



MAFAP SPAANA

Monitoring African Food and Agricultural Policies
Suivi des politiques agricoles et alimentaires en Afrique

ANALYSYS OF INCENTIVES AND DISINCENTIVES FOR COTTON IN UGANDA

DECEMBER 2012



This technical note, a product of the Monitoring African Food and Agricultural Policies project (MAFAP), intended primarily for internal use as background for the MAFAP Country Report. This technical note may be updated as new data becomes available.

MAFAP is implemented by the Food and Agriculture Organization of the United Nations (FAO) in collaboration with the Organisation for Economic Co-operation and Development (OECD) and national partners in participating countries. It is financially supported by the Bill and Melinda Gates Foundation, the United States Agency for International Development (USAID), and FAO.

The analysis presented in this document is the result of the partnerships established in the context of the MAFAP project with governments of participating countries and a variety of national institutions.

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Suggested citation:

Ahmed M., Ojangole S., 2012. Analysis of incentives and disincentives for cotton in Uganda. Technical notes series, MAFAP, FAO, Rome.

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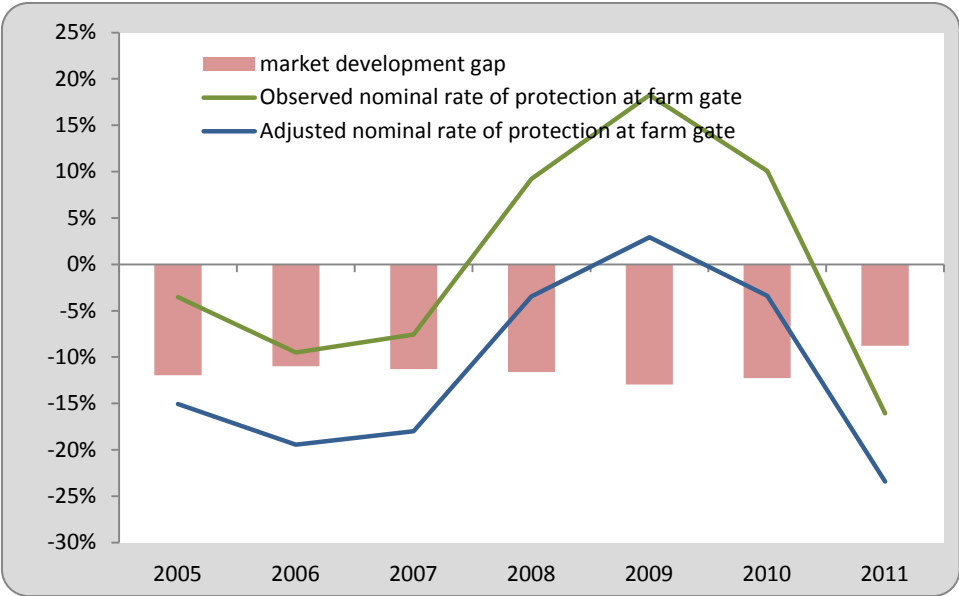
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SUMMARY

Product: Cotton
 Period analyzed: 2005 – 2011
 Trade status: Export in all years

- Production of cotton lint and seed in Uganda is quite variable over the years due to various factors including weather conditions, price expectations and provision of farm inputs. It is argued that the fundamental problem of Uganda’s cotton sector is its low profitability, which reflects the displacement of cotton by food crops.
- Over the years 2005 – 2010, over 80 percent of the lint produced from Uganda was exported, while only about 8 percent of the seed produced was exported over the same period of time. The major importers are Singapore (55 percent) followed by Switzerland (23 percent) and United Kingdom (17 percent) while China, Kenya and Tanzania are minor importers of Ugandan cotton.
- In the typical cotton marketing value chain, farmers sell seed cotton to ginneries through ginnery commissioned agents, farmers’ groups or other traders who sell to ginneries. Export pricing of lint is usually based on the world price in Liverpool. Ginneries generally sell lint on a FOT (free on truck) basis at Kampala /Tororo.
- Cotton Development Organization (CDO) regulates the production and marketing of cotton in Uganda.



While the export promotion measures eliminate all major factors causing deviation of cotton prices at the point of competition from its reference prices (except the CDO tax on lint exports), cotton pricing in Uganda is the most important policy directly affecting the cotton sector and influence farmers’ incentives. The positive observed price gaps and nominal rates of protection at the farm gate suggest that the system of indicative prices is apparently effective in protecting growers from negative shocks as the observed price gaps and nominal rates of protection appears to be transparent. However, the negative adjusted price gaps and nominal rates of protection suggest that the system needs to be updated frequently for prices that are consistent with world prices.

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PURPOSE OF THE NOTE

This technical note is an attempt to describe the market incentives and disincentives for cotton in Uganda. For this purpose, yearly averages of farm gate and wholesale prices are compared with reference prices calculated on the basis of the price of the commodity in the international market for an observed and adjusted scenarios. The price gaps between the reference prices and the prices along the value chain indicate the extent to which incentives (positive gaps) or disincentives (negative gaps) are present at farm gate and wholesale level. In relative terms, the price gaps are expressed as Nominal Rates of Protection. These key indicators are used by MAFAP to highlight the effects of policy and market development gaps on prices.

The note starts with a brief review of the production, consumption, trade and policies affecting the commodity and then provides a detailed description of how the key components of the price analysis have been obtained. The MAFAP indicators are then calculated with these data and interpreted in the light of existing policies and market characteristics. The analysis that has been carried out is commodity and country specific and covers the period 2005-2011. The indicators have been calculated using available data from different sources for this period and are described in Chapter 3.

The outcomes of this analysis can be used by those stakeholders involved in policy-making for the food and agricultural sector. They can also serve as input for evidence-based policy dialogue at country or regional level.

This technical note is not to be interpreted as an analysis of the value chain or detailed description of production, consumption or trade patterns. All information related to these areas is presented merely to provide background on the commodity under review, help understand major trends and facilitate the interpretation of the indicators.

All information is preliminary and still subject to review and validation.

POLICY CONTEXT

Production

Cotton was introduced in Uganda by the British in the early twentieth century, perhaps simultaneous with the introduction of the crop into Sudan and Kenya. Since then, cotton industry has evolved and undergone through many institutional and policy changes. During the 1960s, Uganda was Sub-Saharan Africa's largest cotton producer. However, political instability and poor policy choices of the 1970s led to the sector's precipitate decline. While attempts to revive the sector with lending operations during the 1980s failed, policy reforms combined with a lending operation and high cotton prices revitalized the sector in the 1990s (Baffes, 2009). Nevertheless there remains the sense that the sector lags behind its full potential. Various reports have linked this chronic underperformance to low quality of cotton, lack of domestic textile industry, and low use of purchased in-puts due to lack of rural credit as the key constraints (Baffes [2009], Baffes [2010]).

Uganda first experimented with cotton cultivation in 1903. Cotton was produced for commercial purposes after the construction of the 1 400 kilometre Mombasa-Kisumu rail-way and later increased with the completion of the Busoga railway that connected the Lake Kyoga region with Kampala and substantially reduced the cost of transporting goods from Kampala to Mombasa (Carr, 1982). Cotton production received a further boost following the introduction of a poll tax by the colonial government, which served the dual purpose of collecting revenue and supplying raw material to the British textile industry— at the time, cotton was the country's only cash crop hence the only way peasants could pay the poll tax was by cultivating cotton. The tax, UGS 15 per year, equivalent to 100 lbs of seed cotton, in effect, made cotton a forced-labour crop (Baffes, 2009). However, due to economic and political instabilities experienced in the 1970s and 1980s, the cotton industry in Uganda declined steadily reaching a low production of only 11,000 bales in 1988 (CDO, 2000).

Until 1994, the ginning and marketing of cotton was regulated under the Cotton Act, revised in 1964, and the Lint Marketing Board Act of 1959, amended in 1976. As stated above, the Government Marketing Agency – the Lint Marketing Board (LMB) – had a monopoly of cotton lint and seed sales both locally and externally. Marketing of seed cotton and ginning was vested in co-operatives (CDO, 2000). In the late 1991, the government took a deliberate move to liberalize the ginning and marketing of cotton in an effort to revive the cotton sector. A cotton sub sector strategy evolved, which incorporated the policies of the government and also advocated for a five-year COTTON SUB-SECTOR DEVELOPMENT PROJECT (CSDP) 1994-2001 (CDO, 2000). In 1994, the Cotton Development Organization was created to promote and regulate the production and marketing of cotton in Uganda as an autonomous agency. CDO has continued to undertake these functions since then.

The initial genetic material for cotton came from American varieties, which after extensive research and experimentation gave way to varieties better suited to local growing conditions. In the two decades following the crop's introduction, output exceeded 30,000 tons. Cotton production grew further to reach 60,000 tons during the mid-1930s, when coffee began to compete in the cash crop market (CDO, 2000). Cotton output and area continued to grow at a slower rate until around 1970, when the area under cultivation peaked and production reached 86,900 tons of lint (CDO, 2010).

Uganda cotton is a rain fed annual crop of medium staple, grown using low input, low output methods mainly by small scale farmers with an average of 1.2 acres (PMA, 2009). The use of

fertilizers and pesticides is limited. It is grown at less than 1,500m above sea level, and requires a rainfall regime of over 800 mm/annum. It competes mainly with annual food crops.

Cotton can be produced in most parts of Uganda. It is grown mainly in the North, East and South East of Lake Kyoga, and in the Kasese area in the West (CDO, 2000) (Figure 1). The ecological zones for growing cotton are the Northern and eastern dry areas, which grow the variety Serere Albar Type Uganda (SATU) and the southern and western wet areas which grow the variety Bukalasa Pedigree Albar (BPA) (CDO, 2000). Yields vary between 200 and 450 kg/ha of seed cotton. Cotton has a fairly long growing season of 6 – 7 months¹. It is usually planted in May/June and harvested in November or December.

Due to Liberalization of marketing since 1994, SATU, which is a shorter and coarser fibre, fetched a lower price than the BPA variety, which is longer and smoother. Farmers were therefore reluctant to continue planting SATU (CDO, 2010). Uganda farmers now grow only BPA cotton stocks but SATU lines are being maintained for research purposes.

In addition to conventional cotton which constitutes over 90 percent of total cotton production, Uganda also produces organic cotton. According to PMA (2009), the main areas involved in organic cotton production are in the Northern part of Uganda, especially the districts of Lira, Apac, Kitgum and Pader (Figure 1). About 15 percent of organic cotton production is consumed locally by one spinner, Phenix Logistics. The organic cotton value chain faces a number of challenges. They include, the low yields when compared to conventional cotton due to pest and disease incidence, inadequate training and sensitization of farmers on organic production principles and requirements, lack of effective organic pesticides and seed dressing products. Many observers believe that Uganda can also exploit the emerging markets for fair trade and organic cotton with great growth potential (PMA, 2009).

Despite the efforts of the Cotton Development Organization (CDO) which regulates the production and marketing of cotton in Uganda, the production of cotton lint and seed in Uganda is quite variable over the years due to various factors including weather conditions, price expectations and provision of farm inputs (Figure 1). Following an upward trend between 1998 and 2004, production declined from 18 981 tonnes of lint and 35 400 m of seed in the 2005/06 season to about 13 006 tonnes of lint and 27 840 m of seed in 2009/10 season (Figure 2). Baffes (2009) argues that the fundamental problem of Uganda's cotton sector is its low profitability, which reflects the displacement of cotton by food crops.

The area under cotton cultivation has been fluctuating over the last three years (2008-2010). Cotton area decreased from 100 000 hectares in 2008 to 67 000 hectares in 2009, and then increased to 80 000 hectares in 2010 (MAAIF, 2011). The decline in acreage is attributed to decline in the cotton prices in 2008/9 season which affected the farmers' incentives, severe drought during the June-August 2009, the ideal cotton planting window in Uganda and; a shift to the production of food crops due to high prices paid during that period (MAAIF, 2011).

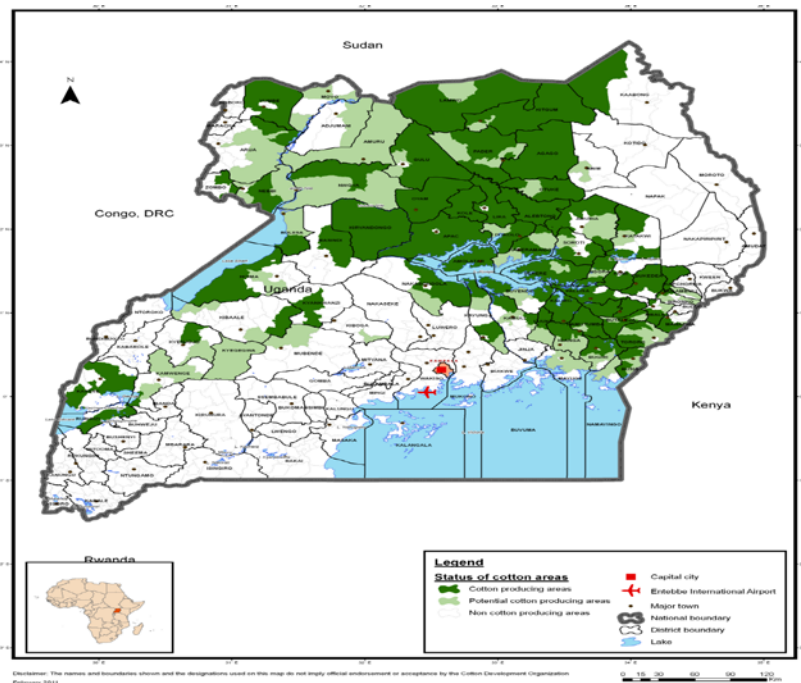
¹ Because cotton is planted and harvested in a year but marketed in the following year, official statistics are reported with reference to both years. For example, 2005/06 refers to production season of 2005 and marketing season of 2006. In this note, reference to a single year always refers to marketing year since prices quoted here are valid for that marketing period.

Domestic utilization

Domestic utilization of cotton refers to the amount of cotton lint used by the domestic textile industry and seed processed into oils and animal feed. It is calculated as the difference between what is produced and what is exported. Over the years 2005 – 2010, over 80 percent of the lint produced from Uganda was exported, while only about 8 percent of the seed produced was exported over the same period of time (Figure 3).

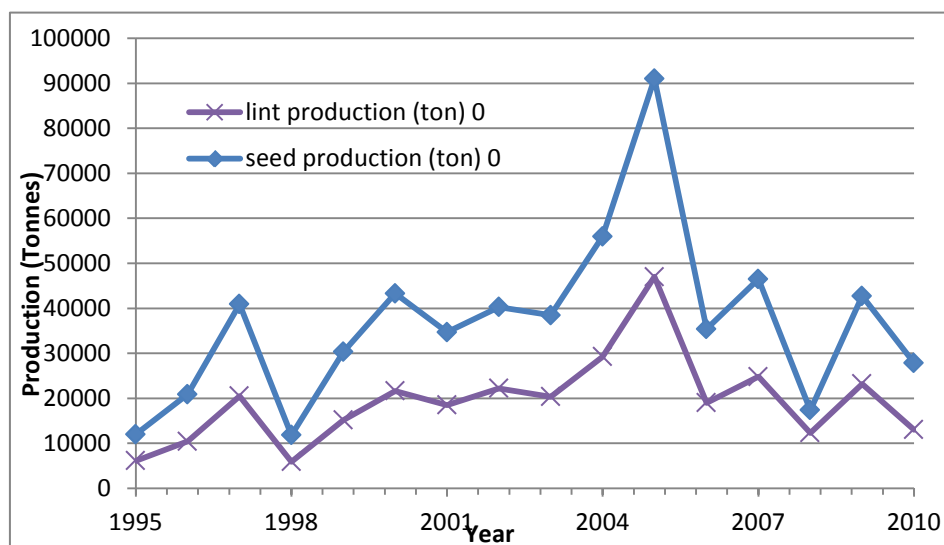
While the textile industry in Uganda consists mainly of small to medium sized with modest technology and low capacity (PMA, 2009), the seed processing companies appear to have higher capacity. This explains partly the low domestic utilization of lint compared to the domestic utilization of seed. Uganda has five privately-owned cottonseed processing companies, of which four are independent and one is associated with a ginning operation, located in or close to Kampala, the key oil consuming area (Baffes, 2010).

Figure 1: Major Cotton producing and potential producing areas in Uganda



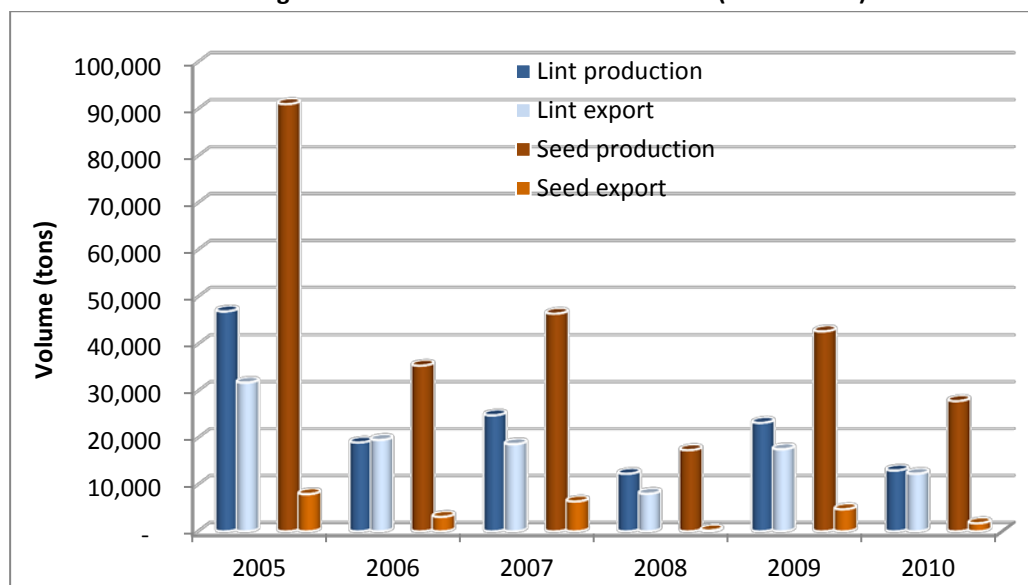
Source: CDO, 2011

Figure 2: Cotton Lint and Seed production trends in Uganda (1995-2010)



Source: Data from CDO (2012)

Figure 3: Cotton Lint and Seed Utilisation (2005 – 2010)



Source: CDO (2012) and FAOSTAT (2012)

Marketing and Trade

With the low share of domestic utilization of cotton lint, Uganda is net exporter of cotton lint. It is considered as one of the four traditional exports of the country which include also coffee, tea and tobacco. Although cotton lint exports were quite variable during the last five years (2006-2011), lint exports contributed 1.2-3.9 percent of the total export revenue of the country and 2.5-12.7 percent of the revenue generated from the traditional exports (Table 1). Cotton lint exports contributed about USD 86 million in 2011 (BoU, 2012).

Ugandan cotton lint exports are destined to several countries in Europe, Asia and Africa. The major importer is Singapore (55 percent) followed by Switzerland (23 percent) and United Kingdom (17 percent), (Figure 4). China, Kenya and Tanzania are minor importers of Ugandan cotton. In contrast, Kenya is the only country where exports of cotton seed are reported. With the low export earning

value, seed exports seem to represent the unutilized surplus by the seed processing industry. There are established markets in the sense that cotton seeds, oil, and meal are all tradable commodities. Seed prices are market determined and depend mostly on the size of the cotton crop. Although oil and meal prices are also market determined, there is considerable intra-year and cross-company variability (Baffes, 2010).

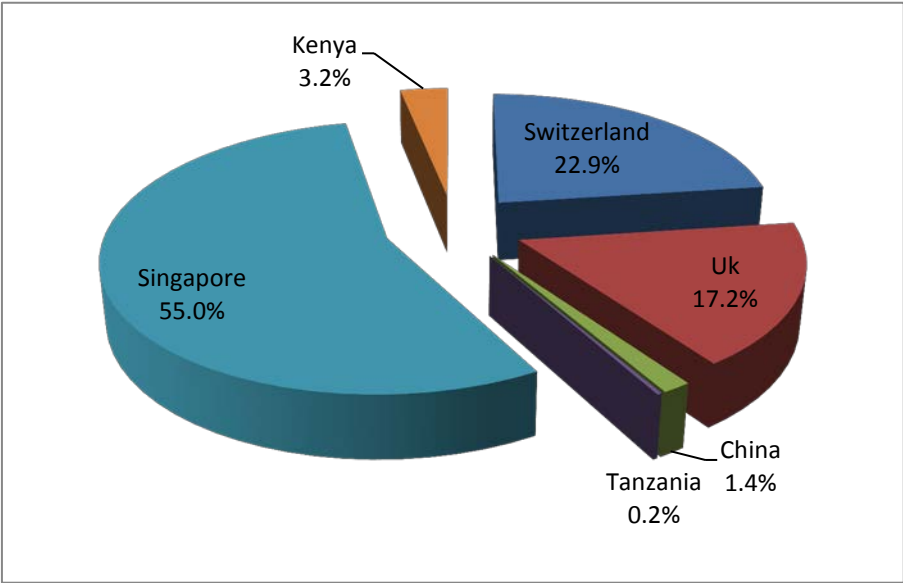
Table 1: Importance of cotton exports in Uganda (2006-2011)

	2006	2007	2008	2009	2010	2011
Total lint production (ton)	18,981	24,790	12,303	23,182	13,006	
Quantity of lint export (ton)	18, 480	16, 230	7,960	17,888	11,891	25,587
Value of export (000 USD)	20,474	19,571	13,214	23,186	19,919	86,010
Export as % of total production	97.4	65.5	64.7	77.2	91.4	
Value of export as % of total exports (%)	2.10	1.50	0.80	1.50	1.20	3.90
Value of export as % of traditional exports (%)	7.10	4.90	2.49	5.52	4.52	12.67

a. Traditional exports of Uganda include coffee, cotton, tea and tobacco.

Source: UBoS (2011) and BoU (2012)

Figure 4: Destinations of Uganda cotton export (2008/09)



Source: CDO, 2009

Description of the value chain

The typical cotton marketing value chain is described in details by PMA (2009) and presented in Figure 5. Farmers sell seed cotton to ginneries through ginnery commissioned agents, farmers' groups or other traders who sell to ginneries. The point of sale of seed cotton is usually the ginnery or ginnery store located in the production area. Seed cotton is largely procured by commission agents working on behalf of ginners. They are funded, trained, facilitated and monitored by the ginners. They procure the crop, store it, do additional sorting and deliver it to the ginnery. They are also a source of market information for farmers although this is at times distorted.

Ginnery owners advance funds to the agents for procuring cotton, the agent's commission and transport facilities. The agent's commission varies from US\$ 20 – 25 per kg of seed cotton delivered to the ginnery (PMA, 2009). Some ginners provide separate funds for loading at the local store and for transport from the local store to the ginnery. Other ginners allow the agent US\$ 25/kg of seed cotton for loading and transport to the ginnery. BoU (2011) reported collection and handling costs from farmers to ginneries of US\$ 90 per kg in 2010 compared to US\$ 40 per kg in 2001 (Foodnet, 2002) and US\$ 49.5 in 2004 per kg of seed cotton (USAID, 2005). Collection and handling cost represents 8-11 percent of the farm gate price of seed cotton.

Uganda has about 43 ginneries operated by 25 ginning companies (PMA, 2009). Ginning capacity, efficiency and constraints vary greatly by ginnery type, make, capacity, maintenance and technology. Almost all operating ginneries are operating on average at 30 percent capacity (PMA, 2009). The current ginning outturn² (GOT) averaged 0.35 percent for the period of 2001-2010 (CDO, 2009; CDO, 2012). Ginning in Uganda is a private business and the only public sector involvement in the ginning business is through CDO that handles seed distribution, licensing and conducts an annual inspection of ginneries.

Export pricing of lint is usually based on the world price in Liverpool. Ginneries generally sell lint on a FOT (free on truck) basis. The reference point for transport costs being Kampala /Tororo. On this basis, ginneries in areas such as Kasesi are at a disadvantage and prices quoted by buyers in this instance deduct transport costs to Tororo/Kampala. The estimated freight costs are US\$ 30 000-50 000 per bale of 185 kg of cotton from the location of the ginnery to Kampala and USD 9-10 per bale from Kampala to Mombasa.

According to estimates of PMA (2009), the typical cost and revenue structure of the ginning business reveals a net margin on ginning of US\$ 607/kg of lint or US\$ 112, 295 per (185 kg) bale as the return to investment and management at 30 percent capacity of operation. Ceteris paribus, this would amount to US\$ 336,885 per bale at about 90 percent capacity of operation. In 2008, the total cost of ginning was US\$ 2,932/kg of lint of which only 8 percent is comprised of fixed costs and 92 percent are variable costs including the cost of seed cotton, electricity, casual labour, grading, documentation and communication.

² Ginning is the process of separating cotton lint from cotton seed. The resulting quantity of lint per unit of seed cotton is known as ginning outturn.

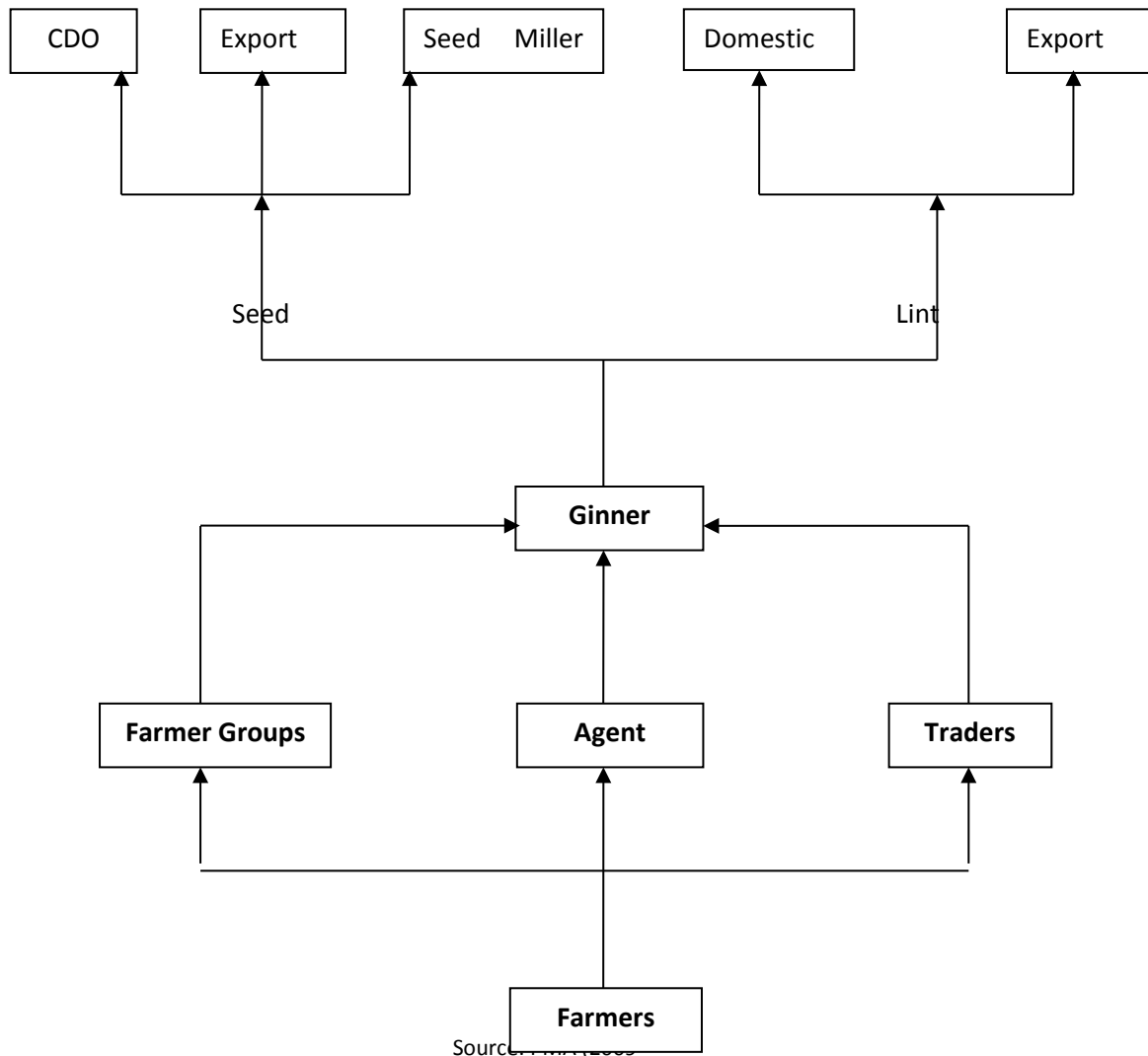
As it is important that ginneries retains enough seed for planting requirements next season, each ginnery must retain a quota of 300 mt at the beginning of the season(December/January) for treatment by CDO (Foodnet, 2002). The treated seed is distributed to farmers for the new season's plantings. On every bale (185/190 kg) over 5,600 bales produced in a season, a ginnery must retain, and make available to the CDO, 15 percent of the recovered cotton seed for planting purposes. Whilst the ginnery owns the resultant cottonseed separated during the ginning process, the levy by the CDO to cover the cost of supplying the farmer with planting material is factored into the farm gate price. Therefore, the farmer, in reality is not being supplied with free seed. Furthermore, the obligation to retain seed at the beginning of the season affects the time of its availability to cottonseed millers.

Vegetable oil millers based in Kampala, Jinja and Mbale purchase cottonseed from ginneries for milling into cottonseed oil, used primarily in cooking oil, and cottonseed cake, used in the compound animal feed industry. Cottonseed oil is refined, bleached and deodorized (RBD), usually blended with other oils such as sesame oil, packaged and sold primarily in the domestic market. There is a small regional trade to Kenya, however, as Uganda imports about 80 percent of its vegetable oil, mainly palm oil from Malaysia, quantities available domestically can easily be absorbed locally (Foodnet, 2002).

Policy Decisions and Measures

Evolution of Cotton policies in Uganda is described by CDO (2000) and Baffes (2009). The evolution of cotton policies followed largely the political changes in the country as well as the ups and downs of cotton production. Many of the policy initiatives were meant to solve the structural problems facing the cotton sector. For example, in 1985 the Government of Uganda (GoU), in collaboration with the World Bank, undertook a comprehensive review of the industry. Two follow-up studies resulted in the formation of the Cotton Task Force whose objective was to identify institutional impediments and prepare investment proposals. As a result, the Emergency Cotton Production Program was launched in 1986/87. Its key objectives were to increase cotton production, revitalize research, initiate a system of seed multiplication, and rehabilitate primary processing facilities (Bibangambah 1995). Despite attention the sector received both in policy and finance, it performed poorly with the collapse of cotton prices in 1985.

Figure 5: The typical cotton value chain in Uganda



GoU launched the Emergency Cotton Production Program in 1986/87. Under the program GoU redefined its role, taking on new responsibilities—especially during the transitional phase—while shedding other activities (World Bank 1994). The reforms introduced in the cotton sector in 1993 coupled with high prices of the mid-1990s led to considerable supply response with cotton production reaching 20,000 tons in 1996 (Baffes, 2009).

Until 1994, the ginning and marketing of cotton was regulated under the Cotton Act, revised in 1964, and the Lint Marketing Board Act of 1959, amended in 1976 (CDO, 2000). The Government Marketing Agency – the Lint Marketing Board (LMB) – had a monopoly of cotton lint and seed sales both locally and externally. Marketing of seed cotton and ginning was vested in co-operatives. Under the Cotton Development Statute of 1994, the Lint Marketing Board was liquidated and a new regulatory agency was established, the Cotton Development Organization (CDO) (Baffes, 2009). The CDO, a statutory body, was created to promote, regulate the production and marketing of cotton in Uganda and as an autonomous agency, to represent the cotton industry in all aspects (CDO, 2000).

CDO issues ginning and export licenses and manages a fund for the collection, processing, and distribution of cotton seed for planting. Thus, CDO took over some of the functions of the former Lint

Marketing Board. Its objective is to regulate the industry as well as collect and disseminate statistics. It is financed by a levy (2 percent) imposed on all cotton ex-ports. Its Board of directors consists of the Chairman (appointed by the Minister), representatives from Ministry of Finance, Planning and Economic Development, MAAIF, and NARO, and six private sector representatives from cotton-related industries. The Managing Director is appointed by the Board. Often, CDO's functions are now carried out in collaboration with other institutions with broader mandates including the Uganda Ginners and Cotton Exporters Association (UGCEA), the Cotton Research Institute, and various ministries (Baffes, 2009).

With the reforms, cotton research became a top priority. All research activities were transferred to the Cotton Research Institute, which has made numerous achievements. GoU, through CDO, retained the function of providing free seeds to farmers but chemicals had to be purchased (Baffes, 2009). However, cotton Seed for planting has never been free of cost to the farmer. The cost of seed, processing, packaging and distribution was in-built and the minimum farm gate price announced by government (CDO, 2000).

As for other commodities in Uganda, cotton is not subject to export taxes except the 2 percent of export price levied by CDO to finance its activities. In some cases, commodities are subject to local taxes (cess) during market transactions. Such local taxes were not reported for cotton.

Cotton Pricing

One of the major responsibilities of CDO is the announcement of indicative farm gate, ginnery buying and export prices and to monitor prices actually paid at these levels together with prices of cotton seed for planting and milling (PMA, 2009). Farmers are reportedly offered 60–70 percent of the Cot Look A – Index which is an international indicative (average) price arrived at by international traders based on the cotton outlook. The indicative price is computed by CDO and announced in August on FM radios and other mass media avenues (PMA, 2009). There are elements of unfair pricing at farm level whereby some companies promise a price to farmers but fail to pay it at harvesting time. According to PMA (2009), it is unclear whether the idea of an indicative price for cotton is consistent with liberalization. Based on comparison of the indicative price to the actual price received by cotton producers during the period of 1995-2010, the indicative price manifests itself in the market as some form of a “price ceiling” with few exceptions (Table 2).

Since liberalization in 1994, the indicative price as a share of the export price began to increase gradually from 54 in 1994/05 to 74 percent in 2009/10 (Table 2). As a result of the high export price in 2010/11, this share declined to 48 percent. It is to be noted that the indicative price is based only on the lint export price without taking into account the value of seed which account for 65 percent of the weight of seed cotton. Although seed is low-valued product compared to lint, it represents significant value due to its volume. The value of cotton seed relative to lint depends heavily on expected trends in relative prices. In 2007-09, during the commodity price boom, the contribution of seed was 15.7 percent and 22.4 percent corresponding to the high and low ginning ratios (Baffes, 2010).

In August 2008, CDO announced a pre-season indicative price of US\$ 800 per kg of seed cotton. However, in November 2008, cotton prices dropped to US\$ 540 per kg of seed cotton at farm gate. Ginners could not give a firm offer for seed cotton. As a consequence, the farm gate price dropped from US\$ 800 announced in August to 450 in November 2008 (CDO, 2009). Subsequently, the

government intervened with a price support of USh 150 per kg of seed cotton raising the farm gate price from USh 450 to USh 600 per Kg of cotton. Recently in 2010/11, the FOB price of cotton lint more than doubled compared to previous years. Consequently, actual producers' price increased by about 44 percent above the indicative price (Table 2).

The price received by farmers in any year has important implications for supply response in the subsequent year. PMA (2009) concludes cotton production in any year strongly correlated with cotton farm gate price prevailing in the previous year.

DATA REQUIREMENTS, DESCRIPTION AND CALCULATION OF INDICATORS

While farmers are producing and marketing seed cotton, cotton lint and cotton seed are the main products that are traded internationally. Moreover, cotton passes through two important stages in the production-processing-marketing chain. As cotton is processed into seed and lint, the prices can differ significantly at the farm, ginnery and border level. The analysis of cotton market incentives/disincentives is undertaken from the perspective of cotton producers and therefore, it is imperative to take the value (prices) and marketing and other access costs of both products into account in analysing the market incentives/disincentives. The approach followed here follows closely the approach described by Tsakok (1990). Without including seed value in evaluating cotton prices, the benchmark price will be underestimated giving rise to wrong conclusions of the size of support to cotton growers. Moreover, the price increases for edible oils combined with the relatively stagnant prices for cotton, has reawakened interest in the potential of cotton by-products as a complementary source of revenue for cotton growers and that cotton by-products in general have a growing market and are potentially an important complementary source of revenue for cotton growers, (Baffes, 2010).

The analysis is for the period of 2005-2011 and aims at estimating price gaps and rates of protection at producers and the point of competition levels. The point of competition is assumed to be the ginning as it is at this point cotton sale to exporters and domestic traders takes place. This will allow comparing the incentives/disincentives at farm level for raw cotton to lint at the ginning level.

Table 2 : Comparison of indicative and actual producers' prices of seed cotton in Uganda (1995-2011)

year	Indicative price (USh/kg)	Actual price (USh/kg)	Lint export price (USh/kg)	Indicative price as a % of export price ^a	Actual price as a % of export price ^a
1994/95	400.0	400	2,100	0.54	0.54
1995/96	350.0	350	2,095	0.48	0.48
1996/97	320.0	320	1,990	0.46	0.46
1997/98	390.0	390	2,112	0.53	0.53
1998/99	400.0	400	2,302	0.50	0.50
1999/00	300.0	300	2,050	0.42	0.42
2000/01	420.0	420	2,775	0.43	0.43
2001/02	270.0	270	1,320	0.58	0.58
2002/03	500.0	500	2,172	0.66	0.66
2003/04	650.0	650	3,000	0.62	0.62
2004/05	350.0	350	1,425	0.70	0.70
2005/06	450.0	450	2,015	0.64	0.64
2006/07	470.0	450	1,930	0.70	0.67
2007/08	750.0	750	2,753	0.78	0.78
2008/09	540.0	650	2,152	0.72	0.86
2009/10	900.0	900	3,462	0.74	0.74
2010/11	1,600	2,300	9,518	0.48	0.69

a. Export prices were adjusted by the ginning factor of 0.35 for conversion to an equivalent seed cotton prices.

Source: CDO (2009) and CDO (2012) and authors' calculations.

TRADE STATUS

As Figure 3 and Table 1 indicate, Uganda is net exporter of cotton lint with the low share of domestic utilization of cotton lint. It is considered as one of the four traditional exports of the country which include also coffee, tea and tobacco. Though cotton seed export is relatively small, Uganda is also net exporter of cotton seed.

BENCHMARK PRICES

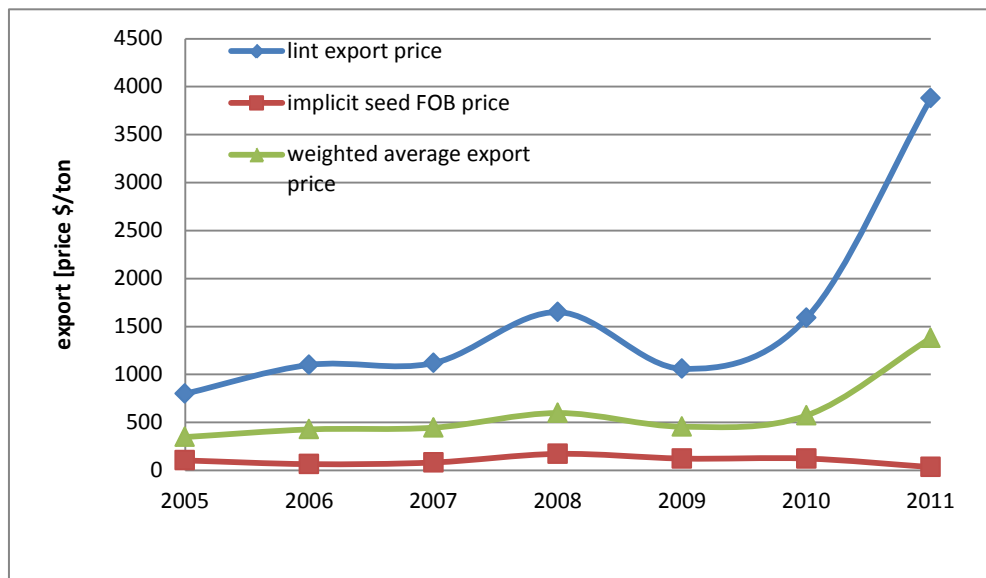
Observed

The benchmark price is defined as the weighted average of the export price of lint and seed produced from one unit of seed cotton using the ratio of lint to seed cotton, known as outturn or retention rate. The outturn rate in Uganda averaged 0.35 for the period of 2001-2010 (CDO, 2012). This means for every kg of seed cotton, the ginnery recovers 0.35 kg of lint and about 0.65 kg of seed. For both seed and lint, the FOB export prices are assumed to be the benchmark prices. While the export (FOB) prices of lint at Tororo, are directly available and published by CDO, the FOB export price of cotton seed is obtained by dividing the total value of cotton seed export by the exported quantity. Figure 5 compares the FOB prices of cotton seed and cotton lint to the derived (weighted average) benchmark price of seed cotton.

Adjusted

Adjusted benchmark price is not considered in this analysis as the FOB prices of both cotton seed and lint appears to measure the opportunity (social) value of seed cotton at the country's border accurately.

Figure 6: FOB prices of cotton seed and cotton lint and the derived benchmark price of seed cotton in Uganda (2005-2011)



Source: CDO (2012) and author's calculations

DOMESTIC PRICES

Two domestic prices are needed for the analysis: at the point of competition and at the farm gate. Ginners sell lint to private buyers or ship it to importers based on the world price in Liverpool (PMA, 2009). As such, it is safe to assume that the domestic price received at the point of competition is equal to the FOB export price adjusted by the tax paid to CDO. This price is very close to ex-ginnery lint sale price obtained from Bon Holding Ltd³ (2012). On the other hand, ginners sell most of the seed directly to oil millers (PMA, 2009). The equivalent price of seed cotton at the point of competition is thus calculated as the weighted average of the prices of these two products using the outturn factor. The data for the cotton seed prices is obtained from CDO (2012) for 2005-2011.

Although an indicative price of seed cotton at the farm level is announced at the beginning of the season, these prices represent a price ceiling for producers in most of the years. In this analysis, the producers' price is assumed to be the actual prices received by cotton growers as reported by CDO (2012). Table 3 presents actual producers' prices of seed cotton, the prices of cotton products at the point of competition and the calculation of the equivalent price of seed cotton at the point of competition.

EXCHANGE RATES

Observed exchange rate: The exchange rate between the Ugandan shilling and US dollars has been taken from the IMF database on exchange rates. The average of the exchange rate for each year has been calculated from the monthly data reported in that database. These represent the observed exchange rate.

Adjusted exchange rate: Since Uganda is adopting free market foreign currency market, real (equilibrium) exchange rate is assumed to be equal to the observed exchange rate. For the years considered, this assumption is close to reality as exchange rate misalignment is likely to be minimal since the foreign exchange market in Uganda has been fairly liberal.

Table 3: Domestic prices of seed cotton and estimation of the equivalent seed cotton price at the point of competition in Uganda (2005-2011)

	Actual farm gate price	Price at the point of competition		
	seed cotton U Sh/kg	Lint U Sh/kg	Seed U Sh/kg	seed cotton equivalent U Sh/kg
2005	350	470.10	110	590.85
2006	450	664.82	150	743.01
2007	470	637.00	180	730.15
2008	750	936.78	340	972.69
2009	650	710.26	350	882.89
2010	900	1,142.56	400	1,240.25
2011	2,300	3,140.90	500	3,338.66

a. The above calculations assume a lint content (rate of retention) of 0.35 and seed content of 0.65.

Source: compiled from data from CDO (2012) and Bon Holding Ltd (2012) personal communications

³ Although fluctuates considerably over time, the calculated lint price is, on average, about 98 percent of the price reported by Bon Holding Ltd ginneries. Note that CDO tax is 2 percent of export price.

MARKET ACCESS COSTS

Consistent with the analytical approach described above, access costs between farm gate and the point of competition - (inclusive of ginning cost) - and between the ginnery and the border are needed to compute the reference price parities at these respective points along the value chain. The estimation of the access costs from the farm gate to wholesale markets is based on marketing costs reported by CDO (2009).

Observed access costs

The observed access costs between the farm gate and ginneries include transportation and handling costs from the farm gate to ginnery, agents' commissions and labour/bagging costs while the costs at the ginnery include costs of ginning, baling, classification (grading) and marketing and transportation from the ginneries to the point of competition (Tororo/Kampala which is the basis for the FOB prices quoted for export). Together, these represent the access costs from the farm gate to the point of competition at the gate of the ginnery (Ex ginnery). Observed access costs from the point of competition to the border include only the tax paid to CDO which is 2 percent of the export price.

The data on these costs is available for several years from the study of the domestic resource costs conducted by Bank of Uganda in 2007-2010 and the value chain analysis of cotton undertaken by PMA (2009) although to a varying degree of details. Table 4 summarizes the available data on access costs from these sources calculated on the basis of seed cotton. One of the reasons for the difference in costs across the three sources is that BoU (2010) tends to aggregate all costs of ginning under ginning while the other two sources have some degree of disaggregation.

Table 4: Summary of the cotton access costs data available from alternative sources

Cotton flow	Cost type	2007	2008	2010
		USH/kg	USH/kg	USH/kg
Farmer to Agents ^a to Ginnery (seed cotton)	Agents commission	53.55 ^b	25.00	46.07
	Transport and handling(to ginnery)		25.00	43.85
	Total	53.55	50.00	89.92
Ginnery to wholesalers (cotton lint)	ginning	83.30	90.00	251.12 ^c
	baling		22.00	
	marketing/classification	30.00	11.64	
	Total	113.30	123.64	251.12
Ginnery to border	Lint transportation cost		120.88	
	Seed transportation cost		40.00	
Source:		BoU, 2008	PMA 2009	BoU, 2011

a. This segment also includes flow of cotton through traders and farmer groups.

b. Including agents' commission and transportation and handling in 2007.

c. Including baling, marketing and classification.

Source: Compiled from BoU (2008), BoU (2011) and PMA (2009)

The ginning access costs are further converted on the basis of seed cotton. Extrapolation of access costs to other years for which data is unavailable is done as follows. First, the access costs in Table 4 are converted to real values using consumers' price index (CPI) (2011=100). The access costs in 2011 are computed as the average of the real access costs. Second, the access costs in other years (2005, 2006, and 2009) is assumed to be the nominal values of the access costs of 2011, i.e., the access

costs in 2011 are deflated using the consumer price index for these years with 2011 as the base year. Table 5 presents the observed access costs from the farm gate to point of competition and from the point of competition to border for 2005-2011 on the basis of seed cotton (converting costs associated with cotton lint to equivalent seed cotton).

The profit margin for ginneries in each year is calculated the difference between the weighted price of lint and seed at the ginnery and purchase price of seed cotton, collection and ginning costs, transportation costs and CDO fees (2 percent of lint sale prices paid by ginneries). The ginnery margin of profit varies significantly from year to year and ranges from 6 to 33 percent and averaged 18 percent of the investment costs. In computing the observed access cost at the point of competition, the observed margin is assumed to be 18 percent.

Table 5: Observed access costs for cotton in Uganda (2005-2011) on the basis of metric tonne of seed cotton

	2005	2006	2007	2008	2009	2010	2011
Collection costs	50,332.1	52,310.1	53,550.0	50,000.0	70,263.6	89,920.0	86,707.1
Ginning, baling and marketing	43,849.9	45,573.2	39,655.0	43,274.0	61,214.5	87,892.0	75,540.2
Transportation costs (lint and seed)^b	29,645.0	30,810.0	32,680.6	36,617.4	41,384.4	43,035.6	51,069.4
Margin of profit (18 percent)	92,530.3	112,284.0	114,700.0	166,693.0	156,537.3	212,327.8	471,217.3
Observed access costs to the point of competition	246,616.0	271,981.9	268,410.0	322,894.4	361,123.0	467,690.2	722,465.8

a. Collection costs includes agents commission, handling and transportation costs from the farm to ginnery.

b. Transportation costs from ginnery to Tororo/Kampala defined as the weighted average of the transportation cost of seed and lint.

Source: Compiled from data in Table 4 as described above.

Adjusted access costs

Both ginneries and lint exporters earn above normal profit margin in most of the years. To estimate the adjusted access costs, the estimates of the ginneries and exporters margins in Table 5 are adjusted to reflect a maximum profit margin of 10 percent of investment costs which is considered as normal profit. Other costs remain the same as in the observed access costs. As a result, adjusted access costs to the point of competition are lower than observed access costs for all years and represents from 73 to 84 percent of the observed access costs. The adjusted access costs from the point of competition to the border are zero since the CDO tax is the only access cost here. Table 6 presents the adjusted access costs for the two market segments.

Table 6: Adjusted access costs for cotton in Uganda (2005-2011) on the basis of a tonne of seed cotton

	2005	2006	2007	2008	2009	2010	2011
Collection costs	50,332.1	52,310.1	53,550.0	50,000.0	70,263.6	89,920.0	86,707.1
Ginning, baling and marketing	43,849.9	45,573.2	39,655.0	43,274.0	61,214.5	87,892.0	75,540.2
Transportation costs (lint and seed)	29,645.0	30,810.0	32,680.6	36,617.4	41,384.4	43,035.6	51,069.4
Adjusted margin of profit (10 percent)	53,257.6	64,999.0	66,231.6	96,297.6	89,763.2	122,460.9	274,160.6
Adjusted access costs to the point of competition	207,343.3	224,696.9	219,941.6	252,498.9	294,348.9	377,823.3	525,409.2

Source: Compiled from data in Table 5 as described above

EXTERNALITIES

Estimates of externalities associated with cotton production and marketing are unavailable and thus externalities were not accounted for.

BUDGET AND OTHER TRANSFERS

Estimates of budget and other transfers to producers are unavailable and were not considered in this analysis. As such, nominal rate of assistance is not estimated. These will be included in the analysis as data becomes available.

QUALITY AND QUANTITY ADJUSTMENTS

All prices and access costs are based on per tonne of seed cotton. In computing the benchmark prices, domestic price at the point of competition and access costs, conversion from seed cotton to lint and seed is already accounted for. These variables measure the equivalent for a unit of seed cotton in terms of its yield of lint and seed. Therefore quantity conversion is not needed. Table 7 describes the data used in analysis of market incentives/disincentives of cotton in Uganda. The data used in estimation of the indicators is presented in Table 8.

Table 7: Summary of the description of the data used in the estimation of policy indicators for beef in Uganda

<i>data</i>	<i>Description</i>	
	<i>Observed</i>	<i>Adjusted</i>
Benchmark price	<i>FOB price (Tororo) published by CDO (see Figure 5)</i>	<i>N.A.</i>
Domestic price at point of competition	<i>The relevant domestic price is estimated as the FOB price at Kampala/Tororo minus the CDO export tax (see Table 3)</i>	<i>N.A.</i>
Domestic price at farm-gate	<i>Annual average price received by growers as published by CDO (see Table 3)</i>	<i>N.A.</i>
Exchange rate	<i>Annual average of exchange rate as reported by UBoS (2012)</i>	<i>NA</i>
Access cost to the point of competition (Kampala)	<i>The relevant access cost is only the CDO export tax of 2 percent of the FOB export price</i>	<i>Adjusted access cost at this market segment is zero</i>
Access costs at the farm gate	<i>All observed marketing costs involved in collection, transportation, processing and classification of cotton as reported by PMA (2009), BoU (2008) and BoU (2011) plus estimated margin of profit (18 percent). (see Table 5)</i>	<i>All observed marketing costs involved in collection, transportation, processing and classification of cotton as reported by PMA (2009), BoU (2008) and BoU (2011) plus normal margin of profit (10 percent) (see Table 6)</i>

CALCULATION OF INDICATORS

The indicators and the calculation methodology used are described in Box 1. A detailed description of the calculations and data requirements is available on the MAFAP website or by clicking [here](#). Three types of indicators are estimated for cotton. First, the price gaps at the farm gate and the point of competition which measure the deviation of the observed market prices at the farm gate and the point of competition as a key parameter for estimating transfers arising from government policies and other factors associated with cotton marketing are presented in Table 9 and Figure 7. Second, the price gaps expressed relative to the reference price as the nominal rate of protection are presented in Table 10 and Figure 8. Both of these indicators are estimated for observed and adjusted scenarios. Finally, estimates of various components of the market development gaps for cotton are presented in Table 11.

Table 8: Data used in the analysis of MAFAP policy indicators

DATA	Unit	Symbol	Year trade status	2005	2006	2007	2008	2009	2010	2011
				x	x	x	x	x	x	x
Benchmark Price										
	Observed	US \$/TON	$P_{b(int\$)}$	348	428	446	598	456	601	1,439
	Adjusted	US \$/TON	P_{ba}							
Exchange Rate										
	Observed	US\$/US \$	ER_o	1,781	1,831	1,723	1,720	2,030	2,178	2,453
	Adjusted	US\$/US \$	ER_a							
Access costs border - point of competition										
	Observed	US\$/TON	ACo_{wh}	9,972	14,102	13,512	19,871	15,066	24,236	66,625
	Adjusted	US\$/TON	ACa_{wh}	-	-	-	-	-	-	-
Domestic price at point of competition										
		US\$/TON	P_{dwh}	609,373	769,200	755,243	1,009,594	910,866	1,285,259	3,462,397
Access costs point of competition - farm gate										
	Observed	US\$/TON	ACo_{fg}	246,616	271,982	268,410	322,894	361,123	467,690	722,466
	Adjusted	US\$/TON	ACa_{fg}	207,343	224,697	219,942	252,499	294,349	377,823	525,409
Farm gate price										
		US\$/TON	P_{dfg}	350,000	450,000	450,000	750,000	650,000	900,000	2,300,000
Externalities associated with production										
		US\$/TON	E	-	-	-	-	-	-	-
Budget and other product related transfers										
		US\$/TON	BOT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quantity conversion factor (border - point of competitor										
		Fraction	QT_{wh}							
Quality conversion factor (border - point of competition)										
		Fraction	QL_{wh}							
Quantity conversion factor (point of competition - farm g										
		Fraction	QT_{fg}							
Quality conversion factor (point of competition - farm ga										
		Fraction	QL_{fg}							

Source: Various sources as described above and in Table 8.

Box 1: MAFAP policy indicators

MAFAP analysis uses four measures of market price incentives or disincentives. *First*, are the two observed nominal rates of protection one each at the wholesale and farm level. These compare observed prices to reference prices free from domestic policy interventions.

Reference prices are calculated from a benchmark price such as an import or export price expressed in local currency and brought to the wholesale and farm levels with adjustments for quality, shrinkage and loss, and market access costs.

The **Nominal Rates of Protection - observed (NRPo)** is the price gap between the domestic market price and the reference price divided by the reference price at both the farm and wholesale levels:

$$NRPo_{fg} = (P_{fg} - RPo_{fg})/RPo_{fg}; \quad NRPo_{wh} = (P_{wh} - RPo_{wh})/RPo_{wh};$$

The $NRPo_{fg}$ captures all trade and domestic policies, as well as other factors which impact on the incentive or disincentive for the farmer. The $NRPo_{wh}$ helps identify where incentives and disincentives may be distributed in the commodity market chain.

Second are the **Nominal Rates of Protection - adjusted (NRPa)** in which the reference prices are adjusted to eliminate distortions found in developing country market supply chains. The equations to estimate the adjusted rates of protection, however, follow the same general pattern:

$$NRPa_{fg} = (P_{fg} - RPa_{fg})/RPa_{fg}; \quad NRPa_{wh} = (P_{wh} - RPa_{wh})/RPa_{wh};$$

MAFAP analyses market development gaps caused by market power, exchange rate misalignments, and excessive domestic market costs which added to the $NRPo$ generate the $NRPa$ indicators. Comparison of the different rates of protection identifies where market development gaps can be found and reduced.

INTERPRETATION OF THE INDICATORS

As other export commodities of Uganda, cotton export is subject to export promotion measures that aim at providing incentives to increase and diversify exports. Under these policies, cotton exports are not subject to any export tax. Besides, the foreign exchange regime is fully liberalized and exporters are entitled to retain 100 percent of their foreign exchange earnings accruing from their export transactions. Price control as a development and trade policy measure is no longer practiced by the government. Accordingly, exporters can exchange their export earnings at the market exchange rate. All prices are determined by the market.

Thus, the export promotion measures eliminate all major factors causing deviation of cotton prices at the point of competition from its reference prices (except the CDO tax on lint exports). Consistent with this is the elimination of the observed price gap at the point of competition (Table 9) and an observed nominal rate of protection of zero (Table 10). However, the export of cotton lint is still subject to the tax paid to CDO which amounts to 2 percent of FOB price. This is reflected in an adjusted price gap equal to the tax (Table 9) and an adjusted nominal rate of protection of -1.61 to -1.89 percent. However, the magnitude of these indicators is relatively small. As such the trade and export policies of Uganda are providing a measurable support to cotton exporters by eliminating sources of price disincentives at the point of competition in form of direct or indirect taxation. Therefore, it is not surprising that ginneries retained a profit margin of 6-33 percent of the investment cost which is equivalent to 1-22 percent of the export price. However, this does not eliminate disincentives caused by international price fluctuations and high access costs.

At the farmgate, the indicators were quite variable. For the period of 2008-2010, both observed indicators are positive while these are negative for 2005-2007 and 2011 (Table 9). In the period of 2008-2010, producers appear to receive a price above the reference price ranging from U Sh 63,300 (US \$35.55) to U Sh 100,256 (US \$56.3) per ton of seed cotton (Table 9 and Figure 8). Correspondingly, the observed nominal rate of protection is positive ranging from 9.2 to 18.2 percent (Table 10). In other years, the observed price gaps were negative ranging from U Sh -12,756 (US \$-7.16) to U Sh -439,931 (US \$-247.06) per ton of seed cotton (Table 9 and Figure 8). Although relatively small, the observed nominal rate of protection during this period is negative. The seasons with negative indicators are associated with the highest levels of profit margins for ginneries and exporters. Therefore, the observed disincentives to producers in these years are due in part to the excessive profit by exporters and ginners themselves above what can be considered as normal profit. This means that the price increase may not trickle down to cotton farmers since they sell their cotton early in the season at the announced price.

With sufficiently competitive cotton industry (ginning) and reasonable profit margin for marketing agents, the adjusted price gaps for cotton growers are actually negative throughout the period of analysis except in 2009⁴ as indicated by the adjusted price gap at the farm gate (Table 9). The adjusted nominal rate of protection is consequently negative and averages -9.4 percent (Table 10).

⁴ In 2009, cotton growers received a price subsidy from the government due to the decline of cotton prices in the world market as described before.

Table 7: MAFAP price gaps for Cotton in Uganda 2005-2011 (USD per tonne of seed cotton)

	2005	2006	2007	2008	2009	2010	2011
Trade status for the year	x	x	x	x	x	x	x
Observed price gap at point of competition ^a	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adjusted price gap at point of competition ^a	-9,971.7	-14,102.2	-13,512.2	-19,871.1	-15,066.2	-24,236.2	-66,625.1
Observed price gap at farm gate	-12,756.5	-47,218.1	-36,833.4	63,300.4	100,256.6	82,430.8	-439,931.1
Adjusted price gap at farm gate	-62,000.9	-108,605.4	-98,813.9	-26,966.2	18,416.2	-31,672.3	-703,612.9

a. The point of competition for cotton lint and seed sale is assumed to be Tororo/Kampala consistently with the FOB price.

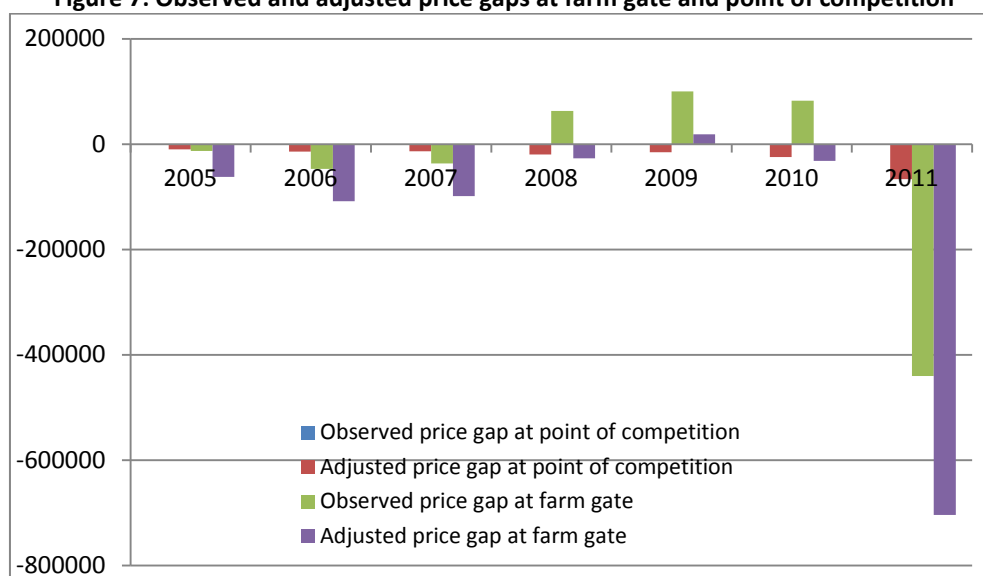
Source: Own calculations using data as described above

Table 8: MAFAP Nominal Rates of Protection (NRP) for Cotton in Uganda 2005-2011 (%)

	2005	2006	2007	2008	2009	2010	2011
Trade status for the year	x	x	x	x	x	x	x
Observed NRP at point of competition ^a	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Adjusted NRP at point of competition ^a	-1.6%	-1.8%	-1.8%	-1.9%	-1.6%	-1.9%	-1.9%
Observed NRP at farm gate	-3.5%	-9.5%	-7.6%	9.2%	18.2%	10.1%	-16.1%
Adjusted NRP at farm gate	-15.0%	-19.4%	-18.0%	-3.5%	2.9%	-3.4%	-23.4%

a. The point of competition for cotton lint and seed sale is assumed to be Tororo/Kampala consistently with the FOB price.

Source: Own calculations using data as described above

Figure 7: Observed and adjusted price gaps at farm gate and point of competition

Source: Authors' estimation.

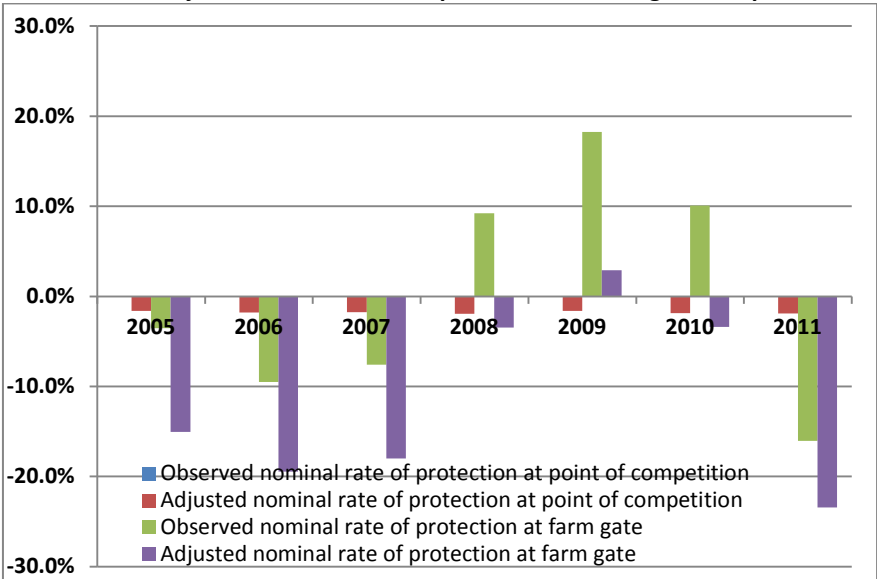
Several factors may explain the negative trends of the indicators at the farm gate. Although CDO sets the indicative prices at 60–70 percent of the Cot Look A, the indicative price is apparently represents a ceiling that prevents growers from gaining from changes in world prices within the season. In addition, the indicative price is based on prices prevailing at planting time and announced in August while export prices and ex-ginneries prices are based on prices after cotton picking. Unlike growers, this gives ginneries some room to profit from short term price increases. Besides, CDO indicative price ignores the value of seed completely since it is based on Cot Look A index. Ginneries generate

significant revenue from domestic sale of seed despite its low value in the export market. This tends to shield ginneries from price volatility of lint.

The current seed cotton pricing mechanism failed neither to reward farmers when export prices increase since the indicative price becomes a price ceiling in this case nor to protect ginneries when world prices of lint decline. For both, this represents a significant source of risk. The CDO may consider establishing a cotton price stabilizing fund to cater for, among other things, the gap between the indicative price and the actual ruling world price to replace the indicative prices, i.e., the farmgate price of seed cotton to be determined by the market. The fund, then, provides a price subsidy to growers when the world price falls below a reasonably established price floor.

The relevant market development gap for cotton in Uganda is access cost gaps at the point of competition and the farm gate measured by the difference between the observed and adjusted access costs at each point. In the case of cotton, the market development gap measures the ability of the market participants at each level to generate profit margin above what is considered as normal profit (10 percent). As Table 9 indicates, exporters seem to extract little profit margin above the normal except the last two seasons. In contrast, the access cost gap at farm gate dominated by the excess profit to ginneries was declining since 2008. According to the estimate presented in Table 11, the market development gap is estimated at 12.9 to 17.4 percent. This gap consists mostly of the excessive profit margin at the point of competition for ginneries and the CDO tax. If both are eliminated, the farmgate price may increase by the corresponding amounts.

Figure 8: Observed and adjusted nominal rate of protection at farm gate and point of competition



Source: Authors' calculations using data as described above.

Table 9: MAFAP Market Development Gaps for Cotton in Uganda, 2005-2011 (USD per tonne)

	2005	2006	2007	2008	2009	2010	2011
Trade status for the year		x	x	x	x	x	
International markets gap (IRG)							
Exchange policy gap (ERPG)							
Access costs gap to point of competition (ACG_{wh})	-28,490.7	-40,292.0	-38,606.2	-56,774.7	-43,046.4	-69,246.33	-190,357.5
Access costs gap to farm gate (ACG_{fg})	-39272.7	-47,285.0	-48,468.4	-70,395.4	-66,774.1	-89,866.9	-197,056.7
Market Development Gap (%)	-16.4%	-15.7%	-15.9%	-16.4%	-17.4%	-17.1%	-12.9%

ND: No data available for calculation

Source: Own calculations using data as described above

PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

MAIN MESSAGE

Cotton pricing in Uganda is the most important policy directly affecting the cotton sector and influence farmers' incentives. A number of studies indicated the strong response to price incentives to cotton growers in Uganda. The objective of the current cotton marketing system, administered by CDO, is to assist cotton growers in receiving higher share of world prices of lint. The positive observed price gaps and nominal rates of protection at the farm gate suggest that the system of indicative prices is apparently effective in protecting growers from negative shocks as the observed price gaps and nominal rates of protection appears to be transparent. However, the negative adjusted price gaps and nominal rates of protection suggest that the system needs to be updated frequently for prices that are consistent with world prices.

Frequent update of the indicative prices will mean higher prices for growers when world prices increase and thus limiting the ability of both exporters and processors to extract above normal profits from growers. On the other hand, this may also result in lower farm gate prices when world prices decline. In this case, some form of stabilization fund supported by levies on cotton sales may need to be introduced.

PRELIMINARY RECOMMENDATIONS

To reduce the disincentives resulting from ability of ginners and exporters to extract above normal profit, the analysis suggest that the indicative price be updated more frequently during the season.

LIMITATIONS

Although CDO maintains excellent data sets on its web site, cotton prices at the point of competition are not published. The data used here is obtained from a single ginnery.

FURTHER INVESTIGATION AND RESEARCH

No further analysis is required.

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ANNEX I: Methodology Used

A guide to the methodology used by MAFAP can be downloaded from the MAFAP website or by clicking [here](#).

ANNEX II: Data and calculations used in the analysis

DATA			Year	2005	2006	2007	2008	2009	2010	2011
	Unit	Symbol	rate status	x	x	x	x	x	x	x
Benchmark Price	Observed	US \$/TON	P _{b(intS)}	348	428	446	598	456	601	1,439
	Adjusted	US \$/TON	P _{ba}							
Exchange Rate	Observed	USh/US \$	ER _o	1,781	1,831	1,723	1,720	2,030	2,178	2,453
	Adjusted	USh/US \$	ER _a							
Access costs border - point of competition	Observed	USh/TON	ACo _{wh}	9,972	14,102	13,512	19,871	15,066	24,236	66,625
	Adjusted	USh/TON	ACa _{wh}	-	-	-	-	-	-	-
Domestic price at point of competition		USh/TON	P _{dwh}	609,373	769,200	755,243	1,009,594	910,866	1,285,259	3,462,397
Access costs point of competition - farm gate	Observed	USh/TON	ACo _{fg}	246,616	271,982	268,410	322,894	361,123	467,690	722,466
	Adjusted	USh/TON	ACa _{fg}	207,343	224,697	219,942	252,499	294,349	377,823	525,409
Farm gate price		USh/TON	P _{dfg}	350,000	450,000	450,000	750,000	650,000	900,000	2,300,000
Externalities associated with production		USh/TON	E	-	-	-	-	-	-	-
Budget and other product related transfers		USh/TON	BOT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quantity conversion factor (border - point of competition)		Fraction	QT _{wh}							
Quantity conversion factor (border - point of competition)		Fraction	QL _{wh}							
Quantity conversion factor (point of competition - farm gate)		Fraction	QT _{fg}							
Quantity conversion factor (point of competition - farm gate)		Fraction	QL _{fg}							

CALCULATED PRICES			Unit	Symbol	2005	2006	2007	2008	2009	2010	2011
Benchmark price in local currency	Observed	USh/TON	P _{b(locS)}		619,344	783,302	768,756	1,029,465	925,933	1,309,496	3,529,022
	Adjusted	USh/TON	P _{b(locS)a}		619,344	783,302	768,756	1,029,465	925,933	1,309,496	3,529,022
Reference Price at point of competition	Observed	USh/TON	RPo _{wh}		609,373	769,200	755,243	1,009,594	910,866	1,285,259	3,462,397
	Adjusted	USh/TON	RPa _{wh}		619,344	783,302	768,756	1,029,465	925,933	1,309,496	3,529,022
Reference Price at Farm Gate	Observed	USh/TON	RPo _{fg}		362,757	497,218	486,833	686,700	549,743	817,569	2,739,931
	Adjusted	USh/TON	RPa _{fg}		412,001	558,605	548,814	776,966	631,584	931,672	3,003,613

INDICATORS			Unit	Symbol	2,005	2,006	2,007	2,008	2,009	2,010	2,011
Price gap at point of competition	Observed	USh/TON	PGo _{wh}		-	-	-	-	-	-	-
	Adjusted	USh/TON	PGa _{wh}		(9,972)	(14,102)	(13,512)	(19,871)	(15,066)	(24,236)	(66,625)
Price gap at farm gate	Observed	USh/TON	PGo _{fg}		(12,757)	(47,218)	(36,833)	63,300	100,257	82,431	(439,931)
	Adjusted	USh/TON	PGa _{fg}		(62,001)	(108,605)	(98,814)	(26,966)	18,416	(31,672)	(703,613)
Nominal rate of protection at point of competition	Observed	%	NRPo _{wh}		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	Adjusted	%	NRPa _{wh}		-1.61%	-1.80%	-1.76%	-1.93%	-1.63%	-1.85%	-1.89%
Nominal rate of protection at farm gate	Observed	%	NRPo _{fg}		-3.52%	-9.50%	-7.57%	9.22%	18.24%	10.08%	-16.06%
	Adjusted	%	NRPa _{fg}		-15.05%	-19.44%	-18.00%	-3.47%	2.92%	-3.40%	-23.43%
Nominal rate of assistance	Observed	%	NRAo		-3.52%	-9.50%	-7.57%	9.22%	18.24%	10.08%	-16.06%
	Adjusted	%	NRAa		-15.05%	-19.44%	-18.00%	-3.47%	2.92%	-3.40%	-23.43%

Decomposition of PWAfg			Unit	Symbol	2005	2006	2007	2008	2009	2010	2011
International markets gap		USh/TON	IRG		-	-	-	-	-	-	-
Exchange policy gap		USh/TON	ERPG		-	-	-	-	-	-	-
Access costs gap to point of competition		USh/TON	ACG _{wh}		(9,972)	(14,102)	(13,512)	(19,871)	(15,066)	(24,236)	(66,625)
Access costs gap to farm gate		USh/TON	ACG _{fg}		(39,273)	(47,285)	(48,468)	(70,395)	(66,774)	(89,867)	(197,057)
Externality gap		USh/TON	EG		-	-	-	-	-	-	-
Market Development Gap		USh/TON	MDG		(49,244)	(61,387)	(61,981)	(90,267)	(81,840)	(114,103)	(263,682)
Market Development Gap		%	MDG		-12.0%	-11.0%	-11.3%	-11.6%	-13.0%	-12.2%	-8.8%



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