

# **Distortions to Agricultural Incentives in Uganda**

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# Distortions to Agricultural Incentives in Uganda

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Uganda, a diverse society in terms of ethnicity and religion, secured its independence in 1962. Its post-independence history has been characterized by long periods of violence and political instability which culminated in military takeovers in 1971, 1979, 1985 and 1986. Since 1986, when President Museveni's National Resistance Movement came to power, there has been relative peace in most parts of the country, apart from the north and north east. Here, rebels had fought a civil war for over two decades until a ceasefire was declared in August 2006, although final peace negotiations have not yet been concluded.

Uganda remains one of the poorest countries in Africa. Its GDP per capita averaged US\$235 in 2000-2004, compared to the Sub-Saharan Africa average of US\$585.<sup>1</sup> This is despite a remarkable growth rate in GDP per capita of 5.9 percent per annum in the period 1980-2004. Uganda's population increased from 7.1 million in 1960-64 to about 26.0 million in 2000-2004. Population growth averaged 3.4 percent per annum from 1980 to 2004, one of the highest growth rates in Africa if not in the world. As a landlocked country, high transportation costs limit its participation in international trade. Exports of goods and services amounted to 7 percent of GDP in 1985-89, increasing to 13 percent in 2000-2004. The share of imports in GDP increased from just 14 percent to 32 percent over the same period. The gap is met through aid inflows, which rose from 5.9 percent of GDP to 13.8 percent of GDP. In part, because of the prolonged disorder and civil strife, agriculture is the most important sector, and remains more important than in comparable countries in Sub-Saharan Africa. The performance of agriculture, and especially coffee, has been the *primus motor* for the economy as a whole.

Uganda's early post-independence economic policy followed a rather conventional development strategy, emphasizing private sector participation with mild import substitution. However, this model was soon abandoned in favor of public sector dominance. As elsewhere in Africa, the state-led model of economic development quickly ran into trouble. In Uganda, its demise was accelerated by a particularly chaotic period of economic policy-making in the 1970s following Idi Amin's seizure of power in 1971 which devastated the economy. During

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<sup>1</sup> The figures in this paragraph are drawn from Sandri et al. (2006) based on the *World Development Indicators* of the World Bank (2007).

this period, the Asian business community was expelled and business management was put in the hands of inexperienced Africans on the pretext of Africanizing the economy. There was a huge expansion of the public sector and in the number of parastatal enterprises which quickly became a drain on public resources.

After the fall of Amin in 1979, an economic reform program was initiated in 1981 with support from the IMF and the World Bank. However, economic policy continued to follow a zig-zag course until the Economic Recovery Program was launched in 1987. Since then, Uganda has experienced sustained growth, with the annual real GDP growth rate averaging 6.2 percent since 1987. This has been accompanied by a dramatic drop in the proportion of the population experiencing income poverty, which fell from 56 percent in 1992 to about 38 percent in 2002.

This study investigates the impact of various policy regimes on the agricultural sector, which is critically important as a vehicle for income growth and poverty reduction. Direct and indirect policy-induced distortions are computed based on a database of agricultural production, prices, policies and margins for the period 1961-2004. The study finds a clear relationship between agricultural incentives and the different periods of economic policy. Agriculture was lightly taxed in the 1960s, but the burden of taxation increased significantly during the chaotic years of the 1970s and 1980s. However, since the onset of agricultural liberalization at the beginning of the 1990s, the discrimination against agricultural production has been greatly reduced. The main challenge now facing the Ugandan government is to improve the competitiveness of agriculture through a supply-side investment strategy as the key element in its poverty reduction strategy.

The rest of this chapter is organized as follows: the growth performance and structural changes in the economy are discussed next, followed by a review of the evolution of policies over time. Then distortion indicators are presented and finally the findings are summarized and future prospects reviewed.

### **Growth and structural changes in the economy**

Uganda's growth performance until 2004 can be divided into four phases: the prelude to independence and the immediate post-independence era (1961–70), the period of economic collapse during the Amin era (1971–80), the period of intermittent growth episodes (1981–

86), and the period of sustained growth and recovery (1987–2004).<sup>2</sup> A brief discussion of each of these periods is followed by a survey of structural change and of agriculture's performance.

### ***Growth performance***

#### *The immediate post-independence era, 1961–70*

At independence, Uganda was well positioned to embark on a successful development path. Agriculture was an important foreign exchange earner through the export of coffee, cotton and tea while at the same time providing basic self-sufficiency in food. The manufacturing sector produced inputs for the agricultural sector and consumer goods, and was becoming a significant source of foreign exchange through the export of textiles. The country's current account balance was in surplus and domestic savings averaged 13 percent of GDP. There was a good transportation system in place, in part facilitated by cooperation in the East African Community, including a road network, railways, port and air services.

Immediately after independence, the economy experienced an initial period of significant progress. Per capita real GDP grew at an average rate of 2.9 percent, despite the high population growth rate. However, economic progress started to decline in the late 1960s due to growing political turmoil, which culminated in a coup d'état led by Idi Amin who deposed Milton Obote in 1971.

#### *The period of economic collapse, 1971–80*

This initial economic progress was ruined by the political turmoil and economic mismanagement of the 1970s. A series of negative external shocks during the mid-1970s also contributed to this collapse, including higher oil prices and the break-up of the East African Community, which disrupted international traffic movements. Increased military and other expenditures led to large fiscal deficits, which were financed by domestic borrowing, with inflation as a predictable outcome. Consequently, real GDP fell 25 percent during the Amin period (1971-79), with particularly sharp falls recorded in the value added of the industrial and monetary agricultural sectors. The only sector that recorded steady growth was the subsistence sector, basically to provide individual food security and to supply the thriving and lucrative parallel markets (Appendix Table 1).

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<sup>2</sup> More extensive reviews of economic policy during this period are Bigsten and Kayizzi-Mugerwa (1999); Reinikka and Collier (2001) and World Bank (1987).

*The period of intermittent recovery, 1981–86*

The Amin Government was overthrown in April 1979 by a combined force of the Tanzanian army and a Ugandan rebel group, the United National Liberation Front. In December 1980, Milton Obote assumed power for the second time, with the economy in deep crisis and infrastructure in complete ruins. The first attempt to revive the economy was made in 1981 with the government implemented the Stabilization and Structural Adjustment Program, with financial and technical assistance from the International Monetary Fund (IMF) and World Bank. The program collapsed after barely four years, following the government's failure to comply with the program benchmarks. The economic crisis, together with growing political opposition, led to the removal of the second Obote Government in a military coup in 1985. The military coup led to further repression and economic chaos. After a further six months of civil war, Museveni's National Resistance Movement (NRM) took power in 1986.

During the period 1981–1986, the annual GDP growth rate averaged 2.2 percent, while agricultural sector annual average growth rate was 2.5 percent (Appendix Table 1). This modest average performance is largely on account of the recovery in the first half of this period.

*The period of sustained growth and recovery, 1987–2004*

After an initial period of indecisiveness, the NRM Government agreed to a new policy package with the IMF and the World Bank in May 1987, formalized in an Economic Recovery Programme (ERP). The aim of the ERP was to restore fiscal discipline, monetary stability, and rehabilitate the economic, social and institutional infrastructure. Since then, significant unilateral agricultural, trade and exchange rate reforms have been undertaken aimed, in part, at removing policy-induced distortions in the agricultural sector. Following these reforms, real annual GDP growth rate has averaged 6.2 percent, well above the average annual growth rate of 2.2 percent and average annual decline of –1.6 percent registered during the early 1980s and the 1970s, respectively. Agricultural growth averaged 3.7 percent per annum during this period, although it declined in 2004 largely on account of drought. (Appendix Tables 1 and 2). An important question is how much of this buoyant growth represents a 'bounce-back' from the devastation of the previous two decades as a result of improved security and can it be sustained (IMF 2005).

### ***Structural changes in the economy***

The British colonial policy turned Uganda into a reservoir of cheap raw materials for British industry and a market for its finished goods. There was very limited effort to develop the manufacturing sector, save for the setting-up of cotton ginneries and coffee processing plants and the provision of transport infrastructure to reduce transport costs while at the same time protecting the quality of the raw materials. Consequently, the structural composition of economic activity was skewed in favor of agriculture, and this dependence on agriculture has continued to a rather remarkable extent. In the late 1960s, 92 percent of the labor force depended on agriculture, the sector contributed 46 percent of GDP and 97 percent of exports. In 1990, agriculture accounted for around 50 percent of GDP, 85 percent of employment, 99 percent of export earnings, and 40 percent of government revenue. Even in 2000-2004, agriculture accounted for 31 percent of GDP, was the primary source of income for 80 percent of the population and contributed 81 percent of exports (Sandri et al. 2006). The share of the secondary sector, which includes manufacturing, electricity generation and construction, has increased only modestly while the share of the service sector has increased by about 10 percentage points since 1961 (Appendix Table 2).

### ***Characteristics and performance of the agricultural sector***

Uganda has a variety of agro-climatic conditions across its regions. Five distinct farming systems/areas can be defined by the rainfall pattern and soil characteristics. These include the high rainfall area around Lake Victoria where bananas, robusta coffee, and other food crops are grown; eastern Uganda, with two distinct rainy seasons separated by a four-month dry period, where the main crops include millet, cassava, groundnuts, maize and cotton; the northern region, where the rainfall pattern restricts cultivation to one season, with the main crops being cotton, maize and millet; the mountainous areas, where the altitude permits the cultivation of temperate fruits, vegetables and some traditional food crops; and north-eastern Uganda, where the rainfall of 80 mm per year is suitable for pastoralism and the cultivation of sorghum and millet (World Bank 1993). The country's natural environment provides good grazing for cattle, sheep, and goats, with indigenous breeds dominating the livestock industry. The most important cash crops are coffee, tobacco, cotton and tea. Coffee has been the main foreign exchange earner since colonial times. Its share in total agricultural exports was about 50 percent in the 1960s, grew to more than 80 percent in the early 1980s, but has fallen to

about 20 percent since then. Maize and beans have become important non-traditional exports, especially in regional trade.

The number of persons dependent on agriculture increased from 3.7 million in 1960-64 to 9.4 million in 2000-2004. During the same period, the agricultural land area increased from 9 million to only 12 million hectares. As a result, agricultural land per agricultural worker fell from 2.5 ha to 1.3 ha over this period. Ugandan agriculture is largely dependent on smallholder production, where own production constitutes a significant proportion of the consumption basket. Large-scale estates are only significant in the tea and sugar sub-sectors. In 2001/02 the subsistence sector accounted for 44 percent of total agricultural output, compared to 52 percent in 1991/92. Large-scale estates are only significant in the tea and sugar sub-sectors.

The typical diet varies from region to region due to differences in staple crops, of which the most important are plantains (matooke), yam, cassava, maize, millet and sorghum. Food production has not kept pace with population growth. Based on FAO statistics, mean dietary intake deteriorated between 1992/93 and 1999/2000, from 1,890 calories per day to 1,640 calories per day. The proportion of the population receiving less than 60 percent of required calories rose from 32 percent to 44 percent over the same period (Opolot et al. 2005).<sup>3</sup>

The annual growth rate of Uganda's agricultural GDP averaged 3.4 percent between 1980-2004, only slightly above the average of 3.2 percent for Africa as a whole during the same period (Sandri et al. 2006). The production of cotton, tea, and tobacco virtually collapsed during the late 1970s and early 1980s. Since the late 1980s, the government's export strategy has concentrated on reviving traditional exports as well as encouraging diversification in commercial agriculture that would lead to a variety of nontraditional exports.

## **Evolution of policy**

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<sup>3</sup> These nutrition trends based on agricultural statistics are not consistent with the figures quoted earlier for the very significant decline in income poverty during this period, as reported by household budget surveys, and suggest that there may be under-reporting of agricultural production in Uganda.

The colonial administration created a highly open economy. By 1960, the economy was heavily dependent on import-export trade characterized by the supply of raw materials for export and the import of consumer goods for the domestic market. The policy framework in the immediate post-independence period (1962–1966), which was built on the recommendations of a World Bank mission, did not deviate much from the policy framework inherited from the colonial administration. It emphasized the promotion of commodity exports, external financing to bridge the savings-investment gap, and the promotion of private investment by encouraging existing investors and creating incentives to attract new ones, including African entrepreneurs. As discussed above, commendable economic progress was recorded during this period.

The second development plan, which came into force in 1967, instituted radical changes aimed at promoting the dominance of the public sector in the economy. The policy emphasis shifted to import-substituting industrialization, and import tariffs and customs refunds on imported raw materials were introduced, although the level of protection remained modest (Bigsten 2000). In the same vein, the government made pronouncements (commonly referred to as the Nakivubo Pronouncements) directed at socializing the means of production in 1969. Consequently, government acquired 60 percent of ownership in most if not all private sector ventures. In addition, the export marketing of all cash crops was nationalized through the formation of Statutory Marketing Boards. At the local level, the processing factories (cotton ginneries and coffee factories) originally owned and run by non-Africans were handed over to the co-operative movement managed mainly by Africans. Export taxes, price controls by state marketing boards, exchange controls, subsidies provision and administered credit to the agricultural sector were the order of the day.

In early 1971, Idi Amin took power, and in 1972 declared an “economic war”, during which 50,000 Asians were expelled and their productive and personal assets confiscated. This affected both agricultural and industrial production through the huge loss in skilled personnel. Further damage was caused by economic mismanagement and a substantial expansion of the public sector which quickly became a drain on public resources. The agricultural sector suffered from poor service delivery, shortage of agricultural inputs, market deterioration and delayed payments to farmers. Corruption and the bureaucratic tendencies of marketing boards contributed to high costs. As a result, marketing boards absorbed a larger percentage of the world market prices, leaving producers with low producer prices. This was exacerbated by the practice of late payment, which acted as a further tax on farmers’ incomes.

The rehabilitation of the economy was the first task facing the post-Amin governments along with the creation of political stability. The first attempt at policy reform was in 1981 with the support of the IMF and the World Bank. This marked the start of the Stabilization and Structural Adjustment Programs (SAPs). The government introduced wide-ranging economic policy reforms, which included among other things, the floating of the shilling, increasing producer prices for export crops, removal of price controls, and rationalization of the tax structure and government expenditure.

This reform program collapsed in 1984 after the IMF and World Bank cut off lending, following the government's failure to meet the program benchmarks. In 1984 alone, there was a four-fold increase in public sector wages, bank credit to government increased by 70 percent and money supply increased by 127 percent. Further, foreign exchange controls were tightened in the face of insufficient foreign exchange inflows. The return to economic crisis was both prompted by and a factor in the renewed civil war following which the National Resistance Movement came to power in 1986.

The new government first reintroduced controls, revalued the currency, and sought to support the import-substituting sector. The consequences of this policy stance were economically devastating. The budget remained in serious deficit, export duties eroded, producer prices and export revenue fell in real terms, the balance of payments worsened, reserves were depleted and arrears accumulated. Underground market activities flourished, inflation rose to over 200 percent between 1985 and 1987, and the parallel exchange rate rocketed to several times the official rate (Loxley 1989).<sup>4</sup>

In early 1987, the NRM Government turned to the IMF and the World Bank for financial assistance. This led to a more consistent and successful phase of policy reforms launched in May 1987. The reforms embraced monetary and credit policy, fiscal policy, exchange rate policy, trade policy as well as institutional, pricing and domestic market reforms in the agricultural sector (for details, see the Appendix). Since 1997 the national vision and strategies for the reduction of poverty are articulated in the Poverty Eradication Action Plan, further revised in 2000 and 2003. Its overarching objective is to reduce absolute poverty to less than 10 percent by 2017.

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<sup>4</sup> With a base of 1980=100, the Consumer Price index topped 150,000 by mid-1992, largely due to the devastation due to war inflation. Only Zaire had a worse experience (Donovan 1996).

## Measurement of agricultural policy distortions

The main focus of the present study's methodology (Anderson et al. 2008) is on government-imposed distortions that create a gap between domestic prices and what they would be under free markets. Since it is not possible to understand the characteristics of agricultural development with a sectoral view alone, the project's methodology not only estimates the effects of direct agricultural policy measures (including distortions in the foreign exchange market), but it also generates estimates of distortions in non-agricultural sectors for comparative evaluation.

More specifically, this study computes a Nominal Rate of Assistance (NRA) for farmers. It also generates an NRA for nonagricultural tradables, for comparison with that for agricultural tradables via the calculation of a Relative Rate of Assistance (RRA). Although distortions undoubtedly existed in farm input markets in Uganda during the period analyzed, purchased farm inputs are so little used in Uganda (with the possible exception of cotton) that we have ignored their impact.

In our analysis, we have assumed that the farm gate price equals the wholesale (market) price for primary products, in the absence of detailed information on the average farm-to-market margin. More problematic is an assumption about the proportion of the protection or taxation of the processor (as measured by the processor's NRA) which is passed back to the primary good wholesaler. For much of the pre-liberalization period, government marketing policy set both the wholesale price for the processed product and the market (wholesale) price for the primary product. To the extent that these announced prices were effective (which was more often the case for export crops than food crops), processors were constrained in the extent to which they could pass back the (mostly negative) effects of government interventions to farmers. The pass-through of distortions from processors to wholesalers was effectively determined by the margin allowed by government policy. Various assumptions about government price-setting behavior are possible for the pre-liberalization period. For example, if the government set the producer price in relation to the processed good wholesale price by allowing for a competitive (undistorted) margin, then the pass-through value should be calculated on the basis of the inverse of the input-output coefficient between the primary good and the processed one at the wholesale level. It turns out that the absolute margin varies considerably from year to year, making this hypothesis

unlikely. We have thus assumed equi-proportionate pass-through of the processed product distortion. For the pre-liberalization period this assumes that, in setting prices and the processing margin, the government distributed the incidence of its interventions proportionately along the marketing chain.

### ***Product coverage***

The covered commodities are coffee, cotton, tea, rice, maize, sugar, beans, cassava, groundnuts, plantains (matooke), cassava, yam, millet and sorghum. These commodities account for between 75 and 85 percent of the (non-distorted) value of output. The trade status of each commodity depends on their net trade position in volume terms, as determined using FAOSTAT data.<sup>5</sup> A commodity was assumed to be non-traded in any year if either the percentage share of exports or imports in production was less than 2.5 percent. The reason for non-traded status needs to be assessed in the calculation of distortions. Where an (otherwise import-competing) product is non-traded because of high trade taxes or non-tariff barriers, the analysis takes this into account. We find that most of the staple foods were non-traded throughout the period. It is reasonable to assume that the lack of trade is due to trade cost rather than trade policy reasons. Maize and beans were non-traded in the early part of the period, but were increasingly traded in the latter part of the period.

### ***Marketing costs of the state marketing boards***

Parastatal marketing boards dominated agricultural marketing in Uganda from independence until the early 1990s. These boards had the sole right to export coffee, cotton and tea and regulated internal marketing as well. Thus, coffee growers could only sell at licensed markets or to licensed traders at a fixed minimum price, and the processing margin was also fixed by the Board. Similarly, in the case of cotton, growers had to sell to ginneries in a particular zone at a predetermined price, and the margins allowed for ginneries were fixed by the Lint Marketing Board. To the extent that the margins of the boards themselves or the margins determined for processors were higher than what would have been expected in a non-regulated situation, then the extensive government regulation of agricultural marketing counts as an additional distortion which should be included in the NRA of these commodities. The

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<sup>5</sup> FAOSTAT data were checked against national sources and mistakes and errors corrected.

parastatal marketing boards also undermined the efficiency of the marketing system. Payments to cooperative unions and thus to farmers were often delayed, resulting in a real reduction in the prices received, particularly when inflation was high. Stock levels were often unnecessarily high and crop finance was inadequate. Delays in collection and transport caused qualitative losses, for example, in coffee. While the likelihood of inefficiencies can be documented, trying to quantify their magnitude is more difficult. One approach is to compare the marketing margins post-liberalization with those pre-liberalization, on the assumption that greater competition in the post-liberalization period would lead to increased efficiency and drive margins closer to opportunity costs. We report on the results of this comparison below when discussing the NRAs for coffee and cotton.

### ***Treatment of foreign exchange distortions***

For most of the period, Uganda had a parallel exchange rate, which often was a large multiple of the official rate (Figure 1). The premium increased rapidly in the 1970s when the secondary rate grew to ten times the parallel rate, and again in the mid-1980s (see discussion in Appendix). We assume that all agricultural exports were converted at the official exchange rate until liberalization began in 1991, and that food imports were purchased at the secondary market rate. This may exaggerate the bias against agricultural exports in some years, as some agricultural exporters may have had access to foreign exchange at official rates.<sup>6</sup> This overvaluation of the exchange rate was by far the most important policy distortion affecting agricultural incentives over the period. The size of this distortion can be measured relative to an estimated equilibrium exchange rate. The estimated division of the total foreign exchange distortion between an implicit export tax and an implicit import tax depends on the estimated elasticities of supply of exports and of demand for exports (Anderson et al. 2008). In the absence of more specific information, we assume that these elasticities are equal and estimated the equilibrium exchange rate to be the mean of the official and secondary market rates.

### ***Treatment of input distortions***

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<sup>6</sup> A World Bank paper reported that certain tea plantation companies with access to foreign exchange at official rates found it privately profitable to purchase tea-picking machines, even though hand picking was more cost-effective from the standpoint of the economy as a whole (quoted in Donovan 1996).

In calculating the overall NRA for an agricultural product, distortions in relevant input markets should also be taken into account. Government agencies had a virtual monopoly on the marketing of agricultural inputs in Uganda. They provided different levels of price subsidies for inputs based on the exchange rate margins between the official and secondary market rates. In the early 1990s the government withdrew entirely from the marketing of agricultural inputs. Liberalization was followed by the government's removal of tariffs on imports of these inputs. The availability of inputs, including agrochemicals, farm tools and implements, is now much improved compared with before liberalization. However, the market for agricultural inputs remains very small and these input market distortions have not been taken into account in the computations.<sup>7</sup>

Subsidized credit was an important instrument of development policy. The Uganda Development Bank and several other institutions supplied credit to local farmers, although small farmers also received credit directly from the government through agricultural cooperatives. However, for most small farmers, the main source of any short-term credit was the policy of allowing farmers to delay payments for seeds and other agricultural inputs provided by cooperatives. While government-imposed fixed lending rates and poor recovery rates implied that those farmers fortunate enough to secure a loan received an implicit subsidy, the sharp curtailment of lending as a result of these financial losses implied that the agricultural sector as a whole was disadvantaged. In addition, donor funds were made available (often at negative interest rates) for the rehabilitation of the agro-processing sector during the 1980s. In the absence of data, we have not been able to incorporate these credit subsidies into our analysis, but in quantitative terms they are not likely to have been significant.

Other interventions, such as high fuel taxes and duties on imported vehicles, adversely affect the cost of agricultural marketing. But these policies do not discriminate specifically against agriculture so they are not counted as distortions in this analysis. A specific distortion in the pre-liberalization period was the monopoly held by the Uganda Railways Corporation on the transport of coffee to Mombasa. The state-run railway system was very inefficient, as shown by the very long turnaround times both in Kampala and Mombasa. Transportation of coffee to ports for export was liberalized in 1992. Competition among freight and shipping companies reduced the cost of moving commodities from Uganda to Mombasa by over 40

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<sup>7</sup> See Nkonya and Kato (2001) for a description of agricultural input marketing.

percent in the five years to 2002 (NRI/IITA 2002).<sup>8</sup> This sharp fall in the cost of shipping exports to Mombasa means that the Uganda FOB prices relative to the international price should have increased. As we have used FOB prices as the relevant international prices for our analysis, we do not capture this distortion and its subsequent removal in our analysis.

### **Trends in agricultural distortions in Uganda**

We begin with estimates of distortions in the two most important traditional export products, coffee and cotton, before discussing distortion estimates for the rest of the farm sector and for non-agricultural tradables.

#### *Coffee*

Uganda has traditionally been a robusta coffee exporting country; however, arabica production has increased over time and currently accounts for around 15 percent of production. Given its importance in the Ugandan economy, the industry has been under tight government control since the colonial era. A Coffee Industry Board was established in 1953 to administer the price fixing provisions previously covered by the defense regulations. Uganda joined the International Coffee Organization (ICO) which came into being in 1962, and had to conform to the export quota allocated by the ICO. To manage this export quota, a Coffee Marketing Board (CMB) was established by the 1962 Coffee Act and given a monopoly over robusta marketing and export. This was extended to all coffee in 1969.

The pre-liberalization system was based on fixed producer prices and processing margins, with smallholders delivering coffee to primary cooperatives or private traders. The coffee was then transported to either cooperative unions or private traders for hulling. The processors had to pay a minimum price to growers, although this price could be discounted at markets to account for the transport cost to the factory. The hulled coffee was then sold at prices fixed by the government to the CMB, which in turn sold to exporters overseas (NRI/IITA 2002). With all margins fixed by the government, the difference between export

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<sup>8</sup> Bigsten reports that the recent creation of a Mombasa-Kampala express cargo train service and removal of the need to unload merchandise at the border for customs purposes cut transport time to Kampala from two weeks to two days (Bigsten 2000).

receipts and the government-set price of exports in local currency remained with the government. The marginal tax rate was 100 percent (World Bank 1993). Marketing chain costs and margins in the post-liberalization period are described in NRI/IITA (2002).

With the adoption of the economic reform program in 1987, a series of institutional and marketing reforms was implemented in the coffee sector. In 1990, the export monopoly of the CMB was removed, permitting cooperative union and private exporters access to the export market. To separate regulatory and trading functions, two new institutions were created within the CMB: the Uganda Coffee Development Authority (UCDA) looking after the former, and Coffee Marketing Board Limited the latter. In July 1991, controls on prices and margins were removed; however, the administered prices were replaced by indicative prices announced by UCDA and a floor price was announced daily for exports. Competition in the industry was further enhanced in November 1991 when government guarantees for crop financing were withdrawn, effectively making life more difficult for the cooperatives who had been the beneficiaries of the guarantees. In March 1992 exporters were permitted to exchange coffee proceeds at the open-market rate and in July 1992 the export tax on coffee was removed, although it was briefly re-imposed in the wake of the coffee boom in 1994. Currently, there are no restrictions on coffee trading or processing of coffee, although since 1995 the UCDA levies a cess (currently 1 percent) to finance its activities of quality control and promotion and monitoring of coffee marketing.

International prices for coffee (a weighted average, using Ugandan production weights, of robusta and Arabica world prices) in 2004 were close to those in 1961 in nominal US dollar terms, but in the intervening years the coffee market experienced three price spikes: in 1977, 1987, and 1995. The Uganda FOB (US\$) price closely follows the international price, though at some discount which probably reflects the transport cost of shipping coffee from Kampala to Mombasa and onwards to international markets. The FOB price in local currency expressed in constant prices bears little relationship to the FOB price in US dollars between the early 1970s and the mid-1980s (Appendix Figure 1). This is largely the result of the increasing misalignment of the exchange rate during this period. Thus, local currency proceeds from coffee exports declined in the 1970s despite the coffee boom in the second half of that decade, and increased significantly in the first half of the 1980s thanks to successive devaluations of the shilling. Since the early 1990s, the two series move in tandem. Compared to the local producer price, the FOB price in local currency appears to be much more volatile. Real producer prices were stable in the 1960s, but fell drastically during the

1970s. There was some recovery in the first half of the 1980s, but the non-adjustment of the nominal farm gate price in an environment of high inflation in the late 1980s again resulted in a serious loss of real value. It was only in the post-liberalization period that real prices recovered sharply. The reforms led to increased competition among processors and exporters of coffee. Prices to coffee farmers not only went up following liberalization but farmers were also paid promptly, reportedly leading to a rapid reversal of the previous neglect of coffee trees. However, the collapse in international coffee prices since the mid-1990s, which reflects in part the emergence of Vietnam as a serious competitor in robusta coffee, has been reflected in falling real producer prices as well.

Margins were high in the 1960s but collapsed during the 1970s, appearing to become even negative in some years (Appendix Figure 2). Margins recovered during the 1980s, leading the World Bank to report that “margins were set at or above average processing costs, and had grown to ‘comfortable levels’ by 1990” (World Bank 1993) – which appears to have been the case, as margins have approximately halved in real terms since liberalization began in 1991. According to the NRI/IITA (2002), coffee supply chains are now reasonably competitive and efficient, with no clear areas within the supply chain where potential exists for major and significant reductions to transaction costs. All the evidence suggests that the domination of coffee marketing by the CMB and cooperative unions in the pre-liberalization period led to marked inefficiencies,<sup>9</sup> although we could not see this effect in the data. Because of the behavior of margins in the period 1975-85, margins in the pre-liberalization period were no higher on average than in the post-liberalization period.<sup>10</sup>

The overall primary coffee NRA at the farmgate, including the distortion introduced by foreign exchange market misalignment, is shown in Figure 1(a). This is also the NRA at the processing level given our assumption of equi-proportionate pass-through. Coffee became increasingly taxed even in the immediate post-independence period, reaching a negative NRA of over -40 percent in 1971. However, the agony became worse during the 1970s when the implied taxation of producers increased to reach a negative NRA of over -90 percent in the

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<sup>9</sup> There were instances, most notably in 1988, when the CMB was unable to pay farmers for new deliveries of coffee or to repay loans for previous purchases, and when the government had to step in to provide funds to meet these obligations. Such subventions should, in principle, be netted off against export tax receipts in any year. In the absence of data, however, we had to ignore this offset.

<sup>10</sup> We estimated a simple ordinary least squares regression (OLS) of the margin on time with a dummy variable taking the value of 1 for the pre-liberalization years (up to and including 1990). The coefficient on the dummy variable yields the excess marketing margin in the pre-liberalization period. However, the coefficient on the dummy variable was not significant, and thus we have not counted any marketing board distortion in the computation of the coffee NRA. The OLS regression gave the following results (with t-statistics in brackets): for the time trend -0.056 (-1.77), pre-liberalisation dummy 0.110 (0.11). The overall adjusted R<sup>2</sup> was only 0.064.

late 1970s. Although export taxation continued to weigh heavily, the main contribution to the NRA during this period came from the requirement to exchange foreign currency earnings from coffee exports at the increasingly unrealistic official exchange rate. The situation of coffee growers improved during the recovery period of the 1980s, with the set-back in the mid-1980s coinciding with the stalling of the first effort at economic reforms. Only following the initiation of the Economic Recovery Program in 1987 did a lasting improvement in the NRA take place, and since 1995 there have been no distortions in Uganda's coffee market.

### *Cotton*

Cotton production and marketing has also been regulated by the government since colonial times. The licensing of ginneries was initiated in 1907. In 1933, the Cotton Zone Ordinance divided the country into fourteen zones, and allocated an area to each ginnery in which it was the monopoly buyer. A minimum pricing scheme was established by the government, in collaboration with the ginners, and a maximum charge set for ginning and baling. The revised 1964 Cotton Act provided for the zoning of cotton production, the setting of fixed seed and cotton lint prices, restrictions on cotton imports and trade, and the licensing of ginneries. This system of controlled marketing and prices continued until 1993.

The Lint Marketing Board Ordinance of 1949 established the Lint Marketing Board (LMB) with the right to purchase all cotton for export, though ginneries were still free to sell to domestic mills.<sup>11</sup> The price which the Board paid to the ginners was fixed by government based on the price which the ginner had to pay to the grower, which was also fixed by the government. Thus both ginning and exporting had monopsony buyers – the cooperative unions and the LMB – working with captive clients on a predetermined margin (World Bank 1993). The lint was sold to exporters by auction in Kampala. Whether the Board made a profit or loss on its operations depended on the price fixed for seed cotton in relation to world prices.

Cotton marketing reforms were undertaken in sequence since the beginning of the 1990s. As of 1990, earnings from cotton exports were allowed to be valued at the market exchange rate. From 1993 private buyers were permitted to buy cotton, but the cooperative unions continued to monopolize the ginning sector until mid-1995 when a transfer of

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<sup>11</sup> The LMB purchased from the ginners all lint and cotton seed produced and the ginner was compelled by law to sell all his production to the Board.

ginneries to the private sector commenced. Cooperative unions continue to play an important role in processing and marketing, but many now source their cotton through private buyers in addition to cooperative societies (Shepherd and Farolfi 1999). Information on cotton market costs and margins in the post-liberalization period is given in NRI/IITA (2002).

The Cotton Development Organization (CDO) was established in 1994 to carry out regulatory and development activities. The CDO publishes an indicative farm gate price at the beginning of each cotton season, which the ginneries treat as a maximum farm gate price (NRI/IITA 2002). The CDO charges a levy of 35 percent of the value of seeds produced by a ginnery to cover the costs of a seed distribution fund. Ginneries which are approved sources of seeds can offset the cost of the levy by supplying farmers with seeds or by selling seeds to those ginneries which are not approved seed sources.

The international price for cotton lint (the Cotlook Cotton A Index) increased during the commodity price boom of the mid-1970s before declining to its lowest level ever at the close of the 1970s. It recovered in the early 1980s before displaying a declining trend since the mid-1980s to date. The Ugandan FOB price (converted using the market exchange rate) largely moves in tandem with the international price, with the exception of the mid-1970s (Appendix Figure 3). This is not surprising as cotton lint was sold at auction throughout the period.

In the early years of administered prices, the LMB had access to a price assistance fund built up on the basis of the profits earned in the bulk-purchasing era. During the 1950s, it had a deliberate policy of subsidizing the producer price, with the consequent losses covered by the Cotton Price Assistance Fund. By the 1970s, however, the policy had changed to one of producer taxation, as producer prices were not adjusted to keep pace with inflation and fell dramatically in real terms. Cotton production collapsed and smuggling increased as farmers tried to take advantage of better prices in neighboring countries. Prices recovered in real terms in the first half of the 1980s but have trended downwards since then in line with the trend in international prices.

The marketing and processing margin, calculated as the difference between the FOB price (converted at the official exchange rate) less the export tax and producer price, has fluctuated widely (Appendix Figure 4). In years when the FOB price increased, the margin also increased, and vice versa. This is consistent with the observed behavior in the cotton market where the indicative price announced at the beginning of the season is treated as a fixed price and any volatility in the FOB price is reflected in agents' margins rather than the

producer price. Margins have been slightly larger, on average, in the post-liberalization period.<sup>12</sup> However, our method of calculating the producer price in this period could have exaggerated the margin. We took the CDO indicator price as the producer price, although some observers believe that the indicator prices in recent years only act as floor prices (see Appendix). We conclude that the data do not allow us to quantify the effects of marketing inefficiencies through a comparison of pre- and post-liberalization margins and thus we do not incorporate any estimate of marketing distortions in the cotton NRA.

In the early post-independence period, there was a moderate export tax on cotton of around 15 percent of the (pre-tax) export price and the NRA averaged about -13 percent. During the period of economic collapse in the 1970s, the export tax continued albeit at a slightly lower rate (Figure 1(b)). The main contributor to the increased negative NRA was the requirement to convert cotton foreign exchange earnings into local currency at the increasingly overvalued official rate. Producer prices fell precipitately in real terms and cotton production collapsed. The steps taken by the new government in 1981 to devalue the shilling show up in an immediate reduction in the negative NRA, helped by the absence of export taxation in the years 1980-84. The collapse of the first reform program led to a further temporary overvaluation of the exchange rate which shows up as an increased burden on farmers and the NRA reached -72 percent in 1986, just before the NRM government took power. By 1992, however, distortions had been effectively removed and the NRA was zero, although it was not until 1995 that the cotton market was fully liberalized.

### *Other farm products*

The remaining commodities covered in this study can be classified into predominantly exportables, predominantly import-competing products or predominantly non-tradables. It is characteristic for the three tradables – maize, beans and to a small extent, rice – that their status shifts between all three categories over the period. The products cassava, groundnuts, plantains (matooke), yam, millet and sorghum are treated as nontradables whose price is formed entirely domestically.

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<sup>12</sup> This is confirmed by the results of a simple OLS regression of the margin on time with a dummy variable taking the value of 1 for the post-liberalization years (1995 and after). Although the goodness-of-fit is low, the margin exhibits a slight (although significant) downward trend over time and the dummy variable for post-liberalization years is positive and significant. The coefficient on time is -0.058 with a t-value of -2.02, the coefficient on the liberalization dummy is 3.637 with a t-value of 4.2, and the adjusted R<sup>2</sup> is 0.29.

At independence in 1962, the government introduced minimum producer prices which were set higher than the equilibrium market prices for some crops. Buyers refused to buy at these prices and there was no state institution to act as a buyer of last resort to support these minimum prices. In the case of groundnuts, the state required the co-operative unions to purchase at the minimum price. It guaranteed them against the losses involved, but such a system was not sustainable as there were no price assistance funds (as had built up for cotton and coffee) to fall back on. To address this deficit, the Produce Marketing Board was established in 1968. The stated purpose of the PMB was to stabilize the prices of food crops by buying when prices were low, storing the surplus and releasing stock when prices were high. In addition, the PMB was exclusively responsible for the procurement and export of maize, beans, sesame (simsim), soybeans and groundnuts.<sup>13</sup> It appears that its influence as a market agent was insignificant, in part because it had no facilities in rural areas to effectively buy from producers, and in part because its predetermined prices were lower than market equilibrium prices. Its role was limited to buying what was offered to it and selling mainly on request to government institutions (Ngategize and Kayabyo 2001). In 1989, the market monopoly of PMB in foodstuffs trade was brought to an end. These market reforms were accompanied by the removal of restrictions on the movement of produce across districts in 1992 (Opolot et al. 2005).

Another marketing body, Foods and Beverages Ltd., was a government-owned trading company intended to protect consumers so that prices did not go beyond the controlled prices, to ensure constant supplies and to protect domestic producers through import control. The company handled both exports and imports, but established private traders were allowed to import/export so that the State-trading enterprise should not become a monopoly.

Beans have been an export crop in Uganda, although during the 1970s they effectively became non-traded and in other years they have been an importable (leading to a sharp increase in the border price of beans in 1998, for example). In general, the producer price and

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<sup>13</sup> Ugandan notifications to the GATT on state-trading enterprises give different dates regarding the origin and functions of the Produce Marketing Board. The 1963 notification stated that the main function of this Board is to provide or create efficient marketing facilities for all controlled "minor" cash crops, defined as wheat, maize, beans, soya beans, tobacco, sorghum, and millet. According to the 1970 notification, the Produce Marketing Board was established by Act of Parliament (Laws of Uganda Act 37 of 1970) to give guaranteed minimum price to farmers, to facilitate export sales and to protect domestic producers and consumers by regulating both exports and imports. The Board is both importer and exporter of produce. Private traders were allowed to export/import with the approval of the Board. Board approval for exports depended on there being no shortage of the produce in question.

the border price are closely aligned in years when beans are exported. Retail prices lie above both producer and border prices. Bean prices in real terms more than doubled in the post-independence period, but fell during the period of economic collapse, possibly because resources shifted from the traditional export crops into subsistence farming and staple crops. Real bean prices rose in the economic recovery period but have stabilized during the past decade (Appendix Figure 5).

Maize is not a traditional staple food crop for Uganda's population but it plays an important part in the rural and urban diet. Maize was one of the crops controlled by the Produce Marketing Board. Following the liberalization of the grain sector, there are no significant policy, regulatory or institutional constraints to its development. Maize marketing costs and margins in the post-liberalization period are given in NRI/IITA (2002). Maize producer prices (for grain) are closely aligned to the FOB export price in the years when maize was exported; the series diverge in years (such as 1969-70, 1980-82 and 1997-99) when the status of maize changed to a net importable. Retail and producer prices broadly follow the same pattern as for beans. Real prices increased during the post-independence period, fell during the 1970s, recovered somewhat during the 1980s and have remained relatively stable since then (Appendix Figure 6).

Uganda produces a significant amount of rice but generally not sufficient to meet domestic demand, and in most years rice is an importable. Rice prices trended upwards in real terms in the 1960s, and the limited information available on producer and retail prices suggests they too increased (Appendix Figure 7). Prices fell during the 1970s, and after some recovery in the first half of the 1980s, have gradually trended downwards since then. Between 1981 and 1995 the producer price closely followed the border price (as the producer price refers to paddy rice and the FOB price to imports of milled rice, this is consistent with positive protection of local rice production during this period). Since 1994, domestic producer prices have exceeded the FOB price, suggesting a further strengthening of protection.

Cassava is shown as an example of the other non-tradables which all follow exactly the same NRA pattern. It is a major staple food in Uganda and is consumed either in fresh or dried flour form. Dried cassava had a complex marketing chain (NRI/IITA 2002). From harvest to purchase at the local store, cassava must be dried, bulked, transported, stored, milled and finally retailed. This report gives an example of costs and margins in dried cassava trading between rural and urban areas based on data from early 2000. The markup on the

producer price of 10,000 Shillings per 100 kg was 200 percent. Fresh cassava trading is more streamlined, driven by the perishability of cassava roots which are unsaleable after five days. Margins are also higher, up to 400 percent in 2000, given the greater price and physical product risk borne by traders. Generally, the NRA for cassava and other nontradables was zero throughout the period.

Rice as an importable has always had positive protection. In the 1960s, this was due mainly to assumed tariff protection. Protection grew dramatically in the 1970s largely because of exchange rate protection, and gradually subsided in the 1980s as the official exchange rate moved towards the equilibrium rate. The observed positive NRA during the 1994-2004 period is due exclusively to tariff protection. NRAs for maize and beans jump around but are generally low throughout the period. Positive protection occurred in years when these products became import-competing products, while negative protection represents the implicit exchange rate tax in years when they were exportables.

### ***Aggregate NRA for the agricultural sector***

The aggregate NRA for the primary agricultural sector is obtained by weighting the individual commodity NRAs by their undistorted value of production. NRAs are also calculated for each sub-group of exportables, import-competing products and nontradables (Table 1 and Figure 3). The commodities examined account for 75-85 percent of the total value of agricultural output (at undistorted prices). The non-covered farm products were allocated to each of the three groups. In the case of exportables among this group, we assume that the foreign exchange rate misalignment was the sole source of distortions. In the case of import-competing products, we assume that the sources of distortion included the forex misalignment as well as the applied tariff rate.<sup>14</sup> The main import-competing commodities not covered are sugar, dairy products, wheat flour, vegetables oils and meat products. In the case of non-tradables, we assumed that the sole source of distortion was the differential application of VAT after 1995.

The main exportables not explicitly covered are tea and tobacco. Tobacco is the second largest cash crop after coffee. Tobacco production, processing and marketing of the crop is vertically integrated. Inputs and extension services were provided as a package to

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<sup>14</sup> Support for this procedure can be found in the comment that, in 1991, the wholesale price of sugar charged by the two sugar factories was comparable to the price charged by importers of sugar after tax and duty (World Bank 1993).

farmers on credit. Production peaked in the early 1970s but collapsed during the late 1970s when management was brought under the monopoly of the National Tobacco Corporation. There was a divestiture of the industry to British American Tobacco (BAT) in 1984. The tobacco industry has since been opened to other competitors besides BAT, although the latter continues to control up to 93 percent of the market.

Tea in Uganda is grown mostly on large estates because of its more rigorous processing requirements although smallholder tea production has existed since 1966. Management of the tea industry was originally under the control of the Uganda Tea Association, a voluntary association of tea producers established in 1948. In 1972, the Uganda Tea Authority took control, but production subsequently collapsed in 1979 when war forced closure of the factories. In 1983, the industry was liberalized and the Uganda Tea Association was revived. Since then, policy reforms such as the removal of the Uganda Tea Authority monopoly on exports, valuation of export proceeds at the market exchange rate after 1987, and liberalization of export marketing have stimulated production. For both sectors, only taking account of the forex misalignment may underestimate the extent of distortions at certain periods, but the impact on the overall NRA is likely to be small.

Turning to the results there are marked differences in the stance of policy towards the three main groups. Most striking is the heavy taxation of exportables throughout the period until the 1990s. The situation for producers of exportables deteriorated in the 1960s and worsened further during the 1970s. Much of this deterioration was driven by the overvalued exchange rate and the gap between the official and secondary market forex rates which grew enormously during this period. Matters improved, but only slightly, in the 1980s. Only in the first half of the 1990s did a major improvement occur, and in the 1995-2004 period all direct distortions against exportable crops have been effectively removed (Figure 3).

The situation for import-competing products was almost the mirror opposite, again mainly driven by exchange rate movements. Particularly during the 1970s, when agri-food imports required the purchase of foreign exchange at the secondary market rate, there was very large positive protection of import-competing agricultural sectors in Uganda. From a moderate level of protection in the 1960s, this increased substantially in the second half of the 1980s. As the foreign exchange market gradually returned to equilibrium at the beginning of the 1990s, the implicit protection of import-competing products also fell, although it has continued at a relatively modest rate during the 1990s and the first few years of the present decade, mainly representing continuing tariff protection of these commodities (Figure 3).

Given our assumption of the ineffectiveness of the Produce Marketing Board, there were no policy interventions which affected the incentives to produce nontradable agricultural products over the period. In the last three five-year periods there has been a very small negative bias due to the operation of the VAT system. Thus, despite the very large swings in the distortions affecting the two tradables sub-sectors of agriculture, the overall (negative) NRA indicator for agriculture remained at modest levels. This is due to the predominance of largely non-traded food crops in Uganda's agricultural production, and the relatively small share of these crops which were marketed, with most production being for own consumption during this period. While the overall magnitude of the distortions remained low throughout the period, the strong bias against export crops undoubtedly held back the development of the sector.

### *Non-agricultural NRAs*

As mentioned above, the total effect of distortions on the agricultural sector depends not just on the size of agricultural policy interventions, but also on the magnitude of the distortions generated by direct policy measures in non-agricultural tradable sectors. The RRA measures the size of distortions in agriculture relative to those in other sectors. The higher is the nonagricultural NRA the more other sectors are in a position to attract resources away from the agricultural sector, adding further to the discrimination against this sector or reducing the value of any direct positive assistance that may be granted to farmers.

Various policy measures were included in the computation of the nonagricultural NRA. We included customs duties, export taxes (which applied on copper and hides and skins in some years up to 1977), the import commission and withholding tax and the differential application of sales tax and VAT (the calculations are described in the Appendix). Other non-tariff barriers could not be included because of an absence of specific information; these may have been important in earlier decades, but were eliminated in the post-liberalization period. Exportable non-agricultural goods were heavily taxed throughout the 1970s and 1980s, largely through the unfavorable exchange rate regime, while import-competing products were strongly protected in the 1960s and 1970s by the distorted exchange rate regime, and more recently by effectively higher VAT rates and import tariffs. In terms of the overall trend, relatively limited protection of around 8 percent in the late 1960s increased

to between 15-20 percent during the 1970s and 1980s, falling back to between 9 and 13 percent during the 1990s and early 2000s.

The resulting NRAs for non-farm tradables, and the RRA, are shown in Table 2 and Figure 4. The trend in the RRA can be divided into four periods. During the 1960s, the RRA was initially negative but small. During the Amin period in the 1970s, the position of agriculture worsened considerably, mainly due to an increase in support to the non-agricultural sector which averaged over 50 percent during this period; however, there was also an increase in direct distortions negatively affecting agriculture. The 1980s saw limited dismantling of the heavy anti-agriculture bias in government policy, with the RRA averaging just under -50 percent, but still worse than the level that prevailed at the beginning of the 1970s. This was mainly due to an improvement in the agricultural NRA, although there was also a slight decrease in the level of protection for the non-agricultural sector. This improvement continued in the 1990s and into the early years of the present decade. Indeed, during this period there is now some small positive protection of the agricultural sector arising from direct policies alone. This is due to the continued protection of import-competing products while government interventions have been completely abolished on exportables. However, the limited protection of agricultural production is slightly smaller than the assistance to producers of non-agricultural goods so the RRA is slightly below zero.

## **Conclusions**

The measured rates of distortion for Ugandan agriculture which we have reported here could undoubtedly be improved. We have not taken into account the impact of farm input market distortions, although the use of purchased farm inputs is very limited and this omission is unlikely to significantly alter the conclusions. Nor have we been able to fully take into account the impact of state control of all agricultural marketing in the pre-liberalization period. Although we did not find evidence that margins were higher in this period, there were probably other inefficiencies which adversely affected farmers but which are not captured in the published prices, such as the effect of delayed payment, the impact of the Uganda Railways monopoly on the transport of coffee to the coast, or the restrictions on food marketing across regions. And nontariff barriers to imports of non-farm products in the pre-

liberalization period mean we underestimate the size of the negative RRA in those years. Despite these caveats, the broad story which emerges from the figures is a plausible one.

In the early years of independence, agricultural incentives were broadly neutral, although positive protection to the non-agricultural sector meant that some discrimination existed against the agricultural sector. The shift to a state-led development strategy in the late 1960s was reflected in increased direct taxation of the agricultural sector, particularly of export crops. However, the NRA for the agricultural sector as a whole turned only slightly negative. Despite the importance of the cash crop sector as a source of foreign exchange earnings and in underpinning the growth of the monetary economy, most Ugandan agricultural production consisted of, and still consists of, staple food production, much of it of a subsistence nature and comprising predominantly non-traded products. Despite regulations affecting food marketing, and the existence of the Produce Marketing Board for much of the period, the evidence suggests that food markets remained mainly local and were not much affected by direct policy interventions. This explains the resilience of the sector when incentives for the exportables sector were totally undermined during the fifteen-year period of economic chaos between 1971 and 1986 and the early hesitation in introducing reforms by the new government in 1986. Much of this distortion was due to the substantial overvaluation of the shilling during those years, which gave significant protection to import-competing substitutes, although the overall extent of economic disorder during those years meant that there was little benefit to the agricultural sector from these incentives. The non-agricultural sector was potentially a bigger beneficiary from the overvalued exchange rate, but the impact of other events which cannot be captured in price policies, such as the expulsion of the Asian business community or the effect of war on industrial capacity, severely limited any likely benefits to the non-agricultural sector.

Liberalization of agricultural marketing began in earnest in 1991, and the subsequent thirteen years have seen a remarkable change in policy towards the agricultural sector. Direct disincentives have now been eliminated, while direct assistance to the non-agricultural sector has remained relatively unchanged over this period, at around 8 percent, despite the simplification and reduction in nominal tariff rates. Thus there continues to be some relative discrimination against the agricultural sector in Uganda, but it is tiny compared with previous periods.

Despite this improved policy environment for agricultural growth, the sector remains in great difficulty. Even in the post-liberalization period, real value added in primary

agriculture has grown at markedly lower rates than the economy-wide average, and only slightly higher than the rural population growth rate of 3 percent per year. Low producer prices close to the cost of production threaten the viability of the coffee and cotton sectors. Improving profitability will be dependent on improved efficiencies in production, marketing and processing. Also, rural infrastructure remains very poor. Considerable effort has been put into roads improvement; the average distance of households to a tarred road has fallen from 32km in 1997 to 22km in 1999/2000, and communities on average live within 2km of all-season feeder roads. But access to electricity in rural areas remains low: only 12 percent of all villages and only 2.1 percent of all rural households have electricity connections in Uganda, rates which are among the lowest in the world. The implicit taxation of exports caused by poor infrastructure and high transport costs in 1994 was estimated to be equal to nearly two-thirds of value added. Correspondingly, transport-induced trade barriers provide effective protection for domestic sales even in the post-liberalization period. These “non-policy” barriers to trade have been blamed for the sluggish response of the Ugandan economy to the extensive trade policy reforms undertaken over this period (Milner, Morrissey and Rudaheeranwa 2001).

Uganda’s current economic strategy as laid out in its Poverty Eradication Action Plan (PEAP) sets the long-term goal of reducing the incidence of income poverty in Uganda from 44 percent in 1997 to less than 10 percent by 2017. Agriculture still dwarfs any other sector in terms of its share of economic activity, of employment and as a source of income, especially for poor people. The potential for growth resulting from economic reforms and rehabilitation of the economy from the past devastation has now largely been exploited. There is a need to focus more systematically on raising the growth rate of agricultural production to supply domestic, regional and overseas markets.

Raising existing levels of protection to the agricultural sector as a way of providing additional incentives would be a fruitless strategy. Tariff protection to industry, although lower in nominal terms than on agricultural products and food processing, does contribute to a relative bias against agricultural production simply because of the greater importance of import-competing products in domestic non-agricultural production. However, it would be better to deal with this discrimination through a further reduction in manufacturing tariffs rather than by raising agricultural tariffs. The latter would benefit a very small sub-set of agricultural products – wheat, dairy products, sugar, vegetable oils – where the poverty impact of increased production, except perhaps in sugar, would be limited.

Ugandan agriculture now needs to concentrate on improving its competitiveness through a supply-side investment strategy, including in agricultural research and extension and rural infrastructure. The key to this is additional investment in rural areas, not higher protection. The government's Program for the Modernization of Agriculture points in the right direction (Government of Uganda 2000). If Uganda is to meet the poverty reduction targets set out in its PEAP, then investment in enhancing agriculture's supply capacity must be given much higher priority both in government budget allocations and donor aid flows than is the case at present.

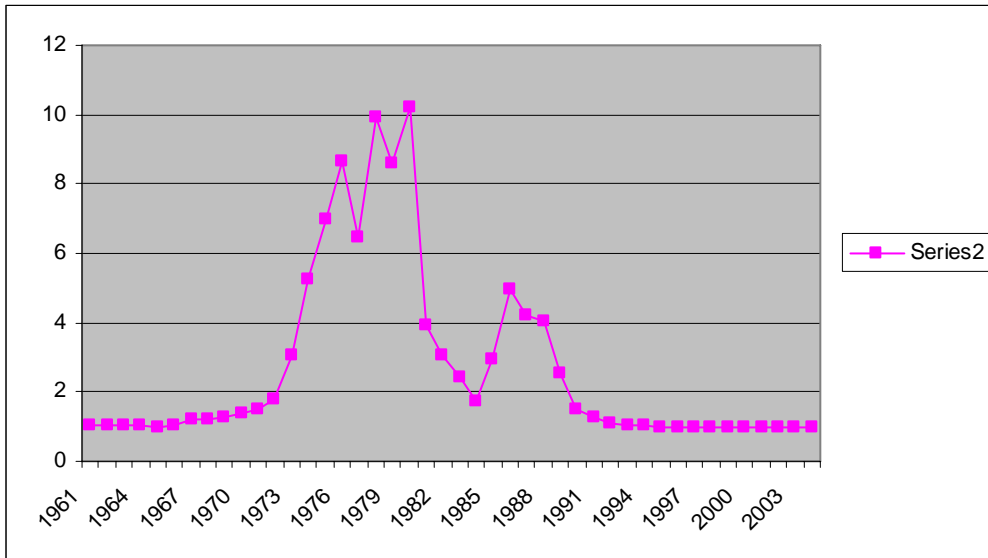
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Figure 1: Parallel market premium over the official exchange rate, Uganda, 1961 to 2004  
(proportion)



Source: Authors' spreadsheet

Figure 2: Coffee and cotton NRAs, Uganda, 1961 to 2004

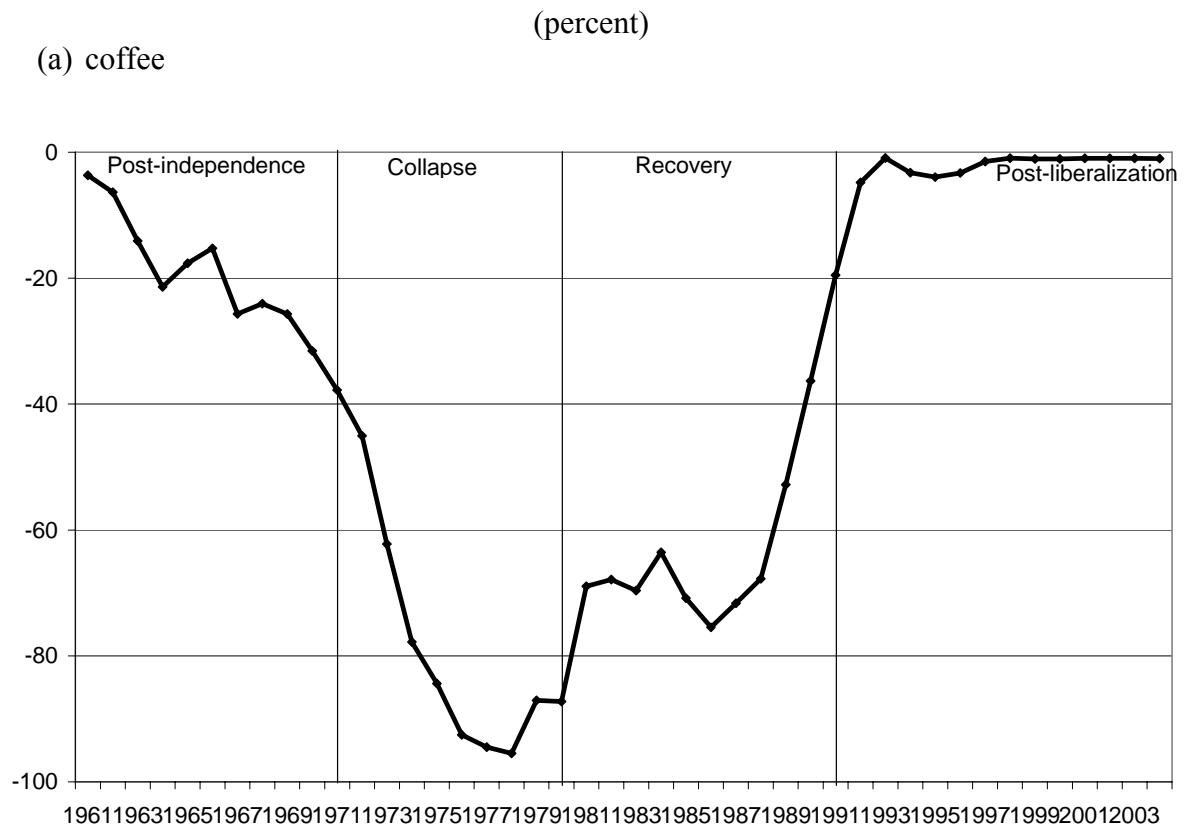
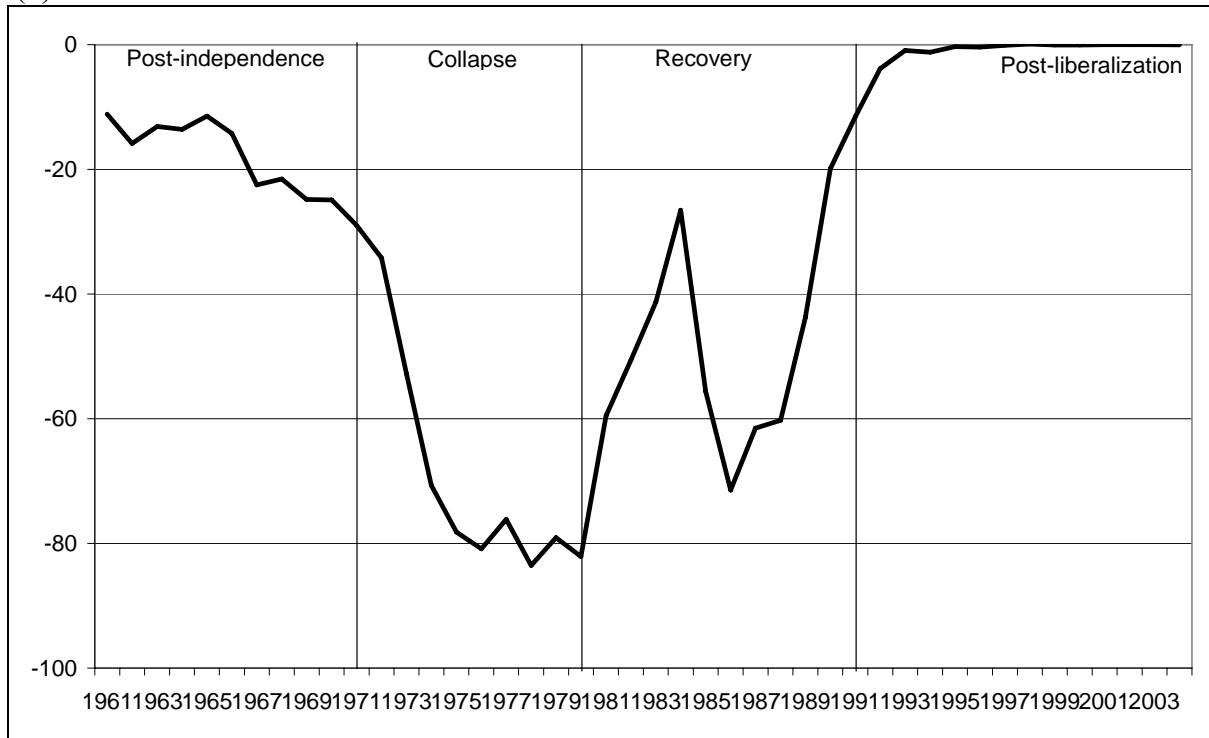


Figure 2 (continued): Coffee and cotton NRAs, Uganda, 1961 to 2004

(percent)

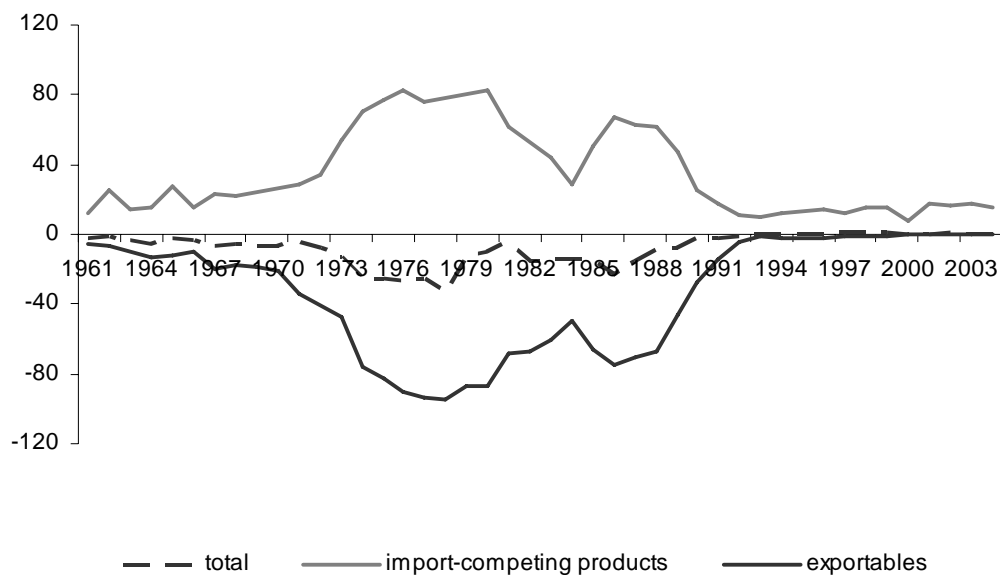
(b) Cotton



Source: Authors' spreadsheet

Figure 3: Nominal rates of assistance to exportables, import-competing and all<sup>a</sup> agricultural products, Uganda, 1961 to 2004

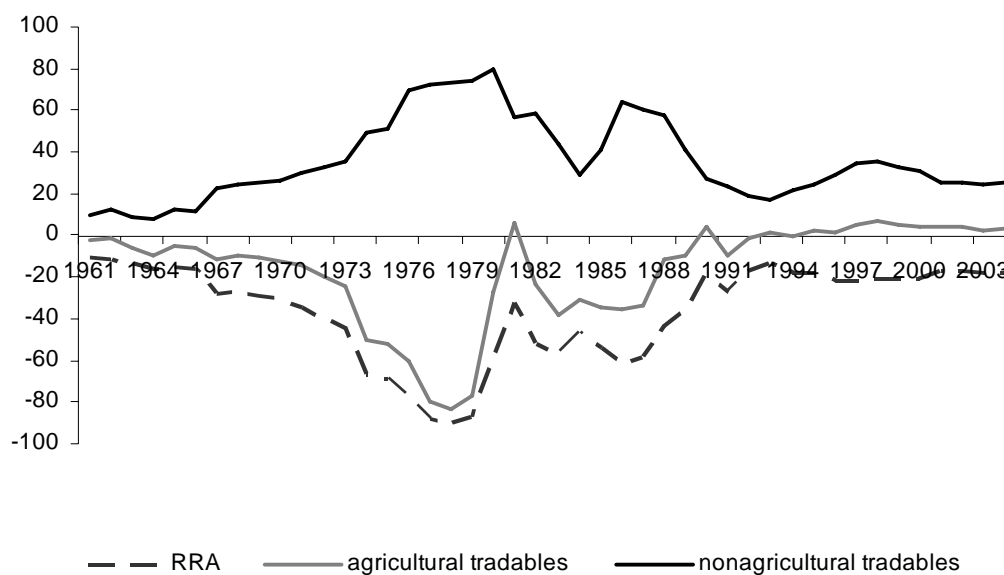
(percent)



Source: Authors' spreadsheet

a. The total NRA can be above or below the exportable and import-competing averages because assistance to nontradables and non-product specific assistance is also included.

Figure 4: Nominal rates of assistance to all nonagricultural tradables, all agricultural tradable industries, and relative rates of assistance<sup>a</sup>, Uganda, 1961 to 2004 (percent)



Source: Authors' spreadsheet

- a. The RRA is defined as  $100 * [(100 + \text{NRA}_{\text{ag}}^t) / (100 + \text{NRA}_{\text{nonag}}^t) - 1]$ , where  $\text{NRA}_{\text{ag}}^t$  and  $\text{NRA}_{\text{nonag}}^t$  are the percentage NRAs for the tradables parts of the agricultural and nonagricultural sectors, respectively.

Table 1: Nominal rates of assistance to covered products, Uganda, 1961 to 2004

(percent)

	1961-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
<b>Exportables<sup>a, b</sup></b>	<b>-8.9</b>	<b>-15.4</b>	<b>-43.7</b>	<b>-89.8</b>	<b>-66.6</b>	<b>-65.0</b>	<b>-9.6</b>	<b>-1.3</b>	<b>-0.3</b>
Cotton	-13.4	-18.9	-42.3	-79.6	-52.0	-58.5	-7.5	-0.2	0.0
Coffee	-11.4	-21.7	-50.9	-90.8	-71.5	-67.7	-13.0	-2.1	-1.0
Tea	-1.1	-6.5	-36.4	-77.6	-52.0	9.9	7.5	0.2	0.0
<b>Import-competing products<sup>a, b</sup></b>	<b>16.5</b>	<b>22.3</b>	<b>42.6</b>	<b>79.0</b>	<b>54.1</b>	<b>57.8</b>	<b>14.8</b>	<b>13.9</b>	<b>15.0</b>
<b>Nontradables<sup>a</sup></b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-0.4</b>	<b>-0.3</b>	<b>-0.3</b>
Cassava	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	-0.3	-0.3
Millet	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	-0.3	-0.3
Yam	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	-0.3	-0.3
Plantains	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	-0.3	-0.3
Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	-0.3	-0.3
Groundnuts	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	-0.3	-0.3
<b>Mixed trade status<sup>a</sup></b>									
Rice	13.7	19.7	42.8	48.0	54.5	45.5	4.2	13.1	17.3
Maize	-1.0	3.4	15.0	0.0	25.8	-18.6	-7.5	6.5	0.0
Bean	5.9	1.6	-3.2	0.0	0.0	0.0	-3.5	3.8	-0.1
Sugar	-1.0	-6.5	20.2	15.4	34.7	57.8	14.7	16.1	16.9
<b>Total of covered products<sup>a</sup></b>	<b>-3.0</b>	<b>-5.1</b>	<b>-11.6</b>	<b>-24.5</b>	<b>-11.5</b>	<b>-14.1</b>	<b>-1.1</b>	<b>0.6</b>	<b>0.5</b>
Dispersion of covered products <sup>c</sup>	8.1	12.1	24.3	46.6	43.2	40.5	7.8	6.6	6.9
% coverage (at undistorted prices)	83	84	87	86	75	77	75	79	77

Source: Authors' spreadsheet

a. Weighted averages, with weights based on the unassisted value of production.

- b. Mixed trade status products included in exportable or import-competing groups depending upon their trade status in the particular year.
- c. Dispersion is a simple 5-year average of the annual standard deviation around the weighted mean of NRAs of covered products.
- d. Nontradables cassava, millet, yam, matooke, sorghum and groundnut have the same NRA as the nontradables average in all periods.

Table 2: Nominal rates of assistance to agricultural relative to nonagricultural industries, Uganda, 1961 to 2004  
(percent)

	1961-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Covered products	-3.0	-5.1	-11.6	-24.5	-11.5	-14.1	-1.1	0.6	0.5
Non-covered products	4.4	7.2	16.9	18.6	10.7	17.0	0.8	0.2	-0.1
All agricultural products	-1.8	-3.1	-7.8	-19.2	-5.9	-6.8	-0.6	0.5	0.4
Trade bias index <sup>a</sup>	-0.20	-0.30	-0.58	-0.94	-0.77	-0.77	-0.21	-0.13	-0.13
<i>Assistance to just tradables:</i>									
All agricultural tradables	-4.6	-8.6	-24.3	-70.6	-22.8	-25.1	-1.3	4.0	3.4
All non-agricultural tradables	9.6	19.4	34.9	68.1	53.6	52.9	21.6	31.0	26.1
<b>Relative rate of assistance, RRA<sup>b</sup></b>	-13.0	-23.1	-43.1	-82.1	-49.5	-50.6	-18.8	-20.6	-18.0
<b>MEMO</b> , ignoring exchange rate distortions:									
NRA, all agric. products	-1.5	-1.5	-0.6	-3.1	-1.4	-0.8	-0.5	0.5	0.4
Trade bias index <sup>a</sup>	-0.20	-0.25	-0.36	-0.70	-0.54	-0.53	-0.16	-0.13	-0.13
RRA (relative rate of assistance) <sup>b</sup>	-12.0	-15.7	-11.0	-39.8	-15.7	-5.6	-13.2	-20.5	-17.9

Source: Authors' spreadsheet

a. Trade bias index is  $TBI = (1 + NRA_{ag_x}/100)/(1 + NRA_{ag_m}/100) - 1$ , where  $NRA_{ag_m}$  and  $NRA_{ag_x}$  are the average percentage NRAs for the import-competing and exportable parts of the agricultural sector.

b. The RRA is defined as  $100 * [(100 + NRA_{ag}^t)/(100 + NRA_{nonag}^t) - 1]$ , where  $NRA_{ag}^t$  and  $NRA_{nonag}^t$  are the percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively.

## **Appendix: Policy reform details, data sources and methods for time series construction**

Following a description of the economic reforms introduced from the early 1980s, this Appendix details the data sources and how they were used to estimate NRAs.

### *Components of the economic policy reform*

The major reform measures with implications for the agricultural sector include: monetary and credit policy reforms; fiscal policy reforms; exchange rate policy reforms; institutional, pricing and domestic market reforms; and trade policy reforms. These reform measures were in part intended to improve the competitiveness and efficiency of agricultural markets. The basic premise was that improving the incentive structure of smallholder farmers through higher prices and better functioning markets would lead to a positive supply response thereby raising agricultural output, income and the food security status of smallholder farmers.

#### *Monetary, credit policy and financial sector reforms*

Uganda at independence had a well-developed formal financial system which collapsed due to the destruction of loan portfolios arising from the widespread economic disruption between 1971 and 1986 and the undermining of financial institutions' capital and the value of deposits by the highly inflationary environment in the mid-1980s. However, rural finance was never highly developed, although the importance of crop finance to the coffee and cotton marketing boards and cooperative unions meant that agricultural credit was an important component of commercial bank credit outstanding, comprising 15-20 percent of loans in the mid-1960s, and between 30-60 percent by the end of the 1980s (World Bank 1993).<sup>15</sup> Apart from crop finance, very limited credit was available to farmers in rural areas, the only source being donor-funded projects.

Since the onset of the reform program, the conduct of monetary policy has moved away from the use of direct to indirect instruments. Consequently, direct credit allocations to the agricultural sector have diminished. The monetary program provides for adequate private sector credit, but the share going to agriculture remains very low. Furthermore, much of the credit is for crop finance rather than production finance. Another reform measure with implications for agricultural sector credit was intervention to close down insolvent commercial banks. As a result, the cooperative bank, which was viewed as an agricultural bank, was closed in 1998/99. Microfinance institutions have been promoted since 2002 to fill the gap left by the formal financial institutions by lending to the poor in both rural and urban settings. Despite this initiative, however, credit is still inaccessible to the large majority of smallholder farmers.

#### *Fiscal reforms*

Fiscal discipline has been an overriding objective of the government since the inception of the reform program. The government adopted measures aimed at achieving the twin objectives of reducing government expenditure and increasing government revenue. Uganda increased its

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<sup>15</sup> Crop finance is credit that was provided by the Government and Bank of Uganda to exporter of coffee to enable them to purchase coffee from producers. It was initially operated through commercial banks. However in 1988, the Bank of Uganda took over the responsibility of coffee financing from commercial banks. This policy was reversed in 1991.

government spending as a percentage of GDP from 9 percent in 1980 to 16 percent in 1990 and maintained this share during the 1990s. This is a relatively small percentage when compared to other African countries, which averaged 28 percent in 1998. Uganda's total government revenue increased significantly from 2.4 percent of GDP in 1987 to around 7 percent in 1991 (WTO 1995) but is still only 10-11 percent of GDP, well below the expenditure share (Fan et al. 2003). A small tax base, inefficient revenue collection system and a big component of non-monetary GDP explain the low domestic tax revenues. Much of this deficit has been covered by foreign aid which has represented up to 10 percent of GDP.

Budget spending on agriculture relates to the provision of extension and research services, animal health and disease control. It has generally been low, even by African standards. Between 1980 and 1990, both the level of support, and the share of recurrent and development budgetary expenditure on agriculture, declined. Excluding donor grants, agriculture-related government services financed from local sources declined from 12 percent to 4 percent of budgetary expenditure in 1990-91, equivalent to 0.5 percent of GDP. The latter share is doubled if donor contributions are included. Uganda's allocation of central government expenditure on agriculture in the period 1982-87 amounted to US\$ 3.4 per capita, well below the US\$ 21 per capita average for ten other sub-Saharan African countries (World Bank 1993). Expenditure cuts have also targeted the agricultural sector, with the share of total government expenditure going to agriculture continuing to fall. The agricultural sector has also been affected by the removal of subsidies on agricultural inputs. On the other hand, the government in the past decade has invested significant resources to improve rural infrastructure, and particularly rural roads, to create access to input and output markets.

#### *Exchange rate policy reforms*

For most of the 1970s, the official exchange rate with the US dollar was held close to the original rate fixed for the East African Shilling and which the Uganda shilling inherited in 1966. As a result of the economic devastation during that decade, the premium on the parallel market increased dramatically. By 1981, the price of foreign currency in the parallel market was over 30 times higher than the official exchange rate (Atingi-Ego and Sebudde 2003). The adjustment program of the early 1980s almost achieved the unification of the exchange rates before it broke down in 1984. Its centerpiece was a massive devaluation of the Uganda shilling, followed by a further devaluation in July 1982, after which a flexible exchange rate regime came into force. A two-window system began operation in August 1982, with key transactions including exports of coffee, tea, tobacco and cotton, imports of petroleum, aid-financed projects, official loan and grant inflows, and the servicing of debts and arrears being carried out through Window I at the official exchange rate, and other transactions falling under Window II through an auction system. The two windows were merged in 1984, although there was a further brief resort to the two-window system in 1986 before a fixed rate was again established at the end of 1986.

One of the early decisions of the NRM government in 1986 was to appreciate the official exchange rate, though when the consequences of this became clear the decision was reversed. A currency reform was undertaken in 1987 in which one hundred shillings were exchanged for one new shilling, and the currency was devaluated by 77 percent to help address external imbalances. The parallel market premium fell substantially, and various efforts were put in place to assist import-dependent industries such as the Open General Licence, the Special Import Programs and

the Dual Licensing schemes for exporters wishing to import.<sup>16</sup> It was evident that supply and demand for foreign exchange could not be equilibrated at the then official exchange rate. In October 1989, Government adopted a policy of maintaining constant the real effective exchange rate (a 'crawling peg' system). The nominal exchange rate was adjusted on a monthly basis. In July 1990 the parallel market was legalized, leading to the establishment of foreign exchange bureaux. The devaluation of the official exchange rate, and the move from a fixed rate via an auction to an inter-bank market rate achieved full unification of the exchange rates in November 1993 (Atingi-Ego and Sebudde 2003).

#### *Institutional, pricing and domestic market reforms*

Several institutional and domestic market reforms were adopted as part of the economic reform program. The monopolies of the marketing boards (Coffee, Lint and Produce Marketing Boards) were eliminated between 1990 and 1993. The resulting competition benefited farmers who are now paid on a 'cash on delivery basis' by private buyers, and exporters are free to borrow directly from commercial banks instead of going through the marketing boards. In the cotton sector, private buyers were allowed to buy cotton, but the cooperative movement retained a monopoly in the ginning sector until 1995, when the private sector was allowed to gin cotton. In the tea sub sector, the Uganda Tea Association was revived and to date, Ugandan tea is marketed through the Mombassa Auction Market. Arrangements are underway for smallholder producers to form cooperatives to fill the gap created by the liquidation of the Uganda Tea Growers Corporation in early 2006. The government has ceased any involvement in agricultural pricing (both input and output prices have been liberalized) and marketing activities and narrowed its role to supportive activities such as quality control, the provision of information, and research and development.

#### *Trade policy reforms*

For much of the post-independence period, imports were controlled by quantitative import restrictions and administrative allocation of foreign exchange. Import and export procedures have been liberalized and licensing requirements were abolished since the introduction of automatic licensing in 1991 under an Import Certification System. With non-tariff barriers disappearing, Uganda's customs tariff is now the dominant protective instrument. Uganda has been a GATT contracting party since independence in 1962 and was a founding member of the World Trade Organization (WTO) in 1995. As a result of the Uruguay Round, Uganda's level of tariff bindings increased significantly to cover a quarter of all tariff lines: 87 percent of agricultural and fishery products, and 15 percent of industrial products (WTO 1995). Following a period of rationalization, the 1994/95 tariff schedule had five ad valorem rates between zero and 60 percent. More than 95 percent of all tariff lines fell between 10 and 30 percent and the simple average amounted to 17.1 percent (WTO 1995). A further simplification of the tariff structure has reduced the number of bands to three (0 percent, 10 percent, 25 percent) which apply to raw materials, intermediate and consumer goods, respectively. The trade-weighted applied tariff on

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<sup>16</sup> Under the Open General Licence scheme, foreign exchange was made freely available to enterprises importing inputs in ten key sectors (soaps, tobacco, beverages, textiles, cement, mattresses, pharmaceutical, aluminum, nails and sugar), while exchange allocation under the Special Import Program (which applied, inter alia, to imports of agricultural products) was on a first-come first-served basis. Licences were also issued to importers relying on "own" foreign currency, obtained either through exports or on the parallel exchange market. The latter implied a significant cost, given the differences between the official and parallel exchange rates (WTO 1995).

primary agriculture was 15.9 percent in 1994, but had fallen to less than 3 percent in 2000-2004 (Sandri et al. 2006). The maximum tariff rate applies to imports of certain vegetables, fruits and nuts and specified animal and fishery products. In addition to tariffs, imports may be subject to an import license commission (2 percent), a 4 percent withholding tax as well as internal taxes such as excise duty of 12 percent. Incentives exist under which import duties on certain raw materials may be refunded.

Uganda benefits from various preferential sources of market access for agricultural exports in particular. The country is a member of the East African Community (EAC) and the Common Market for Eastern and Southern Africa (COMESA). It is a signatory to both the ACP-EU Cotonou Agreement and the US African Growth and Opportunity Act (AGOA). Within the framework of these partnerships, Uganda's exports fully qualify for preferential tariff rates under COMESA and EAC, and also enter the European Union and US markets duty and quota free.

#### *Other policy directions*

The national vision and strategies for the reduction of poverty are articulated in the Poverty Eradication Action Plan (PEAP) put in place in 1997, and revised in 2000 and 2003. Its overarching objective is to reduce absolute poverty to less than 10 percent by 2017. The PEAP is implemented through a series of sector-wide and local government development and investment plans. These include the Plan for the Modernization of Agriculture (PMA) approved in 2000, which provides the strategic and operational framework for sustainable rural development and agricultural transformation from subsistence to commercial agriculture. The PEAP is complemented by a number of related instruments and innovations which seek to make policy and resource allocation more pro-poor. These include the medium-term expenditure framework which guarantees an increase in pro-poor allocations of public expenditure over three-year periods and which provides a mechanism to assess whether monies are being used for pro-poor purposes. In 1998, the Poverty Action Fund was set up to protect poverty spending. It channels resources from debt relief to priority areas for poverty reduction. The share of budget expenditure under the PAF has grown from 17 percent in 1997/98 to 37 percent in 2003/04.

#### *Sources of data*

Marketing chains in Uganda are usually very complex (see descriptions in NRI/IITA 2002). One commodity usually leads to various processed products (fresh cassava converts to cassava chips and flour, for example) and sometimes the growers themselves sell both primary and half processed production (cassava chips and fresh cassava, for example). The covered commodities were divided into two groups. For coffee, cotton, cassava, maize, rice, millet, sorghum and groundnuts, a distinction was made between primary and processed production. For the remaining covered commodities (beans, plantain, yam), we assume that the commodities experience no significant transformation from the producer to the consumer and that the commodity remains in its primary form.

#### *Production figures*

Production figures from FAOSTAT were compared with Bank of Uganda (BOU) and Uganda Bureau of Statistics (UBOS) data and proved to be reliable. Since FAOSTAT only provides us with 1961 to 2003 figures, the 2004 figures were either computed (according to recent trends in

the ratio import/production or export/production as for sugar) or taken from BOU or UBOS sources (groundnuts, for example).

For coffee, the primary product is robusta kiboko (dry robusta) or arabica parchment that is only used in food processing (i.e., not directly consumed or exported) in the form of green bean coffee. Production data (in volume) are taken mainly from FAOSTAT. These data refer to green coffee and are an aggregate for both types of coffee. Production data for robusta and Arabica separately are collected by UCDA and reported in various secondary sources (World Bank memoranda and BOU) but do not add exactly to the FAOSTAT figures. The ratio of production in the UCDA figures was applied to the FAOSTAT data to get individual production series. Conversion to primary product has been made using conversion factors of 0.8 for robusta and 0.54 for Arabica.

In the case of cotton, farmers produce seed cotton which is assembled and brought for ginning. The ginning process produces lint and cottonseed. The cotton lint is mainly exported but with a proportion retained for domestic use. Cottonseed, in turn, is crushed to produce cottonseed oil and a residual cake. FAOSTAT contains comprehensive volume statistics on cottonseed, cotton lint, cottonseed cake and cottonseed oil. For the purposes of calculating the NRA for cotton, we work with cotton lint as the primary series. Because of lack of data on prices, the cottonseed sector has been ignored. Seed cotton production has been calculated for lint production using the lint to seed cotton ratio of 0.33 (Bibagembah 1996; NRI/IITA 2002).<sup>17</sup>

For cassava, we assumed that all production sold by growers to a processor was half processed into chips, which was then converted into cassava flour (2 percent loss in weight according to NRI/IITA (2002)). For groundnuts, unshelled products are the primary product which is sold to a processor who converts them to shelled nuts (conversion factor of 0.7 given by FAOSTAT) which in turn are sold to final consumers.

### *Trade figures*

FAOSTAT trade figures proved to be less reliable than the production ones. When data were available (for beans and maize mostly), local sources (such as BOU or UBOS reports) were used. When FAOSTAT trade data were modified, the commodity supply and use table was rebalanced by adjusting domestic supply (usually the biggest of the remaining items). The changes were usually not significant. Where other data were not available, FAOSTAT was assumed to be reliable. These trade figures (both value and volume) covered the whole 1961-2004 period.

### *International prices*

For traded commodities, CIF and FOB prices were computed as the ratio of import (or export) value to volume (taken from either FAOSTAT or BOU but always both extracted from the same source). Export values were expressed in US\$, and the market exchange rate was used to convert them to Uganda shillings. This unit value for each commodity, after subtracting the producer price, gives the total value added in the marketing chain. The unit value can vary from year to year not only because of changes in international prices but also if quality changes. The implicit assumption is made that the quality composition of exports reflects the same quality proportions as in domestic production. As domestic consumption of exported commodities throughout the period was low, this is not an unreasonable assumption.

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<sup>17</sup> FAOSTAT does contain production series for seed cotton where the ratio to lint production is 0.31.

### *Producer Prices*

The farm gate prices for Arabica parchment and robusta kiboko are the prices collected by the CMB and subsequently the UCDA as reported in World Bank (1993) and Bank of Uganda database. They were aggregated into a single farm gate coffee price using production weights.<sup>18</sup>

Since the creation of the Lint Marketing Board, two cotton grades are recognized: AR and BR (named also SAFI and FIFI). The AR grade corresponds to the higher quality of seed and BR to the lower. In the pre-liberalization period (prior to the early 1990s), these prices were enforced by the Ugandan authorities as minimum prices paid to buyers (see Bibagambah 1996, Jameson 1970, World Bank 1982). According to the annual reports of the Agricultural Department, these minimum prices were the actual prices paid to growers. The situation is less clear after marketing liberalization in 1993. The CDO which maintains some of the regulatory powers of the former LMB still announces AR and BR minimum prices but has no powers to enforce these prices which are thus only indicative. However, according to NRI/IITA (2002), these indicative prices are still applied to growers by primary buyers and agents. Others are more cautious arguing that these indicator prices only act as floor prices (World Bank 2006). Because of the absence of information on the correspondence between the actual price paid to farmers and the two indices we follow the NRI/IITA and assume that the two indices act as fixed prices to producers.

Data on the minimum AR seed cotton price are available from the Statistical Abstract for the period 1955-67; from a 1982 World Bank report for the period 1966-81, with good consistency for the overlapping years; and from two sources, Bank of Uganda annual reports and the Bank of Uganda database for the periods 1991-2004 and 1981-2004, respectively. There are some differences between these two latter series for the overlapping years, particularly in 2003 and 2004. Data on the minimum BR seed cotton prices are taken from the same sources, though with some differences in data availability for individual years. The seed prices are converted to lint assuming a conversion factor of 0.33 to give the producer price equivalent of lint.

There remains the difficulty how to establish the average producer price between these two indices. The Lint Marketing Board gives us the exact proportion of AR and BR grades in Ugandan production from the early 1940s to the late 1960s. The share of BR seems to increase linearly in those years. Bibagambah (1996) gives two other ratios indirectly for 1986 and 1994 and those ratios also fit with a continuation of the linear trend. Since we have no more information on these shares, we assume that the shares continued to evolve according to this linear relationship for the whole period.

For coffee and cotton, marketing board publications are an important source of information. These sources are not available for other commodities. Minimum prices were established during the 1960s and early 1970s for various commodities (groundnuts, millet, sorghum, beans, maize but also for some years rice and wheat) but evidence from the Agricultural Department Statistical Abstract during this period (which records both prices paid to growers (monthly averages) and minimum prices) shows that these minimum prices were usually far below the actual producer price and were thus of limited value (except for sorghum and millet in the early 1960s). Several authors note that the Produce Marketing Board did not have the

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<sup>18</sup> FAOSTAT prices are not reliable as they refer only to robusta prices and then only to the minimum price at the end of each year.

effective power of the CMB or LMB in purchasing commodities and enforcing prices (for example, Jameson (1970)). Thus, we had to rely on other sources.

As noted, the Agriculture Department in its periodical reports recorded prices to growers during the 1960s. Some of these data were available to us (1963 to 1968 and 1971). In its 1986/1987 report, the *Background to the Budget* document presented a short time series of rural market prices for the years 1981 to 1984. More recently (since 1999) the Market Information System established by IITA and published on the Foodnet website gathers weekly information on rural markets. Publications for the year 1999, 2000, 2001, 2004 and 2006 were consulted but not all commodities are covered. Other data came from secondary sources: a 1982 World Bank report (1969 to 1975 data), the Regional Agricultural Trade Network (for maize, beans and rice only years 1994 to 2005), Rudaheranwa et al. (2003) (1990-94 and 1997-98), Morrissey et al. (2003) (years 1992 and 1999). The prices in these sources were often not consistent with each other and much of this data had to be discarded as unreliable. Thus, the producer price series should be taken as indicative only. To fill the remaining gaps (in the late 1980s, for example), we made assumptions based on the ratio of producer price/ retail price and rely on the latter time series which is far more consistent and reliable.

#### *Retail prices*

As for producer prices, the retail prices time series were derived from many sources but in this case there was a much higher degree of consistency as shown through « matching » overlapping years. The sources include the Statistical Abstract (years 1961-72), Background to the Budget (years 1970-1975-1979 to 1988), Morrissey et al. (2003) (years 1987-99) and UBOS Statistical Abstract (years 1999-2004). Not every covered commodity was included in the literature quoted above (plantain and yam before 1980, for example). Moreover, for both producer and retail prices, a gap occurred in the late 1970's when no information whatsoever is available. To fill in these blank years, we calculated the weighted-average unit value for the years when all the producer prices are available and extrapolated this unit value (using CPI) to the other years.

#### *Policy measures*

##### *Foreign exchange distortion*

Revenue from export crops was assumed to be exchanged at the official exchange rate while payment for food imports was assumed to be made at the secondary rate of exchange. The equilibrium exchange rate was assumed to be the mean of these two exchange rates. Both exports and imports were effectively taxed by this arrangement.

##### *Export crops*

Export taxation was the most important explicit policy affecting export crops. The value of export taxes on coffee is reported in the Ugandan Revenue statistics and were drawn from the Coffee Financial Summary and Revenue Estimates (1959/60-1979/1980, World Bank (1993) for 1980/1981 to 1988/1989 and then BOU on a fiscal year basis. These export tax revenues were transformed to a calendar year basis by taking an export-weighted average of the corresponding fiscal years. By dividing total export tax revenues by the volume exported, the average value of the export tax per kg was calculated. Similar sources were used for the export tax on cotton lint.

### *Import-competing products*

The average rate of import duties on agricultural products was computed using import duty revenue collected (the effective tariff rate) based on Ugandan Revenue Authority statistics. In addition, WITS provides the official applied tariff rates specified for various agricultural commodities for 1994 and the years 2000 through 2004 based on the TRAINS database. For these years, the effective tariff rate on all agricultural products could be compared to the official applied rate to get an “enforcement rate”. The effective tariff rate for rice, beans and maize (our covered import-competing commodities) was calculated multiplying the applied tariffs from the WITS database by this enforcement rate.

We extended these tariffs to the full 1961-2004 period using crude assumptions on the specific treatment applying to each commodity relative to the whole sector (whether it was more or less heavily taxed than agricultural imports as a whole in the six years for which we had actual data). The Revenue statistics allow us to calculate the effective rate in each year applying to agricultural imports as a whole. We computed the effective duty rate for rice, beans and maize by multiplying the effective rate for all agricultural products by the specific weighting calculated for each product.

We added the differential rate of sales tax or VAT applying to imports as compared to domestic production, as well as withholding tax and import commission (at rates assumed the same as for non-agricultural products) to arrive at the total level of import protection for import-competing commodities.

### *Computation of weights used in calculating the aggregate NRA for agriculture*

The NRAs at the farm level for individual commodities are aggregated using their undistorted values to calculate the sector-wide NRA. For this purpose, an estimate of the undistorted production values for commodities for which separate spreadsheets were not constructed is needed. For some of these commodities (which we refer to as included commodities, to distinguish them from the covered commodities with spreadsheets), additional information was available as follows (classified according to their trading status):

#### *Included exportable commodities*

Export volume and value statistics and thus FOB prices were sourced through FAOSTAT for tea and tobacco.

#### *Included mainly import-competing commodities*

Import (volume and value and thus CIF prices) and production figures for the years 1961 to 2004 were sourced from FAOSTAT for wheat, malt of barley, palm oil, sugar and milk.

#### *Included mostly non traded commodities*

For these commodities only production figures were available through FAOSTAT. A producer price sourced from Foodnet was available only for the year 2006.

- Sesame (also called simsim): production and 2006 producer price.
- Soybean: production and 2006 producer price.
- Irish potatoes: production and 2006 producer price.
- Dry peas: production and 2006 producer price.

- Poultrymeat: production and 2006 producer price.
- Bovine meat: production and 2006 producer price.
- Pigmeat: production and 2006 producer price.
- Sheepmeat: production and 2006 producer price.
- Goat meat: production and 2006 producer price.
- Fresh fruits (FAOSTAT category: «Fresh Fruits nes»): production and FAOSTAT producer price time series.
- Fresh vegetables ((FAOSTAT category: « Fresh Fruits nes»): production and FAOSTAT producer price time series.

#### *Other exportables*

Export values for the covered commodities (coffee, cotton, and in some years maize and beans) were added to the export values for the included commodities (tea and tobacco) and the sum compared to the value of agricultural exports (all in FOB prices). The residual exports, even if usually quite small (about 4 percent of agricultural exports in average), represent production which should also be included in the weighting scheme. To compute a production value for these residual exports, we simply assumed that the average ratio of exports to production for all covered and included commodities together also applied to these residual exportables. Their production value was added to the value of included exportable commodities as “other exportable value”.

#### *Import-competing products*

The same procedure was used, in this case using CIF prices. The sum of the covered and included imports accounts for more than 2/3rds of total agricultural imports. The production value of remaining import commodities was extrapolated from the ratio of production value to export value for the covered and included commodities.

#### *Nontradables*

We assumed that the covered and included commodities in this category encompass all non-traded production. As production figures were available for these products, the main issue was how to value them. For the covered commodities, producer prices were available and the undistorted value of these commodities was easily calculated. For included commodities for which the Foodnet (2006) producer price existed, a constant price for the commodity for the whole 1961-2004 period was assumed. Using the CPI, the 2006 value was converted into its nominal equivalent for the whole period. The multiplication of this nominal producer price by the production figures given by FAOSTAT provides with a proxy of the value for this item.<sup>19</sup>

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<sup>19</sup> For fresh fruits and fresh vegetables, for which Foodnet doesn't give producer prices, we relied on the FAOSTAT producer price time series even if these were often unreliable for the covered commodities. However, they always give the right “order of magnitude” for these prices. Since FAOSTAT probably derived its time series from various primary sources, some being reliable and some not, we considered only the years where FAOSTAT proved to be reliable for the covered commodities. The average value for the specified commodity (for example, fresh fruits) over these years was calculated (using constant US\$ through CPI division). This average value was then extended using the same CPI time series as a rather crude but good estimate of the producer price for the ‘unreliable’ years.

### *Distortions in the non-agricultural sector*

Among the policies pursued by the Ugandan government affecting non-agricultural products, the following have been explicitly treated:

- Import customs duties and tariffs
- Withholding tax on imports
- Import commission
- Export tax
- VAT and sales tax
- Excise tax
- Commercial transaction levy.
- Exchange rate misalignment.

As the impact of a given policy depends on whether it is applied to a traded or a nontraded good, the methodology distinguishes between exportables, import competing and non traded sectors (Anderson et al. 2008). The NRA of the non-agricultural sector is given as:

$$D_{na} = \alpha_{hn} \cdot D_{hn} + \alpha_{mn} \cdot D_{mn} + \alpha_{xn} \cdot D_{xn}$$

where :

- hn indices refers to non traded products, mn to import competing products and xn to exportables
- D is the average rate of distortion for each of these categories
- The alpha coefficients are the share of each category in the total production of the country.

The following assumptions were made to determine the traded status of each non-agricultural product:

- Non-agricultural production is divided into two main categories, services and industrial goods.
- Services are considered non-tradable.
- All goods produced by industry are considered as tradable (either exportable or import competing).

Given these assumptions, the alpha coefficients are calculated as:

- $\alpha_{hn}$ : the share of services in Ugandan gross output divided by gross non-agricultural output (total gross output less agricultural gross output).
- $\alpha_{xn}$ : the share of exportable industry products in gross non-agricultural output.
- $\alpha_{mn}$ : the share of remaining industry in gross non-agricultural output.

Time series are not available for sectoral outputs and we rely on GDP figures which refer to the sum of value added and not production sales. The World Bank's *World Development Indicators* provides total GDP time series from the mid 1960s to 2004 and the respective shares of agriculture, industry and services in this GDP. In addition, the UBOS *Uganda Business Inquiry* (2001) provides the ratio of Value Added to Gross Output for a sample of companies across a wide range of industrial sectors for the year 2000/2001. Given these ratios and the definition of

our sectors, we computed a gross output weighted average coefficient VA/GO for our three sectors for the year 2000. This ratio VA/GO is likely to change over time. In addition to the 2000/2001 *Uganda Business Inquiry*, values for this ratio for industry only were available from the Background to the Budget 1982/1983 (1 year), Nicita and Olarreaga (2006) for the year 1989 and from the former UBOS *Survey of Industrial Production* (for four years in the 1960s). These data for the industrial sector, when plotted, followed a linear relationship, indicating a steady deepening of the value added content of Uganda industrial production. We think it is much less likely that a similar upward trend would be observed for services and the ratio VA/GO is assumed to remain constant for services (using 2000 figures given by the UBI). With these relationships, the Gross Output of industry and services in each year was calculated from the value added figures in the World Bank's *World Development Indicators*. Given that the nontradables sector is synonymous with services,  $\alpha_{hn}$  is calculated as the ratio of services output to the sum of industry and services output.

The detailed export figures show that non agricultural exports are not numerous. The only significant ones over the period were Copper, Gold, Hides and Skins, Cobalt, Soap and Electricity. We were not able to get data on the total production (in value) of these items (except electricity from 1991). Apart from electricity and soap (and the latter is not a large part of exports), it is reasonable to assume that these items are exclusively destined to export and not locally consumed. Thus, we assume that the production of exportable products equals the value of their exports.

Figures on non-agricultural exports are available from various sources, usually consistent with each other (which is not the case for imports). The given time series is built on WB 1982 (from 1966 to 1980), WB 1993 report (from 1981 to 1990) (both consistent with the figures reported in the Background to the Budget documents), the BOU annual report from 1991 to 1998 and the UBOS Statistical Abstract from 1999 to 2004. The value of gross output of import-competing products was calculated by subtracting these figures from industry gross output. The resulting five year averages of the alpha coefficients are shown in Appendix Table 4.

### *Import values*

We computed time series of total imports and imports of non-agricultural products which are important in the computation of the distortion rate for several commodities. Unlike the export figures, data on imports are not consistent with each other. Considering all available data, the final time series was computed from the Statistical Abstract (period from 1955 to 1966 using a conversion factor), Hentsridge (1998) (from 1967 to 1996) and BOU Annual Reports (1998 to 2004). The missing year (1997) was imputed as the average of 1996 and 1998 final figures.

The computation of total agricultural imports (in order to derive the value of non agricultural imports as a residual) is also complicated, depending on the definition of agricultural products. In the light of *Background to the Budget* figures, FAOSTAT is reliable in the early period but appears to incorporate some errors at least from 1999 to 2001. So, from 1994 we rely on the MTN agricultural definition in COMTRADE.<sup>20</sup>

### *Customs duties*

The actual revenues are available in the *Financial Summary and Revenue Estimates* back to 1960 and in the BOU Annual Abstract for the 1990s through 2004/05. Instead of relying on official

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<sup>20</sup> WTO Multilateral Trade Negotiation (MTN) aggregation of agricultural products.

registered rates (such as MFN tariff rates) the revenues (converted to US\$) are used to compute an average tariff rate by dividing this converted amount by the total value of imports (which are reported in US\$). Because the *Financial Summary and Revenue Estimates* provide evidence that the duties were paid in US\$ directly, the exchange rate used to compute the tax rates is the one used by importers and international traders during their transactions, assumed to be the unofficial market one.

The next step was to separate the effective duty on non-agricultural products from agricultural products. There is evidence that agricultural tariffs were lower in the 1960s but are now higher in the more recent years. We do not have enough data to model this evolution of rates between agriculture and non-agriculture products, so we assumed that, in principle, the same effective rate calculated applied.<sup>21</sup> However, allowance must be made for the special situation of petroleum products. Petroleum products face a tariff rate several times higher than other products on average. Since the 1990s, the special tariff rates on petroleum product imports have accounted for more than 60 percent of the total import duties collected. We thus separately estimated the tax rate on petroleum products. Since petroleum products are part of the non-agricultural sector they have to be taken into account in the computation of the average duty rate facing non-agricultural products.

The customs duty line is available as part of ‘government revenue’ since the fiscal year 1959/1960 to 2004/2005. Specific revenue coming from petroleum product duties is available only in the late 1960s and since 1986. A time series of petroleum products imports were computed from various sources.<sup>22</sup> Based on these data, we estimated that for the available years in the 1960s and late 1980s, petroleum products faced a duty rate around 5 to 6 times higher than for other products. A crude regression of that ratio was used to fill in the blanks in the 1970s and early 1980s. This enables us to get estimates of duty rates for petroleum products and other commodities (Appendix Table 5).

An import duty drawback system was implemented in 1995 to refund duties on inputs used for export goods. However, according to Hinkle et al. (2005), this system has only been effective since 2000 and was “poorly functioning” until 2003. Thus, no explicit account is taken of this system for the period under review.

### *Excise tax*

Excise taxes were introduced in the colonial period. Except for sugar, these taxes were usually imposed on luxury non-agricultural goods (cigarettes, beer, spirits, soft drinks, soap). According to Hinkle et al. (2005), the number of commodities subject to excise taxation increased considerably in 1997. Whereas in 1994, 90 HS-8-digit level products faced an excise tax, this number had risen to 135 in 1997 and to about 335 by 2001 (WTO 1995, Hinkle et al. 2005).

Excise taxes are levied on both import and locally made products at the same rate. This is not sufficient to guarantee a neutral impact unless tax collection efficiency is similar for both imports and locally made products. This assumption seems realistic for excise tax since it is paid by only a few sectors and thus a few companies. Thus excises are not assumed to have a distortionary effect even if they raise consumer prices.

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<sup>21</sup> For some years, revenue from agricultural and non-agricultural imports was reported separately. The error in assuming a similar effective rate rather than specific rates was around 10 percent in those years.

<sup>22</sup> Statistical Abstract (various years), BOU Annual Report (99/00 and 2004/2005).

### *Export tax*

The main export taxes were levied on agricultural exports (cotton and coffee). However, a significant export tax also applied on ‘hides and skins’ and ‘copper’ products for some years. Revenue from these taxes was obtained from the *Financial Summary and Revenue Estimates* until they ceased in 1977.

### *Import commission and withholding tax*

In addition to customs duties, an import commission and a withholding tax were levied on the CIF value of all imports in recent years. The withholding tax was implemented in 1991/1992 (Ayoki et al. 2005), and we know that the import commission existed at least from 1988/1989. However, as the official rate at that time was only 0.5 percent and the effective rate less than 0.3 percent, there is no major error in assuming that the import commission became effective in 1988/1989. The evolution of official rates since that date is easily found and matches the figures given in Ayoki et al.’s (2005) decomposition of government revenue as “other tax on imports”. This budget line available from 1988/1989 is used to compute the ad valorem equivalent of the aggregate of these two taxes.

### *Sales Tax and Value Added Tax*

The sales tax was introduced in 1970, initially focused mainly on non agricultural manufactured products. Even if the tax base has been broadened since then, the sales tax mostly concerned industrial products at least until 1989/1990 when the tax base was widely extended (including for example, wheat flour and milk among other agricultural products, see Ayoki et al. (2005). A value added tax (VAT) replaced sales tax in 1996 on a broader base (including agricultural products). From 1996 to 2004 two rates were implemented for VAT: 0 and 17 percent. Agricultural inputs were zero-rated in 2004.

To get a better estimate of the respective distortions for agricultural and non-agricultural products various sources were examined. WTO (1995) computed an average VAT rate of 11.3 percent on agriculture and 15.1 percent for manufactured sectors in 1994/1995, based on official tax rates. However, Gauthier and Reinikka (2001) show evidence of an even higher rate of tax exemption and evasion for agricultural companies compared to manufacturing ones. According to these authors, agricultural companies faced a domestic tax rate (also including Company Income Tax although sales tax accounted for three-quarters of the total) around 3.7 percent of their sales in 1995 (3.4 percent in 1997 when the new VAT replaced sales tax), while manufacturing companies faced a 7.4 percent rate (9.3 percent in 1997).

However the main differences in treatment concern not sectors but the origins of products. The *Financial Summary and Revenue Estimates* record separate revenue figures for imported goods and locally produced goods (for both sales and VAT tax). Since the ratio of these two revenues seems quite constant, an average of this ratio was used to fill in the blanks in the early 1970s and early 1980s. Although the relevant tax rates do not in general vary between domestic and foreign goods, the effective taxation on imports is far higher than the rate on local production and we have included this as a distortion.

This information was simplified for purposes of computation. We introduce a  $\beta$  coefficient which is the ratio of the sales/VAT tax rate in agriculture compared to the one facing manufactured products.

- Before 1989/1990 we assume that the sales tax was only levied on industrial products, therefore  $\beta=0$ .

- The ratios of taxation on agricultural products relative to manufactured products  $\beta_1$  (3.7/7.4 in 1995) and  $\beta_2$  (3.4/9.3 in 1997) given by Gauthier and Reinikka is assumed constant  $\beta = \beta_1$  for 1990/1996 (extended sales tax period) and  $\beta = \beta_2$  for 1997/2004 (VAT period). These ratios are assumed to be the same whether the product is locally made or imported.

Since its creation in 1996, a VAT reimbursement on exports (most of which are agricultural products) has been in force and works efficiently according to Hinkle et al. (2005). We therefore assume that exportables (traditional agricultural exports but also non agricultural exports) are VAT exempted. With this assumption, we can decompose the VAT revenues given by the *Financial Summary and Revenue Estimates* as:

$$REV_{VAT}^{imp} = \left\{ \begin{array}{l} \beta * VAT_{nam} * (1 + DUTY_a + COMWITH) * imports_a \\ + VAT_{nam} * (1 + DUTY_{na} + COMWITH) * imports_{na} \end{array} \right\}$$

$$REV_{VAT}^l = \left\{ \begin{array}{l} \beta * VAT_{nal} * (GO_a - Exports_a) \\ + VAT_{nal} * (GO_i - Exports_i) \end{array} \right\}$$

Where  $DUTY_a$  and  $DUTY_{na}$  is the effective tariff on agricultural and non agricultural products, respectively,  $COMWITH$  is the ad valorem rate of import commission and withholding tax and  $GO_a$  and  $GO_i$  are gross output values for agriculture and industry, respectively. In this way, a full time series for the VAT rate for both imports and local production and for agricultural and non agricultural products is computed. The five-year averages of these rates are provided in Appendix Table 6.

#### *Commercial Transaction Levy*

Introduced in 1973, the Commercial Transaction Levy (CTL) is a tax levied on services only. This tax was merged with the sales tax to form the VAT (with the same rate of 17 percent). However, a specific line remains in the Government Budget for VAT coming from services.<sup>23</sup> So, to simplify, we continue to call VAT on services by its former name, CTL. Having computed earlier the gross output of services, the ad valorem tax equivalent of this CTL is easily calculated.

#### *Exchange rate misalignment*

The exchange rate figures given in Henstridge (1998) and BOU enable us to compute a full time series of both official and market exchange rates from 1961 to 2004. Exchange rate policy changed considerably during that time. We assume that imports were purchased at the market exchange rate.<sup>24</sup> Exportables faced surrender requirements forcing them to convert their earning in US\$ at the official rate. During the 1980s rather more complex formulae were implemented but were not taken into account in our computations.

#### *Computation of the NRA for non-agricultural products*

<sup>23</sup> Of course this line has not been taken into account in the previous computation of VAT above.

<sup>24</sup> In practice, some food imports were allocated foreign exchange at the official rate, but because the supply of such foreign exchange was limited, the effective protection is measured as the difference between the parallel rate and the equilibrium rate.

Based on these figures, we compute the specific distortions for each of the three groups of non-agricultural products: exportables, import competing and nontraded.

*Exportable products*

Exportable non agricultural products are assumed to be only industrial goods. Of the policies described above, they face exchange rate misalignment and export taxes. The distortion on exportable non-agricultural commodities regarding producer price is then equal to:

$$D_{xn} = \frac{ExXR}{EqXR * (1 + EXPTAX_{na})} - 1$$

*Non traded products*

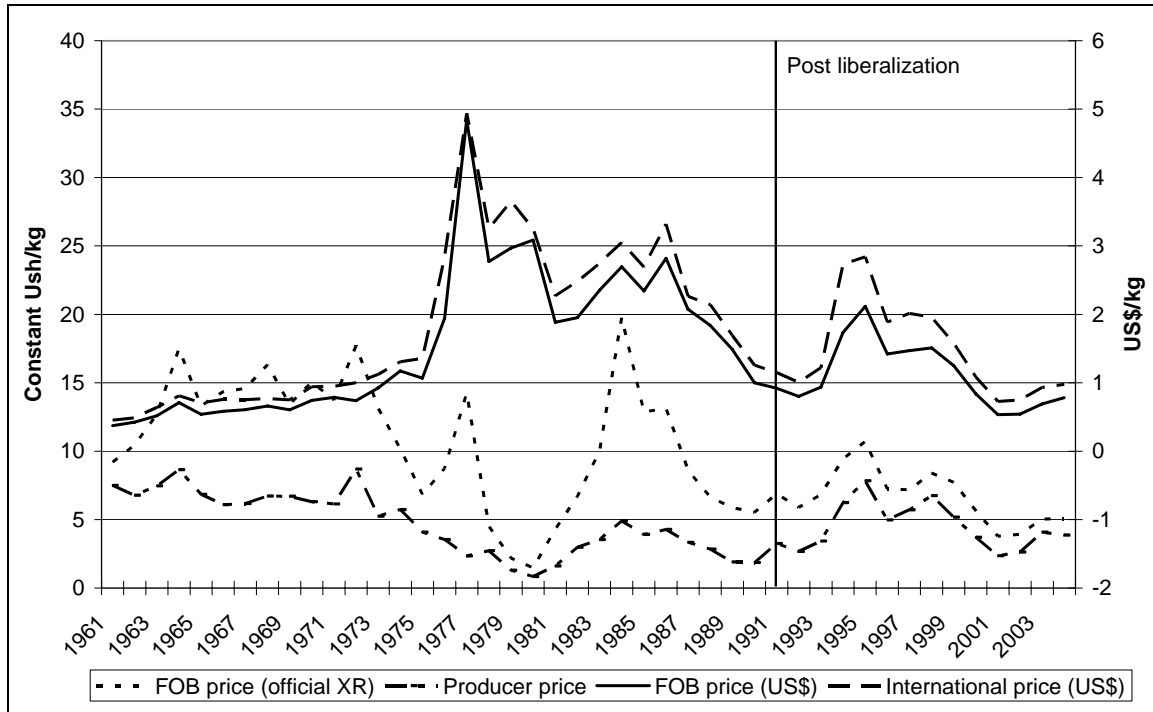
The non-agricultural non traded sectors are assumed to be only services. They face only the Commercial Transaction Levy. Since these products are non traded, we have to make assumptions on the price elasticities of demand and supply of services. In the absence of better information, we assumed them to be equal and then:

$$D_{hn} = -\frac{CTL_s}{(1 + \frac{\epsilon_D}{\epsilon_S})} = -\frac{CTL_s}{2}$$

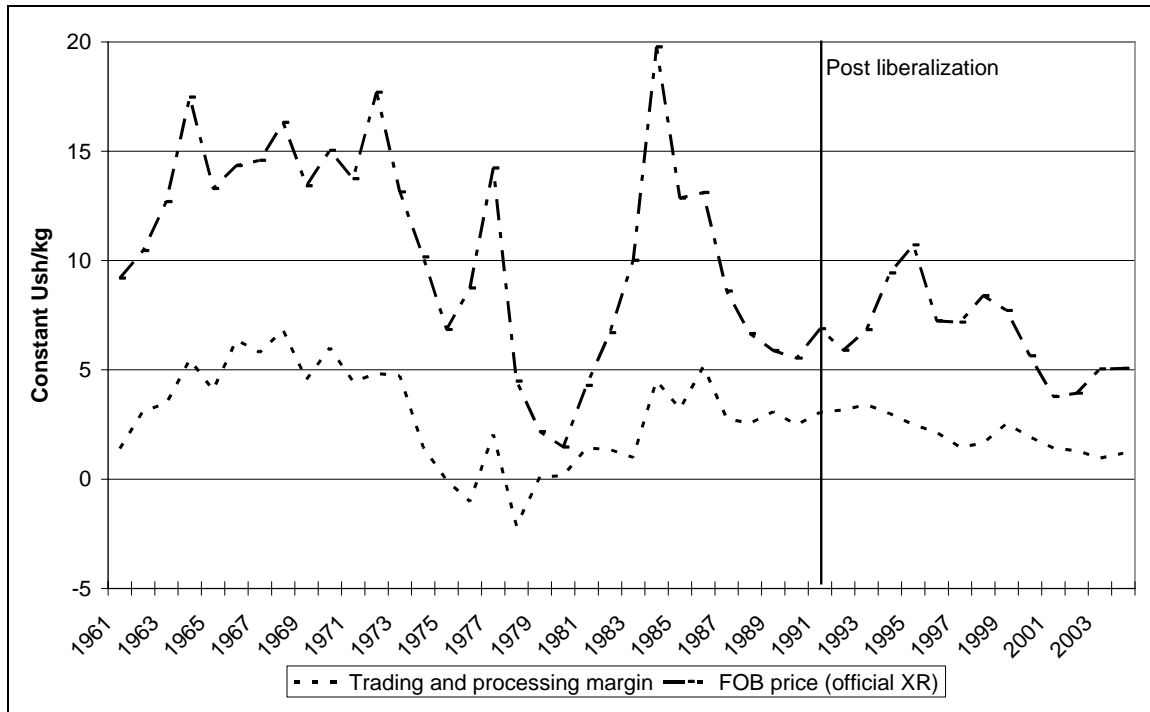
*Import competing products*

Non agricultural import-competing products are industrial goods. They face all the distortions listed above with the exception of the export tax and the CTL.

Appendix Figure 1: Selected coffee prices, Uganda, 1961 to 2004

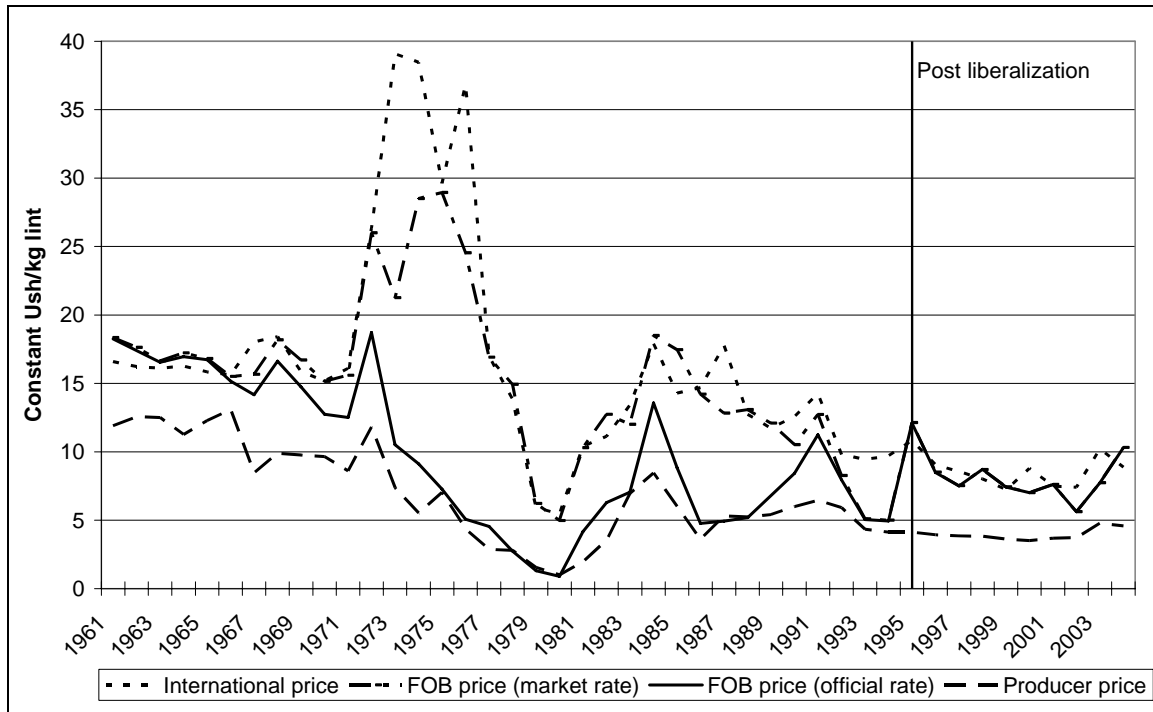


Appendix Figure 2: Coffee trading and processing margin, Uganda, 1961 to 2004  
(constant 1991 Uganda Ush)

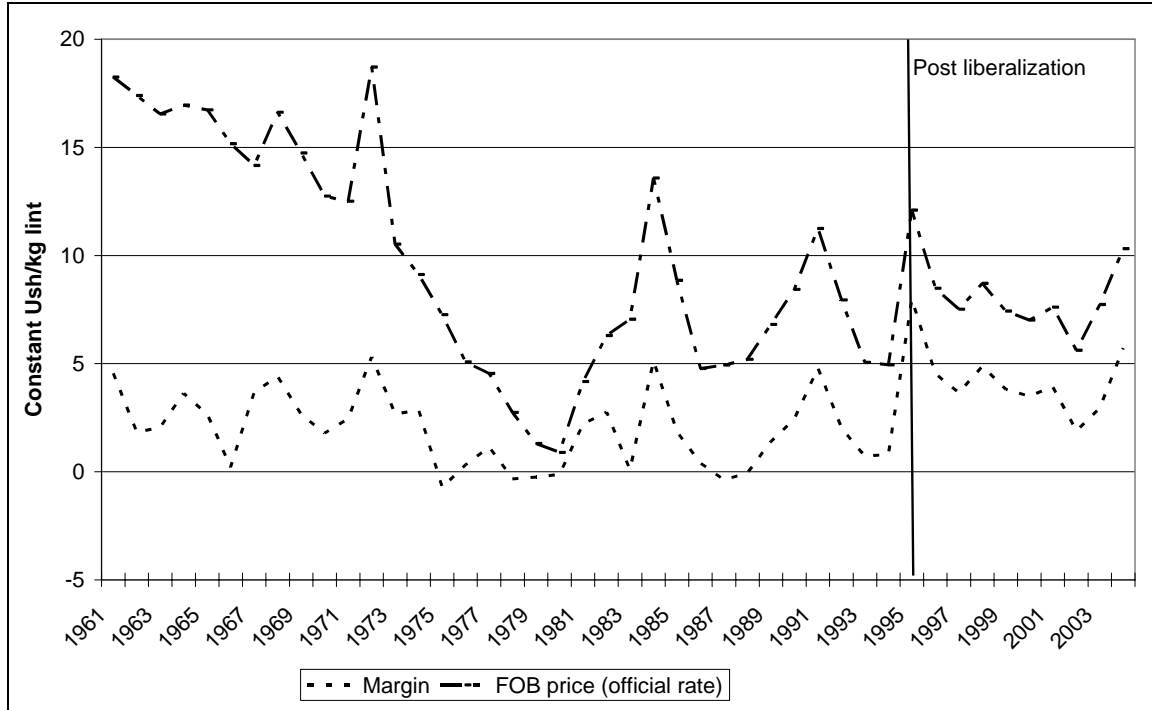


Appendix Figure 3: Cotton prices, Uganda, 1961 to 2004

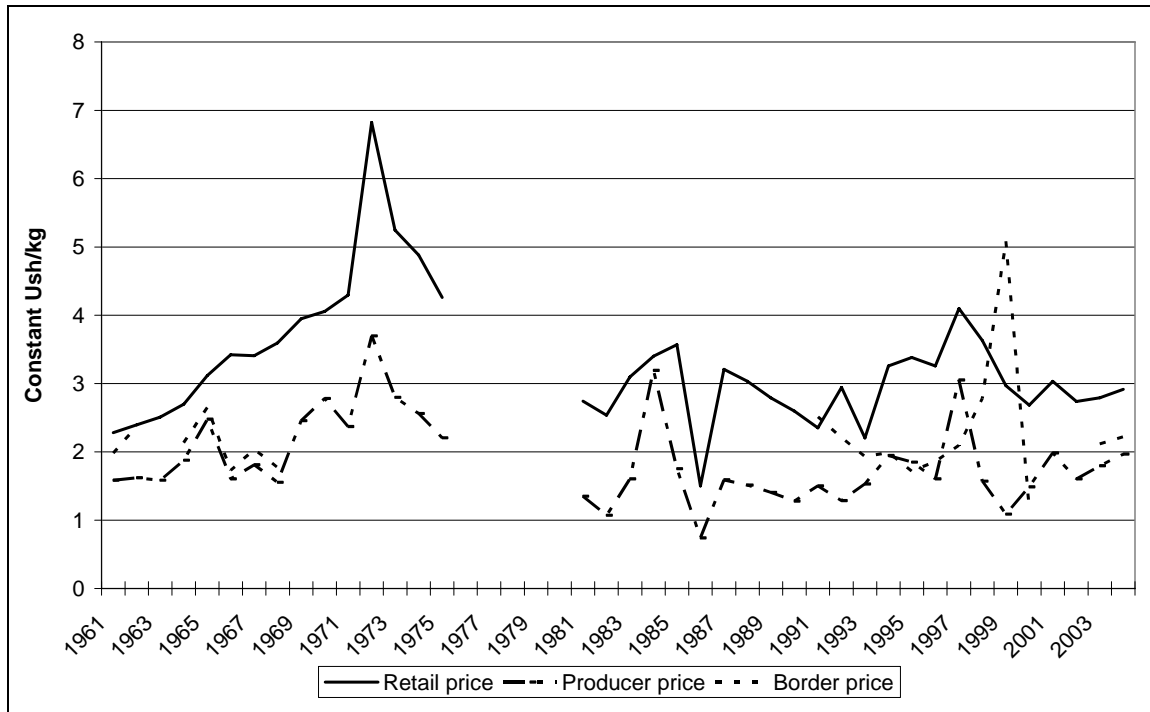
(constant 1991 Uganda Ush)



Appendix Figure 4: Cotton marketing and processing margin, Uganda, 1961 to 2004  
 (constant 1991 Uganda USh)

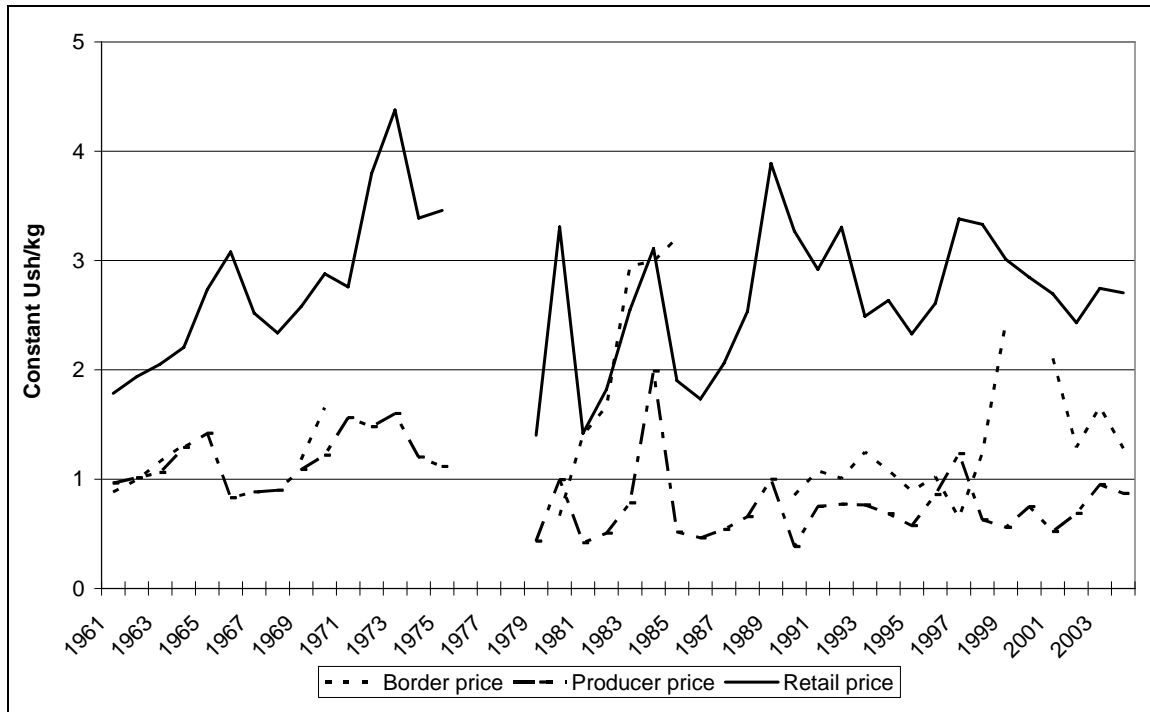


Appendix Figure 5: Selected beans prices, Uganda, 1961 to 2004  
(constant 1991 Uganda Ush)

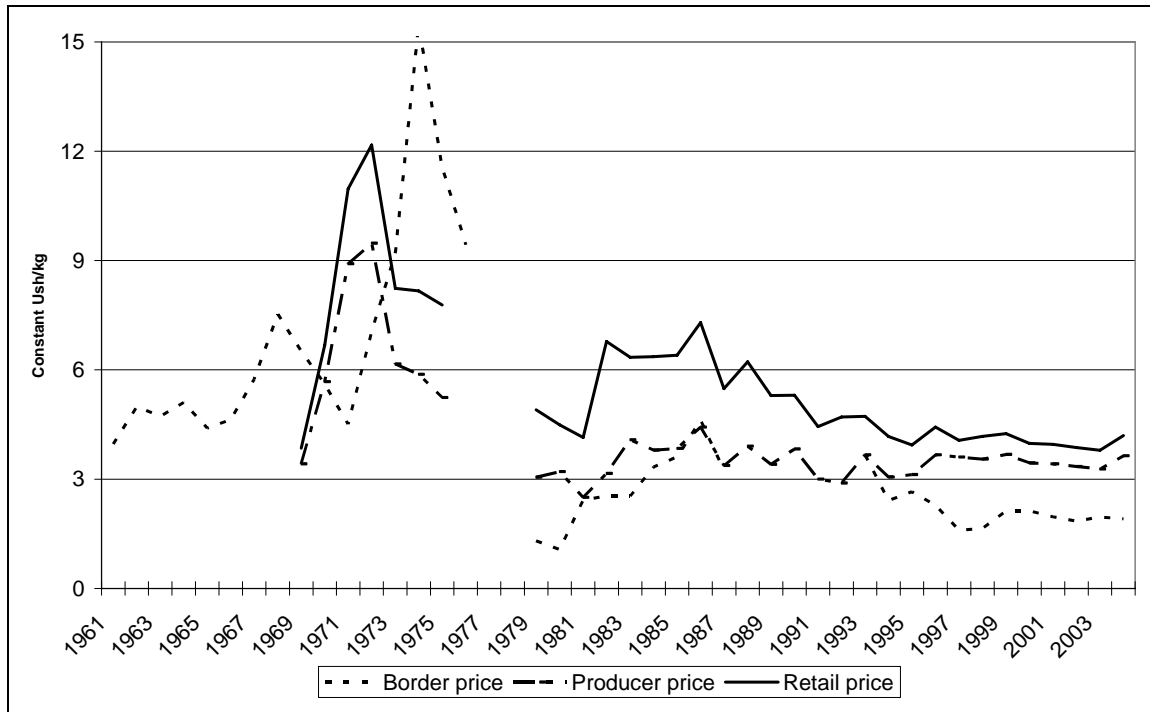


Appendix Figure 6: Selected maize prices, Uganda 1961 to 2004

(constant Ush)



Appendix Figure 7: Selected rice prices, Uganda, 1961 to 2004  
(constant 1991 Ush)



Appendix Table 1: Gross Domestic Product, Uganda, 1961 to 2004  
(percent, annual sectoral growth rates)

Sector	1961-1970	1971-1980	1981-1986	1987-2004					
				1987	1990	1995	2000	2004	Period average
Monetary	5.2	-2.8	1.4	8.2	7.5	12.9	4.3	6.9	7.4
- Primary	4.7	-3.7	0.7	4.8	8.1	6.2	2.9	1.0	5.3
- Secondary	6.8	-7.0	1.6	24.4	5.3	18.2	3.8	12.3	10.9
- Tertiary	5.2	-0.7	4.1	6.0	8.0	11.2	5.5	7.9	7.5
Non-monetary	3.1	0.6	3.7	4.0	1.6	2.0	5.4	-0.7	2.7
- Agriculture	3.3	0.1	4.1	4.1	1.2	1.2	5	-2.3	2.2
- Other	2.3	2.8	2.2	3.4	3.7	6.2	7.3	5.7	4.9
<b>Total GDP</b>	<b>4.5</b>	<b>-1.6</b>	<b>2.2</b>	<b>6.7</b>	<b>5.5</b>	<b>8.3</b>	<b>6.3</b>	<b>6.1</b>	<b>6.4</b>
<i>O/w Agriculture</i>	3.9	-1.6	2.5	4.3	3.5	3.4	3.7	-0.7	3.7

1. Primary includes agriculture, forestry, hunting, mining and quarrying.

2. Secondary category includes cotton ginning, coffee curing and sugar manufacturing, food products manufacturing, miscellaneous manufacturing and electricity generation and construction.

3. Tertiary category includes commerce, transport and communications, government services, miscellaneous services and rent.

*Source: Compiled from Bank of Uganda database*

Appendix Table 2: Sectoral contribution to Gross Domestic Product, Uganda, 1961 to 2004  
(percent of GDP)

Sector	1961-1970	1971-1980	1981-1986	1987-2004					
				1987	1990	1995	2000	2004	Period average
<b>Monetary</b>	<b>68.26</b>	<b>64.9</b>	<b>65.0</b>	<b>65.1</b>	<b>67.2</b>	<b>73.7</b>	<b>79.5</b>	<b>82.3</b>	<b>73.8</b>
- Primary	31.08	23.6	25.3	24.3	24.7	24.0	24.2	23.0	24.1
- Secondary	10.49	8.6	9.6	10.8	11.3	15.2	18.8	20.6	15.4
- Tertiary	28.62	32.7	30.0	29.9	31.1	34.5	36.6	38.7	34.2
<b>Non-monetary</b>	<b>31.81</b>	<b>35.1</b>	<b>35.0</b>	<b>34.9</b>	<b>32.8</b>	<b>26.3</b>	<b>20.5</b>	<b>17.7</b>	<b>26.2</b>
- Agriculture	25.66	27.9	29.3	29.2	27.6	21.7	16.7	13.9	21.6
- Other	6.11	7.2	5.7	5.7	5.2	4.5	3.8	3.8	4.6
<b>Total GDP</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<i>O/w Agriculture</i>	49.64	49.4	51.3	50.0	48.8	42.5	37.4	35.1	42.3

1. Primary includes agriculture, forestry, hunting, mining and quarrying.

2. Secondary category includes cotton ginning, coffee curing and sugar manufacturing, food products manufacturing, miscellaneous manufacturing and electricity generation and construction.

3. Tertiary category includes commerce, transport and communications, government services, miscellaneous services and rent.

*Source: Compiled from Bank of Uganda database*

Appendix Table 3: Shares of commodities by trade status in total gross agricultural output, Uganda, 1961 to 2004 measured at undistorted prices, Ush

COMMODITY	1961-65	1966-70	1971-75	1976-80	1981-85	1986-90	1991-95	1996-2000	2001-04
Non studied exportables	1,178,187	719,782	503,356	0	56,992,646	5,884,795,922	36,036,351,563	111,290,711,947	328,457,286,221
Coffee	3,702,428	6,199,839	26,390,536	126,445,639	1,100,792,964	40,916,421,400	154,595,453,082	273,891,291,632	157,780,966,567
Cotton	2,514,851	3,099,892	6,724,295	7,971,980	80,555,981	1,853,226,888	7,721,613,422	14,750,588,171	29,271,724,551
Exportables	7,395,466	10,019,513	33,618,187	134,417,620	1,238,341,591	48,654,444,211	198,353,418,067	399,932,591,750	515,509,977,339
Non studied import-competing products	4,114,620	4,880,266	10,152,196	13,516,650	355,357,246	37,821,511,792	160,871,491,944	268,201,643,632	387,799,643,565
Rice	0	45,086	421,629	1,447,261	25,395,873	5,120,071,266	33,489,462,200	65,368,659,454	91,904,856,374
Import-competing products	4,114,620	4,925,352	10,573,824	14,963,911	380,753,119	42,941,583,058	194,360,954,144	333,570,303,086	479,704,499,938
Maize	876,265	1,141,142	4,396,786	9,900,606	265,804,467	23,239,466,751	107,928,506,337	182,562,690,601	332,591,599,090
Beans	701,852	1,041,278	3,907,166	#VALUE!	271,889,862	18,481,984,502	126,680,195,961	168,654,034,564	278,983,446,046
Total changing status	1,578,117	2,182,420	8,303,952	#VALUE!	537,694,329	41,721,451,254	234,608,702,298	351,216,725,165	611,575,045,136
Non studied non traded	17,964,855	24,070,525	74,912,450	604,246,462	1,404,467,572	117,523,492,775	626,490,030,634	1,042,810,247,866	1,410,812,892,199
Groundnuts	1,112,759	1,866,958	3,713,802	na	203,514,224	12,705,432,176	52,118,900,270	90,017,237,026	110,750,690,366
Cassava	3,054,238	2,834,162	18,489,430	na	1,122,636,392	104,178,681,955	447,135,842,636	1,144,270,711,992	2,082,102,851,880
Yam	na	na	na	na	415,264,353	24,668,154,551	143,313,205,916	268,914,558,710	480,113,440,376
Plantain	na	na	na	na	1,306,483,477	99,973,494,216	898,181,262,583	1,129,168,743,719	1,409,193,802,948
Non Traded	22,131,852	28,771,644	97,115,682	604,246,462	4,452,366,018	359,049,255,673	2,167,239,242,039	3,675,181,499,314	5,492,973,677,769
TOTAL VALUE	35,220,055	45,898,930	149,611,645		6,609,155,058	492,366,734,195	2,794,562,316,548	4,759,901,119,314	7,099,763,200,182
Percent coverage	33.6 percent	35.4 percent	41.4 percent		69.7 percent	68.6 percent	69.3 percent	69.4 percent	69.9 percent

Source: Authors' calculations

Appendix Table 4: Shares of exportables, import-competing products and non-traded goods in non-agricultural production, Uganda, 1961 to 2004

(percent)

	<b>1961 1965</b>	<b>1966 1970</b>	<b>1971 1975</b>	<b>1976 1980</b>	<b>1981 1985</b>	<b>1986 1990</b>	<b>1991 1995</b>	<b>1996 2000</b>	<b>2001 2004</b>
Non-traded	na	54.6	56.7	67.6	67.6	65.9	63.5	60.4	61.3
Import-competing products	na	40.0	40.5	32.1	32.2	34.0	35.9	37.8	36.7
Exportables	na	5.3	2.8	0.3	0.1	0.2	0.6	1.7	2.1

Source: Authors' calculations

Appendix Table 5: Average tariffs on imports, Uganda 1961 to 2004

(percent)

Tariff rates	1961 1965	1966 1970	1971 1975	1976 1980	1981 1985	1986 1990	1991 1995	1996 2000	2001 2004
Petroleum products	78.3	67.6	21.6	7.2	11.4	16.4	129.0	133.0	82.6
Non-petroleum imports	13.9	11.4	3.0	1.1	1.9	1.9	6.3	6.7	6.2
Agricultural imports	13.9	11.4	3.0	1.1	1.9	1.9	6.3	6.7	6.2
Non-agricultural imports	18.4	15.4	4.7	2.3	4.4	4.8	17.8	22.1	16.7

Appendix Table 6: VAT and sales tax rates, Uganda, 1961 to 2004

(percent)

	1961 1965	1966 1970	1971 1975	1976 1980	1981 1985	1986 1990	1991 1995	1996 2000	2001 2004
VAT on manufactured imports	0.0	2.7	3.3	2.4	4.6	2.5	5.1	11.1	10.6
VAT on manufactured local production	0.0	2.0	5.0	5.7	3.2	4.2	1.9	1.3	1.5
VAT on agriculture imports	0.0	0.0	0.0	0.0	0.0	0.4	2.5	4.0	3.9
VAT on agriculture local production	0.0	0.0	0.0	0.0	0.0	0.2	0.9	0.5	0.5

Appendix Table 7: Annual distortion estimates, Uganda, 1961 to 2004

(a) Nominal rates of assistance to covered products

(percent)

	Bea n	Cas sava	Coff ee	Cott on	Gro und nut	Mai ze	Mill et	Plan tain	Rice	M ato oke	Sug ar	Tea	Ya m	All cov ered
1961	-1	0	-4	-11	0	-1	0	0	12	0	-1	-1	0	-2
1962	26	0	-6	-16	0	-1	0	0	14	0	-1	-1	0	-1
1963	0	0	-14	-13	0	-1	0	0	14	0	-1	-1	0	-3
1964	-2	0	-21	-14	0	-2	0	0	15	0	-2	-2	0	-5
1965	28	0	-18	-11	0	0	0	0	15	0	0	0	0	-2
1966	-2	0	-15	-14	0	-2	0	0	16	0	-2	-2	0	-4
1967	-10	0	-26	-22	0	0	0	0	23	0	-10	-10	0	-7
1968	-9	0	-24	-22	0	0	0	0	22	0	-9	-9	0	-6
1969	0	0	-26	-25	0	19	0	0	24	0	-12	-12	0	-7
1970	-16	0	-32	-25	0	22	0	0	26	0	-16	-16	0	-6
1971	0	0	-38	-29	0	0	0	0	29	0	29	-20	0	-5
1972	0	0	-45	-34	0	0	0	0	35	0	34	-28	0	-8
1973	0	0	-62	-53	0	53	0	0	54	0	54	-50	0	-14
1974	0	0	-78	-71	0	0	0	0	70	0	0	-68	0	-25
1975	0	0	-84	-78	0	0	0	0	77	0	0	-75	0	-25
1976	0	0	-93	-81	0	0	0	0	83	0	-79	-79	0	-26
1977	0	0	-94	-76	0	0	0	0	0	0	76	-73	0	-25
1978	0	0	-95	-84	0	0	0	0	0	0	0	-82	0	-33
1979	0	0	-87	-79	0	0	0	0	80	0	80	-79	0	-13
1980	0	0	-87	-82	0	83	0	0	83	0	83	-82	0	-9
1981	0	0	-69	-60	0	61	0	0	62	0	62	-60	0	-4
1982	0	0	-68	-51	0	53	0	0	54	0	0	-51	0	-15
1983	0	0	-70	-41	0	-41	0	0	44	0	0	-41	0	-15
1984	0	0	-64	-27	0	-27	0	0	29	0	29	-27	0	-14
1985	0	0	-71	-56	0	-49	0	0	51	0	51	-49	0	-15
1986	0	0	-75	-71	0	0	0	0	67	0	67	-66	0	-23
1987	0	0	-72	-61	0	0	0	0	62	0	62	61	0	-15
1988	0	0	-68	-60	0	0	0	0	0	0	62	60	0	-9
1989	0	0	-53	-44	0	-44	0	0	47	0	47	44	0	-8
1990	0	0	-36	-20	0	-20	0	0	0	0	25	20	0	-2
1991	-12	0	-20	-12	0	-12	0	0	0	0	17	12	0	-2
1992	-4	0	-5	-4	0	-4	0	0	0	0	11	4	0	-1
1993	-1	0	-1	-1	0	-1	0	0	10	0	9	1	0	0
1994	-1	0	-3	-1	0	-1	0	0	12	0	12	1	0	0
1995	0	-1	-4	0	-1	0	-1	-1	13	-1	13	0	-1	0
1996	0	0	-3	0	0	0	0	0	13	0	14	0	0	0
1997	0	0	-1	0	0	10	0	0	12	0	15	0	0	1
1998	20	0	-1	0	0	11	0	0	14	0	18	0	0	1
1999	0	0	-1	0	0	12	0	0	14	0	19	0	0	1
2000	0	0	-1	0	0	0	0	0	14	0	20	0	0	0
2001	0	0	-1	0	0	0	0	0	19	0	17	0	0	1
2002	0	0	-1	0	0	0	0	0	17	0	16	0	0	1
2003	0	0	-1	0	0	0	0	0	19	0	16	0	0	0
2004	0	0	-1	0	0	0	0	0	18	0	15	0	0	1

Appendix Table 7 (continued): Annual distortion estimates, Uganda, 1961 to 2004  
 (b) Nominal and relative rates of assistance to all<sup>a</sup> agricultural products, to exportable<sup>b</sup> and import-competing<sup>b</sup> agricultural industries, and relative<sup>c</sup> to non-agricultural industries (percent)

	Total ag NRA				Ag tradables NRA			Non-ag tradables	
	Covered products		Non-covered products	All products (incl NPS)	Export-ables	Import-competing	All		
	Inputs	Outputs							
1961	0	-2	4	-1	-5	12	-2	10	-11
1962	0	-1	5	0	-6	18	-1	12	-12
1963	0	-3	4	-2	-10	14	-6	8	-13
1964	0	-5	5	-4	-13	17	-10	8	-16
1965	0	-2	5	-1	-11	19	-5	13	-15
1966	0	-4	6	-2	-10	16	-6	12	-16
1967	0	-7	8	-4	-19	23	-12	23	-28
1968	0	-6	8	-3	-17	23	-10	24	-27
1969	0	-7	10	-4	-18	23	-11	26	-29
1970	0	-6	10	-4	-21	26	-12	26	-30
1971	0	-5	9	-3	-33	29	-15	30	-34
1972	0	-8	13	-6	-40	33	-20	33	-40
1973	0	-14	24	-8	-48	53	-24	36	-44
1974	0	-25	29	-18	-76	70	-50	50	-67
1975	0	-25	32	-18	-83	77	-52	51	-68
1976	0	-26	32	-19	-91	84	-61	69	-77
1977	0	-25	12	-22	-93	75	-79	73	-88
1978	0	-33	17	-28	-95	83	-83	73	-90
1979	0	-13	0	-10	-87	80	-77	74	-87
1980	0	-9	10	-5	-87	83	-28	80	-60
1981	0	-4	14	1	-68	63	6	56	-32
1982	0	-15	14	-7	-67	55	-23	59	-52
1983	0	-15	10	-9	-61	45	-38	43	-57
1984	0	-14	5	-10	-48	29	-31	29	-47
1985	0	-15	14	-9	-66	50	-34	41	-53
1986	0	-23	24	-12	-75	67	-36	64	-61
1987	0	-15	12	-9	-70	62	-34	60	-59
1988	0	-9	20	-2	-67	63	-12	58	-44
1989	0	-8	14	-2	-46	48	-10	41	-36
1990	0	-2	7	0	-27	26	4	27	-18
1991	0	-2	-1	-2	-14	17	-10	24	-27
1992	0	-1	-1	-1	-4	11	-2	19	-17
1993	0	0	0	0	-1	10	1	17	-14
1994	0	0	0	0	-2	12	0	21	-18
1995	0	0	2	0	-2	13	2	24	-18
1996	0	0	0	0	-2	14	1	29	-21
1997	0	1	0	1	-1	12	5	35	-22
1998	0	1	0	1	-1	15	7	35	-21
1999	0	1	0	1	-1	15	5	33	-21
2000	0	0	0	0	0	8	4	31	-20
2001	0	1	0	0	0	17	4	25	-17
2002	0	1	0	0	0	16	4	25	-17
2003	0	0	0	0	0	17	2	24	-18
2004	0	1	0	0	0	16	3	25	-18

a. NRAs including assistance to nontradables and non-product specific assistance.

b. NRAs including products specific input subsidies.

c. The Relative Rate of Assistance (RRA) is defined as  $100 * [(100 + \text{NRA}_{\text{ag}}^t) / (100 + \text{NRA}_{\text{nonag}}^t) - 1]$ , where  $\text{NRA}_{\text{ag}}^t$  and  $\text{NRA}_{\text{nonag}}^t$  are the percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively.

Appendix Table 7 (continued): Annual distortion estimates, Uganda, 1961 to 2004  
(c) Value shares of primary production of covered<sup>a</sup> and non-covered products, (percent)

	Cotton	Coffee	Tea	Cassava	Mill	Yam	Matooke	Sorghum	Groundnut	Rice	Maise	Beans	Sugar	Non-covered
1961	9	8	1	8	9	8	21	5	4	0	2	2	4	20
1962	5	9	1	9	10	8	21	5	4	0	3	1	5	19
1963	8	12	1	10	8	8	21	4	3	0	2	2	5	16
1964	8	16	1	8	9	8	21	3	3	0	3	2	5	15
1965	8	9	1	12	11	7	21	4	4	0	3	2	4	14
1966	10	10	1	8	12	7	21	3	3	0	2	2	5	15
1967	7	12	1	6	9	8	21	4	4	0	2	3	6	17
1968	7	10	2	5	11	8	21	2	4	0	3	2	6	18
1969	7	15	2	4	10	7	21	4	4	0	3	2	4	16
1970	6	10	1	8	13	8	21	6	5	0	2	3	3	13
1971	5	9	1	17	10	8	21	4	5	1	4	3	2	12
1972	5	12	2	13	10	7	21	5	4	0	3	3	2	12
1973	6	16	2	13	8	7	21	4	3	0	3	2	1	14
1974	4	23	2	11	7	7	21	3	2	0	3	2	1	14
1975	4	21	1	12	7	7	21	3	2	0	3	3	2	13
1976	2	22	1	14	7	6	21	4	3	0	3	3	1	12
1977	1	24	0	17	8	6	21	4	4	1	2	4	1	9
1978	1	30	0	11	8	6	21	4	4	1	2	3	0	11
1979	0	11	0	11	10	6	21	5	3	0	2	5	0	25
1980	0	11	0	15	9	6	21	4	2	0	2	5	1	24
1981	0	6	0	18	7	7	22	4	2	0	1	4	1	28
1982	0	17	0	14	5	5	17	3	2	0	2	3	1	30
1983	1	13	0	13	5	7	26	3	2	0	5	4	1	21
1984	1	14	0	18	3	5	16	2	5	0	8	7	0	22
1985	2	14	0	19	4	7	20	2	3	0	3	3	0	22
1986	1	23	0	11	4	5	25	2	2	0	1	2	0	24
1987	1	16	0	17	6	4	21	3	2	0	2	4	0	24
1988	1	10	0	21	6	6	20	3	3	1	3	4	0	23
1989	0	5	0	21	6	5	20	2	3	1	9	4	1	24
1990	0	3	0	23	5	5	21	3	3	2	3	4	2	27
1991	0	5	0	18	6	5	21	3	2	1	4	5	2	27
1992	0	2	0	23	8	4	19	3	2	1	5	4	2	26
1993	0	3	0	23	7	5	23	2	2	2	4	4	2	22
1994	0	7	0	13	5	8	32	2	2	1	4	4	1	20
1995	0	6	0	10	4	4	48	2	2	1	3	3	1	15
1996	0	10	0	16	5	4	23	2	2	2	6	2	3	25
1997	0	7	0	20	4	7	24	2	2	1	6	3	2	21
1998	0	7	0	27	6	4	23	2	2	1	2	2	2	21
1999	0	6	0	23	5	7	23	2	2	1	2	2	2	24
2000	0	2	0	30	4	6	26	2	1	1	4	2	2	19
2001	0	2	0	32	4	5	20	2	2	1	3	4	2	23
2002	0	2	0	29	5	7	17	2	2	1	4	3	3	24
2003	0	2	0	24	4	7	20	2	1	1	5	3	2	29
2004	1	2	0	28	5	7	20	2	2	2	6	4	2	20

a. At farmgate undistorted prices.

Source: Authors' spreadsheet