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## Working Paper

Cotton-based development in Sub-Saharan Africa? Global commodity chains, national market structure and development outcomes in Burkina Faso, Mozambique and Tanzania

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## **Cotton-based development in Sub-Saharan Africa? Global commodity chains, national market structure and development outcomes in Burkina Faso, Mozambique and Tanzania**

Vienna, June 2015

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Bernhard Tröster, Austrian Foundation for Development Research (ÖFSE)

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## List of Abbreviations

AAM	Mozambique Cotton Association
ACTIF	African Cotton and Textile Industry Federation
APROCOB	Association of Cotton Companies
BCI	Better Cotton Initiative
CDF	Cotton Development Fund
CDTF	Cotton Development Trust Fund
CFDT	Compagnie Francaise pour le Developpement des Fibres Textiles
CmiA	Cotton made in Africa
COPACO	French company Compagnie Cotonniere
ESA	East and Southern Africa
EU	European Union
FONPA	Formula by Both Farmers
IAM	Mozambique Cotton Institute
ICE	Intercontinental Exchange
MINAG	Ministry of Agriculture
SAPs	Structural Adjustment Programmes
SSA	Sub-Saharan Africa
TACOGA	Tanzania Cotton Growers Association
TCA	Tanzania Cotton Association
TCB	Tanzania Cotton Board
TCMB	Tanzania Cotton Marketing Board
VGs	Village Groups
WCA	West and Central African

## Abstract

Cotton is one of the most important cash crops in Sub-Saharan Africa (SSA) and has had an important role in job creation, poverty reduction and foreign exchange generation. SSA cotton exporters face particularly three interconnected challenges – how to increase yields and quality in the context of small holder farming; how to deal with volatile international prices; how to increase value addition through local processing. This paper analyses the cotton sectors in Burkina Faso, Mozambique and Tanzania along these challenges focusing on dynamics in global cotton commodity chains, different national market structures and related development outcomes. The aim of the paper is not to identify the best cotton sector organisation model but to point out issues that are important for positive development outcomes. The analysis shows that the more regulated systems in Burkina Faso and Mozambique generally outperform the liberalized system in Tanzania in terms of production levels, yields, input provision, and price stability. But there are also major differences among the more regulated systems with Burkina Faso faring substantially better in yields and farmers' price share. The state, however, also bears a greater risk in Burkina Faso through its involvement in the largest cotton company and the stabilisation fund. The system in Tanzania provides similar farmers' price shares as in Burkina Faso albeit with higher price instability and inequality. Tanzania has been further most successful in value addition which, however, cannot be attributed to the cotton sector market structure but primarily to a stronger manufacturing tradition. The institutional context in the cotton sector, particularly strong and independent farmers' associations, have a crucial role in all models to ensure that farmers' interests are respected.

**Keywords:** commodity-based development; cotton; price instability; value addition; Burkina Faso, Mozambique, Tanzania

## Executive summary

**Context and objectives:** Cotton is one of the most important cash crops in Sub-Saharan Africa (SSA) and has had an important role in job creation, poverty reduction and foreign exchange generation. SSA cotton exporters face particularly three interconnected challenges: First, how to increase yields and quality and hence achieve higher incomes in the context of small holder farming; second, how to deal with volatile international prices and hence external vulnerability; third, how to increase value addition through local processing of cotton lint and seed. This paper analyses the cotton sectors in Burkina Faso, Mozambique and Tanzania along these challenges focusing on dynamics in global cotton commodity chains, different national market structures and related development outcomes and asking what can be learnt from the similarities and differences in these countries for policy. The aim of the paper is not to identify the best cotton sector organization model but to point out issues that are important for positive development outcomes.

**Dynamics in global cotton commodity chains:** International traders and their strategies play a key role in global cotton trade as they handle the large majority of internationally traded cotton and govern cotton commodity chains. Cotton companies in SSA do not sell directly to spinners but through international traders. Some international traders have also invested in ginneries in producer countries in SSA and purchase directly from farmers. Global cotton prices are derived from the Cotlook A Index (based on quotes from international traders) and cotton futures prices at the Intercontinental Exchange (ICE) in New York. These two highly correlated prices are used as a reference in physical contracts with international traders increasingly preferring futures prices. Hence, developments on commodity derivative markets where futures prices are set are transferred along the cotton chain directly impacting on national prices and farmers' income. In particular in the context of financialisation, i.e. the increasing importance of financial investors on these markets, there is an ongoing debate on the impact of their trading strategies on distorting cotton prices and increasing volatility and short-terminism.

**Differences in national market structure:** Since the 1980s and 1990s cotton sectors (along the agriculture sector more general) have been liberalized in SSA in the context of structural adjustment programmes (SAPs). However, market reform has taken place to different extents. As in most West and Central African (WCA) countries, Burkina Faso pursued a sequenced reform approach with still strong state involvement and the earlier parastatal playing a dominant role. There are three regional monopoly cotton companies with fixed panterritorial and panseasonal prices, a guarantee of purchase and organised input provision. Mozambique has a regional concession system with private actors dominating (the only concession system in East and Southern Africa, ESA). There are eleven regional monopolies, fixed minimum prices, a guarantee of purchase and organised input provision. Tanzania pursued far reaching reforms and has the most liberalized cotton sector in SSA. A large number of private companies compete in buying seed cotton, ginning and marketing.

**Development outcomes:** The analysis shows that the more regulated systems in Burkina Faso and Mozambique generally outperform the liberalized system in Tanzania in terms of production levels, yields, input provision, and price stability. This is particularly explained by challenges in supporting long term relationships between farmers and cotton companies which limits investment in productivity improvements and input provision and by the higher exposure of small holder farmers to global price instability in the liberalized system. But there are also major differences among the more regulated systems with Burkina Faso faring substantially better in yields and farmers' price share. These results show that the precise mechanisms applied in regulated systems and the institutional context are important in ensuring the potential advantages of regulated systems for farmers. The state, however, also



bears a greater risk in Burkina Faso through its involvement in the largest cotton company and the stabilisation fund. The system in Tanzania provides similar farmers' price shares as in Burkina Faso albeit with higher price instability and inequality. Tanzania has been further most successful in value addition which, however, cannot be attributed to the cotton sector market structure but primarily to a stronger manufacturing tradition.

**Contract farming:** In the context of small holder farmers, sector models which ensure long term relations between farmers and cotton companies in the form of contract farming and have procedures in place to monitor these arrangements are most effective. Such systems can ensure access to inputs, equipment and extension services as well as implementation of standards and to a certain degree price security for farmers. The government has an important role in such arrangements in setting and monitoring performance indicators. Some type of regulated concession system as in Burkina Faso and Mozambique is most conducive for contract farming. Also market-based contract farming schemes can be effective but they have larger problems with avoiding side selling and buying. Cotton contract farming systems have also impacts outside of the cotton sector as small holder farmers plant cotton along with other cash and food crops. As most of these sectors are less regulated and contract farming systems less prevalent, inputs received through planting cotton are also used for other crops linking specifically food production to cotton input provision systems. While this reduces productivity in the cotton sector it is a reality that has to be taken into account and supports local food production and security.

**Price stabilization:** Price instability is a major concern for small holder farmers and independent cotton companies that have limited access to price risk management strategies. This problem has been exacerbated in recent years by high price volatility and increased amplitude and speed of price changes in the context of financialization of commodity derivative markets. The extent to which volatile global prices are transmitted to producers depends on the market structure. Inter-seasonal price volatility is a reality in all countries explaining the large fluctuations of cotton production as farmers adapt their crop mix to price expectations. Within seasonal price volatility is however a much larger concern in Tanzania than in Burkina Faso and Mozambique. A price stabilization scheme at the national level is an effective way to cushion intra-seasonal price risks for farmers. A good example is the price system in Burkina Faso that is aligned to world prices, ensures price stability for farmers over the whole season but also a high share of world prices (through a potential post-season premium), and provides a smoothing fund to cope at least partly with the price risk accrued to cotton companies. The minimum price system in Mozambique is less effective. While it secures a minimum price, the share of world prices going to farmers is comparatively low and the actual minimum price is only fixed before marketing reducing price security for farmers. In Tanzania the price share going to farmers is similar to Burkina Faso but there is substantial price instability and inequality. An indicative price is set at the beginning of marketing but it is not binding and subject to adaptations during the marketing season.

**Institutional context:** The institutional context and specifically strong and independent farmers' associations have a crucial role in all systems to ensure that farmers' interests and rights are respected. This is challenging given the asymmetric power structures between small holder farmers and cotton companies and particularly international traders that have much broader access to information and resources. At the national level, asymmetries can be mediated through farmers' representation that can negotiate with buyers and the government, and improve access to information, resources and services, as well as through tripartite institutional structures. In the concession systems in Burkina Faso and Mozambique, requirements and responsibilities of farmers and cotton companies are largely negotiated in a tripartite structure. In Burkina Faso the farmers' union has an important role in the sector and owns shares of the three cotton company. However, there is still concern that the

union is too close to the cotton companies and has limited negotiating capabilities. In Mozambique and Tanzania this concern is more acute given the weak and relatively young role of farmers' associations. In all systems, strengthening of farmers' associations and improving tripartite institutional structures are important to mediate national and global power asymmetries.

**Value addition:** Value addition is of crucial development importance but goes beyond the cotton sector organization model as its performance cannot be attributed to the cotton sector market structure but primarily to different manufacturing traditions and liberalization policies. Processing of cotton lint has been limited in all three countries with Tanzania being most successful given its local textile and apparel sectors. Limited textile and apparel production is related to local capabilities, costs and infrastructure as particularly textile production is capital and energy intensive, as well as to the important role of international traders as they are not interested in local processing but in trading cotton lint internationally. But there are still opportunities particularly in local and regional markets that are currently largely served through Asian imports or second hand clothing from Europe. One way for independent cotton companies of getting less dependent on international traders and increasing value addition in the region is to build direct relationships to regional spinners. This strategy has been successful in Mozambique with rising direct sales to Mauritian spinners. In Tanzania, regional trade could be particularly extended to Kenya and Ethiopia which have the largest textile and apparel sectors in East Africa. In Burkina Faso this potential is more limited but some countries such as Nigeria and Ghana still have formal textile and apparel sectors. At the cotton seed side, value addition through producing oil and cake is more developed with local processing being widespread in Burkina Faso and Tanzania but limited in Mozambique.

**Coordination in SSA region:** The issues discussed above could be supported through regional coordination and integration. This can involve lessons learnt from different country experiences but more importantly joint policy initiatives in the areas of contract farming, price stabilization, farmers' organization, and value addition. This is most important regarding value addition as individual countries face difficulties in establishing an entire chain from cotton to textiles and apparel to retailing, and hence the complementary advantages of countries could be leveraged. Intra-regional trade and commodity chains must be actively promoted by facilitating partnerships between cotton companies, textile mills, apparel factories and regional buyers. Regional associations such as the African Cotton and Textile Industry Federation (ACTIF) play a crucial role in this regard. Also for price stabilization, regional stabilization funds could support national smoothing funds. Even though price risks go in the same direction in participating countries this could make the management of funds less influenced by national political considerations. Further, the tackling of general problems facing the SSA cotton sector such as its negative image in world markets, the improvement of agricultural practices and the implementation of standards such as Better Cotton Initiative (BCI) and Cotton made in Africa (CmiA) could be effectively supported at a regional level. And most importantly power asymmetries in global cotton commodity chains can be mitigated more effectively if SSA cotton producers join forces.

# 1. Introduction

Cotton is one of the most important cash crops in Sub Saharan Africa (SSA) and has had an important role in job creation, poverty reduction and foreign exchange generation. With coffee, it is the most important export cash crop (before sugar, oil seeds, nuts, tea and spices) and accounted for 10.5 % of total SSA agricultural exports in 2013. It is an essential cash crop in more than one third of SSA countries and one upon which millions of small holder farmers and rural households depend for their livelihood. Hence, developments in the cotton sector play a crucial role in poverty reduction. There are, however, fundamental differences in the economic weight of national cotton systems in SSA with cotton enjoying an economic importance in West and Central Africa (WCA) far exceeding that in East and Southern Africa (ESA).

SSA countries dependent on the export of one or few cash crops face particularly three interconnected challenges: First, how to increase yields and quality and hence achieve higher incomes in the context of small holder farming that accounts for the majority of the agriculture economy in SSA; second, how to deal with volatile international prices and hence external vulnerability; third, how to increase value addition through local processing and/or input provision. These issues are connected. In the context of high price instability farmers try to manage risk and maximize their income by switching between different cash and food crops or varying the use of inputs with important implications on production volumes, yields and quality as well as on the sustainability of processing and input provision activities.

Cotton in SSA is no exception:

- Cotton production in SSA largely involves small holder farmers – with a very small number of large commercial farmers – that plant cotton along with other cash and food crops. Cotton is largely rain fed with negligible areas of irrigated production. These small holder farmers have generally difficulties in accessing credit and extension services and buying seed and other inputs such as pesticides, fertilizers and related equipment and machines. Improving the productivity and incomes of these farmers is of key importance in achieving poverty reduction.
- International cotton prices are very volatile. This has been the case historically but the amplitude and speed of price changes have increased since the past decade related to the financialisation of commodity derivative markets, i.e. the increased presence of financial investors on these markets. Given that many producer countries dismantled price stabilization schemes in the 1980s and 1990s, unstable global prices affect national prices and farmers' incomes directly. Dealing with price instability is therefore crucial to sustain cotton production and ensure incomes for small holder farmers.
- SSA is a marginal consumer of cotton, exporting the large majority of cotton in unprocessed form, mostly through international traders. On the other side, the main final products based on cotton – textile and apparel – are imported from Asia or in the form of second hand clothing from Europe. Increasing processing of cotton lint and seed is crucial to further local value addition and diversification, generate employment, improve the trade balance, and reduce external vulnerability which are all major developmental challenges in cotton producing SSA countries.

This paper analyses the cotton sectors in Burkina Faso, Mozambique and Tanzania along these challenges focusing on dynamics in global cotton commodity chains, different national market structures and related development outcomes and asking what can be learnt from the similarities and differences in these countries for policy. Cotton is an important cash crop

in all three countries accounting for 17.7 % of exports in Burkina Faso (after gold<sup>1</sup>), 2.5 % in Mozambique (after minerals, tobacco, sugar and ships) and 2.3 % in Tanzania (after minerals, cashew nuts, coffee, oil seeds and fish) being the number two, nine and seven export good, respectively, in 2013. The sector plays an important role in poverty reduction in all three countries providing livelihoods directly to around 350,000 small holder farmers in Burkina Faso<sup>2</sup>, 250,000 in Mozambique<sup>3</sup> and 425,000 in Tanzania<sup>4</sup>, and many more indirectly.

The national market structure of the cotton sector differs in the three countries. Since the 1980s and 1990s cotton sectors (along the agriculture sector more general) have been liberalized in SSA in the context of structural adjustment programmes (SAPs). However, market reform has taken place to different extents. As in most WCA countries, Burkina Faso pursued a sequenced reform approach with still strong state involvement and the earlier parastatal playing a dominant role. Mozambique has a regional concession system with private actors dominating (the only concession system in ESA). Tanzania pursued far reaching reforms and has the most liberalized cotton sector in SSA.

The paper is based on trade and industry data, interviews with international traders and cotton associations, and fieldwork in Burkina Faso (September 2014) and Mozambique (November 2014). During fieldwork, semi-structured interviews were conducted with ginners, ginners' associations, farmers' organizations, relevant government institutions, and input providers and processing firms. For Tanzania selected telephone interviews were conducted with selected actors in the cotton sector in early 2015.<sup>5</sup>

The paper is structured in six sections. Section two discusses global cotton commodity chains with a focus on the role of international traders and commodity derivative markets. The next section gives an overview of national cotton systems in SSA. The fourth section discusses the market structure in the cotton sectors in Burkina Faso, Mozambique and Tanzania along the dimensions (i) development, (ii) marketing system, (iii) cotton companies, and (iv) price setting. The fifth section analyses and compares development outcomes in the three countries along the dimensions (i) production, performance and input provision, (ii) price level, stability and risks, and (iii) value addition. The last section concludes and discusses implications for policy.

## 2. Global cotton commodity chains

Cotton is one of the rare agricultural products for which both production and consumption is more or less global in extent (Larsen 2008). Cotton is produced in 81 countries by around fifty million farmers. Among cash crops, cotton has the largest area of production in the world and the largest trade volume (Caliskan 2010). Although world cotton production is dominated by developed countries and China (the largest producer), the sector has a major role in developing countries, particularly in SSA, as a share in GDP, export revenues and generating cash income for millions of small holder farmers. Table 1 shows the top 20 cotton exporter countries with the US, India, Australia, Brazil and Uzbekistan being the top five exporters in

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<sup>1</sup> Cotton has historically been the number one export crop accounting for up to 60 % of exports. This changed however with gold being found in Burkina Faso in 2008 that has increased importantly in export shares accounting for around 50 % of total exports in 2013.

<sup>2</sup> The World Bank estimates that between 15 to 20 % of the labor force derives its income directly from cotton (Kaminski 2011).

<sup>3</sup> 1.2 million people are supported indirectly by cotton production (IAM 2014).

<sup>4</sup> It is estimated that cotton contributes directly or indirectly to the livelihoods of about 40 % of the population (George 2012).

<sup>5</sup> Data or statements without references in the text are based on these interviews.

2013. Within the top 20 exporters are eight SSA countries, including Burkina Faso, Mali, Ivory Coast, Benin, Tanzania, Cameroon, Zimbabwe and Mozambique.

**Table1: Top 20 cotton exporters (HS 5201 & 5203, in million USD)**

Exporters	2000	2005	2010	2011	2012	2013	Market share 2013
United States	1,922	4,067	5,512	9,375	6,601	5,898	32.5 %
India	41	348	3,201	4,191	3,543	3,032	16.7 %
Australia	862	693	993	2,630	2,653	2,494	13.8 %
Brazil	13	431	958	1,790	2,479	1,379	7.6 %
Uzbekistan	870	1,030	1,139	934	752	610	3.4 %
Greece	276	300	494	359	575	563	3.1 %
<b>Burkina Faso</b>	84	246	287	394	360	422	2.3 %
<b>Mali</b>	186	230	179	279	423	333	1.8 %
Turkmenistan	154	88	285	186	104	306	1.7 %
<b>Cote d'Ivoire</b>	186	115	171	190	243	258	1.4 %
Pakistan	122	118	271	404	408	193	1.1 %
<b>Benin</b>	141	168	123	156	189	181	1.0 %
<b>Tanzania</b>	36	108	145	98	159	174	1.0 %
<b>Cameroon</b>	70	105	121	151	195	172	0.9 %
<b>Zimbabwe</b>	143	147	126	228	195	141	0.8 %
Egypt	203	262	208	310	186	140	0.8 %
Mexico	40	49	66	197	182	136	0.7 %
Afghanistan	2	1	61	32	68	127	0.7 %
Turkey	37	55	89	160	134	125	0.7 %
<b>Mozambique</b>	34	27	41	54	52	116	0.6 %

Source: UN COMTRADE.

The cotton commodity chain includes various actors involved in the production, marketing, trading and processing of cotton, including seed research institutions, input suppliers, cotton farmers, ginners, local traders and exporters, international traders and at the processing stage spinners, weavers, knitters and apparel manufacturers. Cotton is particularly input demanding with the most important inputs being seeds, pesticides and fertilizers and vulnerable to a large number of pests. The seed cotton from producers needs to be ginned before exporting where the cotton lint is separated from cotton seed. The seeds are processed to oil, animal feed (cake) and soap while the lint is used for textile and apparel production. Governments play an important role in the cotton sector – through regulating national production and marketing structures (see below for SSA) and through subsidies and other support for cotton producers that have been greatest in China, the US and the EU.

International traders play a key role in global cotton trade handling the large majority of internationally traded cotton and governing cotton commodity chains. They act as intermediaries between producers/ginners and spinning mills, providing purchasing services to producers/ginners and buying services to spinners, arranging transport to destination and guaranteeing performance for sellers and buyers (Larsen 2008). The dismantling of centralized marketing systems in many cotton producing countries (see below) has led to ginners and

exporters being fragmented. In this context, some international traders have also invested upstream in ginneries to secure supply and are involved in purchasing from farmers (Larsen 2008; ICT 2013). The latest list of cotton trading companies consists of 443 firms engaged in international cotton trade. The largest ten companies traded 23 % of world production in 2013 which has consolidated but is still less concentrated than in other agricultural crops (Table 2; ICAC 2014). In the context of tightened credit conditions and declining cotton demand during the global economic crisis, large multi-commodity trading firms with wider access to resources like Louis Dreyfus, Cargill, Olam and Ecom increased in importance at the expense of traditional single-commodity firms (ICAC 2009, 2014).

**Table 2: Top international cotton traders (annual volume more than 200,000 tons)**

Company Name	Country	Type	Multi commodity	Active in SSA	Affiliates in SSA
Louis Dreyfus Commodities	Netherlands	Private	X	X	
Cargill Cotton	USA	Private	X	X	X
Olam International	Singapore	Private	X	X	X
Staple Cotton Cooperative Association	USA	Cooperative			
Ecom USA	USA	Private	X	X	
Chinatex	China	Government	X	X	
Paul Reinhart	Switzerland	Private		X	X
Toyo Cotton	Japan	Private	X	X	
MFERIT (Uzinterimpex, Uzmarkazimpex and Uzprommashimpeks)	Uzbekistan	Government	X		
Plexus Cotton	UK	Private		X	X

Source: ICAC 2014.

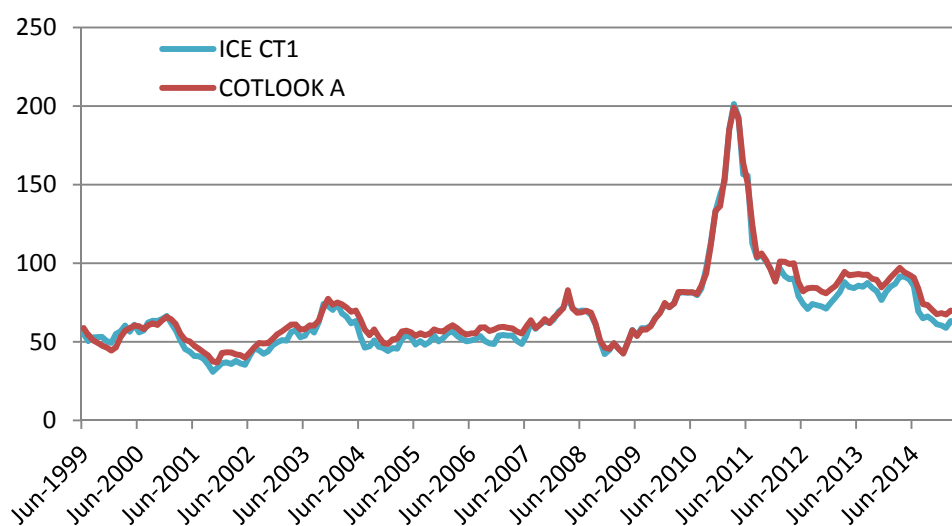
Global cotton prices are derived from the Cotlook A Index and cotton futures prices at the Intercontinental Exchange (ICE) in New York. Prices in physical cotton contracts vary because of differences in quality, location, delivery schedule, local supply and demand conditions and bargaining power. But these two international prices are used as a reference in physical trade. The Cotlook A Index is compiled daily by Cotton Outlook, a private company in Liverpool, by collecting quotations from cotton traders.<sup>6</sup> As quoted prices are not prices at which actual transactions take place some actors are skeptical towards the Cotlook A Index and prefer futures prices as a reference as they represent actual transaction prices. But more importantly, international traders increasingly prefer using ICE futures prices as a reference as they use derivative markets for hedging. For hedging to be effective (by taking the opposite position to the physical position on derivative markets) physical prices have to reflect futures prices. Hence, the role of derivative markets in price setting in producer countries has increased despite important basis risk as ICE futures are based on cotton grown in the US, reflecting primarily U.S. conditions (ICAC 2001; Baffes 2002).<sup>7</sup>

<sup>6</sup> It represents the average of the five lowest quotations of 19 types of cotton (Middling 1 -3/32") from the following origins: Australia, Brazil, China, Francophone Africa, Greece, India, Mexico, Pakistan, Paraguay, Spain, Syria, Tanzania, Turkey, the US and Uzbekistan (Baffes 2002).

<sup>7</sup> To address this problem, after years of debates, a world cotton futures contract is planned to be listed on the ICE underpinned by cotton grown in Australia, Brazil, India, the US and West Africa (Benin, Burkina Faso, Cameroon, Ivory Coast, Mali). The new contract would allow deliveries to the US, Australia, Malaysia and Taiwan (Meyer 2014). But it still has to be seen if this contract will be widely traded and hence has enough liquidity to be used as a reference in price setting and for risk management.

Global cotton prices have been less booming and volatile than other commodity prices in the 2000s but there were unprecedented peaks in 2008 and 2011 followed by a sharp decline (Figure 1). Figure 1 also shows that the Cotlook A Index and ICE futures prices are highly correlated as traders take into account ICE closing prices for their quotations.<sup>8</sup> These price dynamics are related to fundamental demand and supply factors, most importantly production conditions in main exporter countries (including weather), demand in leading import countries (particularly in the textile industry) and cost of substitutes such as man-made fibre. But there is a debate whether the financialisation of commodity derivative markets, i.e. the increasing importance of financial investors (investment banks, hedge funds, institutional investors) that invest in commodities as an asset class, has had an impact on prices and particularly volatility (for an overview see Ederer et al. 2013). Most actors in the cotton sector state that prices are, particularly in the short term, also influenced by trading strategies of financial investors – in addition to fundamental factors. Further, the strong presence of financial investors has changed the microstructure of commodity derivative markets leading to increased short-terminism, speed and complexity (see Heumesser/Staritz 2013).

**Figure 1: Monthly ICE futures and Cotlook A index**



Source: ICE and Cotlook.

### 3. Diversity in national cotton systems in SSA

Historically, cotton production in SSA has had a close relation with colonialism. Cotton production was promoted through state monopolies, in Francophone WCA by the French government-owned Compagnie Francaise pour le Developpement des Fibres Textiles (CFDT) and in the Anglophone countries of ESA by parastatal marketing boards or cooperative unions (Larsen 2008). Public agencies had a monopsony in cotton buying, and most also a monopoly in primary processing, marketing, and supplying of inputs. Further, there were administered prices. These structures were sustained after independence. This includes the role of CFDT in WCA that became a shareholder in cotton parastatals (Baffes 2007). Farmers were guaranteed fixed output markets and prices set in advance of the planting season on a panseasonal and panterritorial basis and parastatal cotton boards or cooperatives had monopolies in purchasing seed cotton, ginning and marketing (Larsen 2008).

<sup>8</sup> The correlation between the monthly returns of the Cotlook A Index and of the nearby ICE futures contract between January 2008 and April 2015 was more than 91 % (own calculation based on ICE and Cotlook data).

Most public monopolies have been abolished through privatization and liberalization since the implementation of market reforms in the 1980s and 1990s, often in the context of SAPs and with the support of the World Bank and other development institutions. Reform processes generally entailed disengaging the state, facilitating greater involvement of the private sector and producer organizations, and ensuring greater competition in input and output markets. But this has taken place to varying degrees and there remains diversity in market organization and regulation across countries in SSA (Delpeuch/Leblois 2011; Tschirley et al. 2008, 2009). In most WCA countries, the cotton sector continues to be organized around a state dominated, single channel marketing system; elsewhere the sector has been liberalized and private operators dominate. These differences are related to the much higher economic weight of national cotton systems in WCA where cotton sector liberalisation and privatisation have therefore been more closely managed and less far reaching (Gibbon 2011).

Three types of systems can be differentiated today in SSA (Table 3; based on Tschirley et al. 2009; Peltzer/Röttger 2013):

- a national or regional concession (or monopoly) model, in which a cotton company has the monopoly right and obligation to buy and market cotton either over the whole territory of the country or over a certain region with a single marketing channel for inputs and outputs;
- a concentrated competition model, in which few cotton companies dominate the sector in a competitive market among smaller companies where farmers can choose the cotton company to sell to; and
- a competitively structured system, in which many ginners compete for market share without a share of them having a dominant position.

The Francophone WCA countries can be classified as concession systems with varying degrees of state involvement. The systems are highly regulated and dominated by state agencies but private companies have entered the ginning and marketing stage (Larsen 2008; Poulton et al. 2004). In all EAC (including non-French West African countries Ghana, Nigeria, DRC), parastatal cotton marketing boards have been dismantled and private companies now dominate input supply, buying, ginning and marketing activities. However, there are important differences from a regional concession system in Mozambique to concentrated market based systems in Zambia and Zimbabwe to competitive market systems in Tanzania (Tschirley et al. 2009).

**Table 3: Market structures in main SSA cotton exporters**

Concession system/Monopoly		Concentrated competition	Atomistic competition
National concession system/monopoly	Regional concession system/monopoly		
Mali (state involvement) Cameroon (state involvement)	Burkina Faso (state involvement) Mozambique (private)	Zimbabwe Zambia Ivory Coast*	Tanzania

Source: based on Tschirley et al. 2010; Peltzer/Röttger 2013.

Note: Include SSA countries exporting above US\$100 million of cotton in 2013; Benin is not in the table as it has a hybrid system. \*Ivory Coast had a monopolistic system for many years but changed to concentrated competition in 2001 with many characteristics of the monopoly system still present.

The literature on the impacts of liberalization comes to mixed conclusions (for a summary see e.g. Poulton et al. 2010; Tschirley et al. 2010; Peltzer/Röttger 2013). Main issues are the effects on yields and quality as well as on prices received by farmers. Generally it is stated that liberalization has led to benefits because of prompter payment and receipt of higher



shares of world prices by producers as a result of increased competition. Problems generally include maintaining quality standards related to problems in achieving efficient delivery of inputs and extension services to small holder farmers and supporting research into seed varieties because of difficulties in coordinating across a variety of small actors and in preventing side selling and buying (Larsen 2008; Tschirley et al. 2010). The transfer of quality control and input supply from public institutions to often numerous private players failed in most post-liberalized markets (Larsen 2008). The higher share of the final price and hence larger transmission of world to producer prices means however also that world market price instability has been transmitted to producers with price instability being a major concern of producers in liberalized cotton markets (Bargawi 2008; Bargawi/Newman 2013). In this vein, there seems to be a trade-off between coordination and competition with competitive systems expected to deliver efficiency and higher price shares to farmers but low lint quality and input provision while concentrated systems are expected to be good at delivering inputs and achieving high lint quality but deliver lower price shares to farmers (see below for a questioning of this trade-off, Tschirley et al. 2010; Poulton et al. 2010).

Contract farming arrangements<sup>9</sup> exist in different cotton systems in SSA but most widely in concession systems that are based on regulated contract farming arrangements. In competitive systems market-based contract farming exists along with more short term farmer-ginner relations. As with concession systems, a central concern of contract farming is that small holder farmers do not get a high price because of the monopolistic system in which prices are not determined through competition. Further, contract farming is criticized for being contradictory to self-organizing among farmers and for preventing farmers to participate in processing steps. On the positive side, contract farming provides pre-financed inputs and extension services to farmers which lead to higher yields and quality and guarantees access to markets (for a more detailed discussion see Peltzer/Röttger 2013). In the cotton sector, contract farming is widespread compared to other cash crops given the high input-intensity and challenges in getting access to inputs and extension service for small holder farmers as well as the bulk nature of seed cotton prior to processing which makes transportation expensive (Dana/Sadler 2012). Further, cotton seed has to be processed before exporting which cannot be done at the farmers' level given the technology and equipment needed for ginning. Hence, there exist larger scale actors in producer countries that have easier access to credit and production techniques and can use their existing relationships to farmers.

International traders play a crucial role in the trading and marketing of SSA cotton (see table 2). Until the 1980s, most cotton lint was sold by national cotton companies and marketing boards to international traders or commissioned agents that had relationships to spinners. In WCA cotton lint was sold through an exclusive sales agent – the French company *Compagnie Cotonniere (COPACO)* (a CFTD subsidiary) (ICT 2013). Also today public and private cotton companies do not sell directly to spinners (with some exception concerning sales to local and regional spinners) but through international traders. Vertical integration between traders and cotton companies has increased in SSA. This has been a longer phenomenon in WCA where some traders hold minority or majority shares in cotton companies due to the French heritage, but has also increased in ESA particularly in the last decade in order to secure supply. Affiliated cotton companies have generally more knowledge of the world cotton market and broader access to capital and other resources than independent local ginners (ICT 2013).

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<sup>9</sup> Contract farming is defined as pre-agreed supply agreements between farmers and cotton companies where cotton companies pre-finance and provide upfront inputs such as seeds, fertilizers, pesticides, extension services and sometimes also equipment and investment goods such as oxen, tractors and ploughs which is later charged against the purchase price, and organize transport (Peltzer/Röttger 2013). The price in such arrangements can be set either before the season or can be flexible (Dana/Sadler 2012).

## 4. Market structure in Burkina Faso, Mozambique and Tanzania

### 4.1. Market structure in Burkina Faso

**Development:** The parastatal cotton company Sofitex (owned by the government and CFDT) had historically a monopsony in purchasing seed cotton from farmers which allowed them to provide farmers with credit and inputs and to recuperate these loans at the time of harvest. Such input supply-credit schemes together with fixed national producer prices have been the hallmark of the cotton system in WCA (Bassett 2008). Low cotton prices in the 1980s and 1990s led to problems related to high costs and inefficiencies at Sofitex and indebtedness of farmers and their village groups (VGs). The gradual reforms in the late 1990s and 2000s included the establishment of voluntary and more market-oriented groups of producers (GPs), formation of a farmers union (UNPCB), scaling back of state control in Sofitex, partial privatisation of two regional monopolies to private cotton companies, establishment of an association of cotton companies (APROCOB), and creation of an inter-professional committee (AICB) to coordinate sector stakeholders (Kaminski et al. 2011). In the second half of the 2000s the sector experienced again difficulties related to low cotton prices (combined with high fertilizer prices), the appreciation of the Euro and the inflexible pricing mechanism which led to large losses by cotton companies. The government had to recapitalize Sofitex in 2007 (IMF 2014).<sup>10</sup> The producer price mechanism was adopted to align it more to world market prices and a new smoothing fund was established in 2007 supported by the French development agency AFD (after a previous fund became insolvent) (Kaminski 2011; Kaminski et al. 2009). In the 2012/13 season, there was a significant draw down of funds which questions its medium-term sustainability.

**Marketing system:** The sector is organized through a concentrated regional concession system with strong state involvement as the largest of the three cotton companies is largely state-owned. Cotton companies work with farmers in their respective region. Hence, there remains a single channel marketing system with cotton farmers having to supply their cotton to the cotton company in their region (exclusive purchasing right) and cotton companies having to buy from all farmers that want to sell in their region (guarantee of purchase). As common in such a contract system, cotton companies have to provide credits, inputs and extension services to farmers and are in charge of transport. Input prices are subsidized in Burkina Faso.<sup>11</sup> Hence, the system revolves around contract framing arrangements with legally binding regulations on what are the roles and responsibilities of cotton companies and farmers. The cotton companies sell all cotton lint to international traders with no direct relationships to spinners. The institutional context in the sector is well developed. At the government side there exists a Permanent Secretariat in Charge of the Monitoring of the Liberalized Cotton Sector. Cotton companies are organised in APROCOB and producers in UNPCB. In the inter-professional committee AICB, cotton-related issues are negotiated. UNPCB has a relatively strong position also given its role as a co-owner of the three cotton companies which provide access to information on their business situation and hence a better bargaining position.

**Cotton companies:** There are three cotton companies (since 2004) – a dominant state-owned company that was earlier the national monopoly retaining 80 % of cotton production (Sofitex) and two private companies that were sold from Sofitex, accounting for the rest –

<sup>10</sup> A new financial restructuring took place at Sofitex in 2012, including a re-capitalization which increased the government's share to 94.5 % (IMF 2014).

<sup>11</sup> In 2012, an inputs fund was established with the formal procedure signed in mid 2013 and the mechanism supposed to begin operations in the 2014/15 season. It is capitalized by the state and is designed to contain input costs (primarily fertilizers). The fund works by serving as a guarantee mechanism that enables cotton companies to receive input credit at lower costs and on more flexible, longer terms to be able to purchase fertilizers when the international prices are lower in the cycle. This should result in lowering input costs for companies, enabling them to sell inputs to farmers at reduced prices with less distortion from subsidies (IMF 2014).

Socoma and Faso Coton. Sofitex provides research and other supporting services to the other two companies, and has provided ginning services to them when their yields exceeded their capacity (IMF 2014). Sofitex is largely owned by the government (94.5 %) with the remaining shares by UNPCB (4.8 %) and limited shares by Gecoton (0.6 %) and local investors (0.1 %). Earlier, the government only owned 35 %, while 34 % were held by Dagrís (earlier CFDT and now Geocoton<sup>12</sup>), 30 % by UNPCB and 1 % by private local investors. In 2006/07 Dagrís was unable to fulfill its part of the recapitalization, obliging the government to increase its stake to 65.4 % and, in 2012, further on to 95.50 % (IMF 2014). Faso Coton is owned by the international trader Paul Reinhart (29 %), International Promotion Services (21 %), the Burkina transportation company SOBA (20 %), the fertilizer company Amerfert (20 %) and UNPCB (10 %). Socoma is owned by Geocoton (75 %), UNPCB (13 %) and private local investors (12 %). In all three cotton companies international traders are involved as owners. Reinhart and Geocoton own shares of Fasocoton as well as Sofitex and Socoma respectively. These traders enjoy privileged positions and sales between the cotton companies and their trade-owners are opaque (Bloomberg 2011).

**Price setting:** A fixed price is set before the season that is unique for the entire cotton growing area (panterritorial) and fixed throughout the season (panseasonal). Cotton companies have to pay this price to the farmers and hence bear the price risk during the season. The price is negotiated at the beginning of the season in April within AICB based on a formula that aims to align producer prices with global prices. Two unique features are the two tier price system and the existence of a smoothing fund (fonds de lissage). In the two tier price system farmers are paid a floor price (minus of input costs they have received at the beginning of the season) at the delivery of the seed cotton and a potential premium (ristourne) at the end of the season if the realized sales price is above the floor price. The smoothing fund – managed by a commercial bank – has the objective to reduce price risks for cotton companies.<sup>13</sup> The basic concept is that farmers are subsidized in years when prices are low, and the fund is replenished in years when prices are high. The floor price for seed cotton is 95 % of the pivot price, a reference price based on the three year (formerly seven year) average Cotlook A index taking into account the conversion rate between seed cotton and cotton lint and standard processing costs (Bellù/Tortora 2010). At the end of the season, the ex-post price of seed cotton is calculated using the average sales price during the season.<sup>14</sup> If the ex-post price is lower than the floor price, the cotton companies receive a compensating payment from the smoothing fund. If the ex-post price is between the floor price (95 %) and 101 % of the pivot price, farmers receive a premium of the difference between the ex-post price and the floor price. If the ex-post price exceeds 101 % of the pivot price, the part up to the 101 % goes to farmers, while the part exceeding the 101 % goes partly to the fund, partly to the cotton companies and partly to the farmers, according to an algorithm which considers the level of the surplus and the needs of the fund (Bellù/Tortora 2010; IMF 2014).

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<sup>12</sup> The partial privatization of Dagrís by the French government in 2008 shifted the control of Dagrís to the French holding Géocoton. This company is controlled by Advens (51 %), a French multinational corporation which owns interests in agro-industrial, logistics and transport activities in Senegal and Mali, and CMA-CGM (49 %), the world's third-largest container shipping French company (Bellù/Tortora 2010).

<sup>13</sup> Such funds were widespread in WCA but many experienced financial problems in the 1990s given the long period of low cotton prices and required re-financing (Dana/Sadler 2012). AFD proposed that the EU should launch a pilot project for a new smoothing fund in Burkina Faso. The aim was to smooth prices but not to stabilize them at an absolute level with prices negotiated based on a formula to align them with world prices, and also with contributions to and support from the fund being determined by a formula to reduce political influence.

<sup>14</sup> The formula was changed by the inter-professional committee in 2011 to not include the actual world market price over the whole season but only the two months where cotton companies sold at least 1 % of national production to international traders. This led to the removal of some of the highest price months in 2010/11 when cotton prices reached its peak because cotton companies contracted to sell most of their cotton lint before the price surged. They would have occurred major losses if the price formula had not been adapted. This change led to major protests by farmers (Bloomberg 2011).

## 4.2. Market structure in Mozambique

**Development:** The cotton sector in Mozambique has been characterized by a concession system since the early 20<sup>th</sup> century with production done by small holder farmers or, as in the last years of the colonial period, by large scale agriculture producers specialized also in other commercial crops. The sector played an important role in the colonial period where forced planting of cotton was common which explains still a somewhat difficult reputation of the sector. Cotton production declined significantly after independence and nationalization of concession companies in 1975 and later during the civil war. Despite the ongoing civil war, the sector recovered in the late 1980s with the formation of public-private joint venture companies provided with exclusive cotton buying rights within specific concession areas. With regained political stability and economic reforms in the early 1990s, private companies were given new concessions which stimulated cotton production, largely based on small holder farming. 'Pirate buying' by commercial farmers within official concession areas destabilized the concession system. In the season 2001/02, the government introduced an open concession system where farmer communities could decide to which cotton company to sell and from which to receive inputs. This system was however abandoned in the following season (Tschirley et al. 2008; Poulton et al. 2004).

**Marketing system:** The sector is organized through a regional concession system involving only private cotton companies. The cotton companies have to buy cotton from the farmers in their region and farmers have to sell to the concession holder. Further, cotton companies have to provide inputs on credit and extension services to farmers and have to buy all cotton from farmers in their region. The price paid to farmers is subject to a flat rate levy to recover the costs of supplying inputs to cotton farmers and partly to meet the operational costs of the Mozambique Cotton Institute (IAM). Hence, the system also revolves around contract farming arrangements with legally binding regulations. The cotton companies sell the majority of cotton lint to international traders with no direct relationships to international spinners. But there are direct relationships to regional spinners in Mauritius where trade has increased recently. The government agencies responsible for the sector are the Ministry of Agriculture (MINAG) and particularly IAM. IAM was created in 1991 being in charge of policy, regulation, strategy development, and dialog and coordination among cotton stakeholders. Cotton companies are organized in the Mozambique Cotton Association (AAM) founded in 1998. Farmers are organised in the National Forum of Cotton Producers (FONPA). Organisation at the farmers' level has improved but is still comparatively weak with some regions remaining with no representative structures.

**Cotton companies:** There are currently 11 private cotton companies active in the sector. Among the largest ones are three international traders – Plexus - the largest player (38 % of production), Olam – the third largest player (19 %) and China Africa – the fifth largest (8 %). Large independent cotton companies include SANAM (nr. 2, 21 %) and SAN/JFS (nr. 4, 9 %). Smaller local companies include SAM Mutuáli, Novos Operadores<sup>15</sup>, Algodão de Moçambique and CAFA. Hence, the sector is concentrated at the ginning side with the top three companies accounting for over 75 % of purchasing and marketing.

**Price setting:** There is a national minimum price that has to be paid by cotton companies to farmers. The minimum price is established by the government following a negotiated proposal based on a formula by both farmers (FONPA) and cotton companies (AAM). The formula for the minimum price includes the Cotlook A index (average of last month), exchange rate, quality differential of cotton lint, costs of freight and insurance between Mozambique and the port of destination, 2.5 % levy to finance IAM, conversion rate between seed cotton and cotton lint, value of cotton seed after deducting 12 % given to farmers for planting, and

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<sup>15</sup> Novos Operadores has no ginnery and its production is custom ginned by SANAM.

the share of producers which varies from 50 to 55 % (IAM 2014). As the other variables are largely given, negotiations focus on the share going to producers and cotton companies. The minimum price is set 1.5 to 2 months before cotton marketing (April/May). But in 2007 the system was amended by an indicative price that was agreed between cotton companies and farmers 7 to 8 months before purchasing of cotton (before planting of cotton) (October/November). The intention of this indicative price is to assist farmers in deciding on their cotton production plans. However, the actual minimum price is still only agreed in April/May making the indicative price subject to change (Dias 2012). However, so far, there has not been a downward revision of the indicative price. There is no binding supplementary payment if actual prices should be higher than the minimum price; there is also no stabilisation fund.

### 4.3. Market structure in Tanzania

**Development:** Before liberalization of the sector in 1994 cotton marketing and trade were handled by cooperative unions and primary societies that had a monopoly on cotton production and ginning. Exports were the responsibility of the government through the Tanzania Cotton Marketing Board (TCMB). Given large inefficiencies, with the Cotton Act 1994 the government eliminated the monopoly and allowed competition in cotton marketing and ginning. Fixed producer prices were replaced by indicative farm gate prices and output and input markets opened. After the reform, the share of prices going to farmers increased but liberalization led to the collapse of the input supply system with production declining (Larsen 2008; Gibbon 1999; Baffes 2004; Bargawi 2008). In view of the problems particularly regarding input provision and quality, the state through the Tanzania Cotton Board (TCB) renewed its engagement in the sector in the Cotton Act 2001 and the Cotton Development Fund (CDF), a tripartite institution bringing together cotton stakeholders focusing on supporting input provision, was founded (Bargawi 2008). In 2006 it was replaced by the Cotton Development Trust Fund (CDTF). Cotton sector development programmes were launched in 2007 and 2011. They included reforms of the regulatory structure of the sector with a focus on contract farming to particularly address farmers' lack of finance for inputs. After a pilot phase, contract farming was implemented in the 2011/12 season with more than 290,000 farmers receiving inputs on credit. These arrangements were however not renewed in the 2012/13 season contributing to a large fall in output. Problems were related to farmers and cotton companies not respecting the contracts, particularly side selling or buying and farmers not being able to pay back credits which led to resistance. Today contract farming only accounts for a small share of production – estimates amount to less than 10 %.

**Marketing system:** The sector is organised in a competitive system with many ginners that can buy from any farmer and farmers that can sell to any ginner. Hence, private companies are able to compete in buying seed cotton, ginning and marketing. Cotton companies do not have to provide inputs, credit and extension services to farmers. Farmers can sell to cotton companies (or their agents) or independent buyers that set up buying posts and collection points. The number of buyers and hence competition varies however by district. Until recently, there was no regulated contract farming scheme in place. Some cotton companies established however contract farming schemes on a market basis. Recently the TCB introduced contract farming on a larger scale with limited success. The TCB (which replaced TCMB in 2001) is the main government organization responsible for regulating and monitoring the cotton sector, registering seed cotton buyers, cotton lint exporters and ginners. The CDTF is particularly involved in programs related to input provision but is also involved in seed research. Cotton farmers are organized in the Tanzania Cotton Growers Association (TACOGA) founded in 2003. The Tanzania Cotton Association (TCA) was formed in 1997 as an association for cotton buyers and ginners, including other cotton stakeholders as associate members.

**Cotton companies:** There is a large number of private companies active in purchasing, ginning, and selling, leading to considerable competition. More than 60 ginneries are registered with the TCB but only around 40 are active – 43 ginneries were inspected and permitted to operate in the season 2012/13. The top five account for only 40 % of total seed cotton purchase and they typically change from year to year (Tschirley et al. 2009; Salm et al. 2011). There is only one international trader involved in ginning (Olam, around 10 % of production) and few large players that account for 8-16 % individually and together for 60-70 % of production. Only around five cotton companies are directly exporting cotton lint (Ngaruko/Mbilyini 2014). The cooperative societies, which earlier enjoyed state-backed monopolies, play a minimal role today. An emerging trend is that spinners establish their own ginneries, in order to ensure regular and efficient supply of cotton lint into their factories. Hence, around 50 % of ginners also do spinning.

**Price setting:** After liberalization fixed prices were replaced by indicative prices that are however not binding – paying below this price would however still disregard the Cotton Act 2001. TCB sets the indicative price for each season based on a stakeholder consultation process including associations of cotton buyers (TCA) and farmers (TACOGA). In their price proposals, TACOGA considers production costs, TCA considers costs incurred in buying and processing of seed cotton, transportation and related taxes and levies while TCB uses 60 % of the world market price (Ngaruko/Mbilyini 2014). This procedure was criticized as leading to too low indicative prices causing conflicts between farmers and the TCB. The TCB made no announcement in 2006 but indicative prices were reestablished in 2007. Indicative prices are set before the marketing opening in June but are adjusted during the marketing season. The price-setting group reconvenes as necessary to adjust the price in reaction to fluctuations of the world market price for cotton (Salm et al. 2011). For instance, in 2011, the indicative prices started at 1,100 shillings but declined to 800 shillings per kilogram (Ngaruko/Mbilyini 2014). A new system is planned to be implemented where the government will refrain from setting indicative prices but will intervene through a Crop Price Stabilization Fund to support farmers that have problems repaying loans when prices fall below a certain level. This fund was announced in May 2014 and would include cotton, coffee, cashew nuts and tobacco (Bariyo 2014).

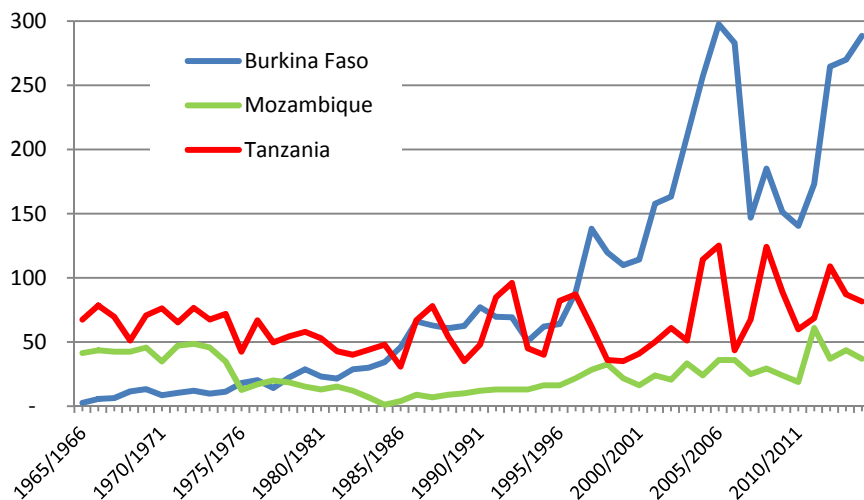
## **5. Development outcomes in Burkina Faso, Mozambique and Tanzania**

### **5.1. Production, performance and input provision**

Cotton production has strongly increased in Burkina Faso particularly since the mid 1990s from 2,613 tonnes in 1965/66 to around 290,000 tonnes in 2005/06 and 2013/14 (Figure 2). It is the largest producer of cotton today in SSA. There was however a nearly 50 % reduction in 2007/08 and production remained low until 2011/12 related to problems in the cotton sector, particularly low prices and high debts accrued by cotton companies that needed to be re-capitalized by the state. In Mozambique production has only recently reached levels of the colonial period with a peak in 60,000 tonnes in 2011/12 that declined however to around 40,000 tonnes in the next three years. In Tanzania production levels have experienced strong instability, fluctuating around 65,000 tonnes. After liberalization production reached particularly low levels of 35,000 tonnes in 1998/99 and 1999/2000. In all three countries yearly fluctuations are high which is related to farmers basing their planting decision on last or this year's prices. Given high inter-seasonal price volatility farmers switch between different cash crop and food production to try to maximize incomes and reduce risks. This is a major challenge for cotton companies that require consistent supply of seed cotton for their

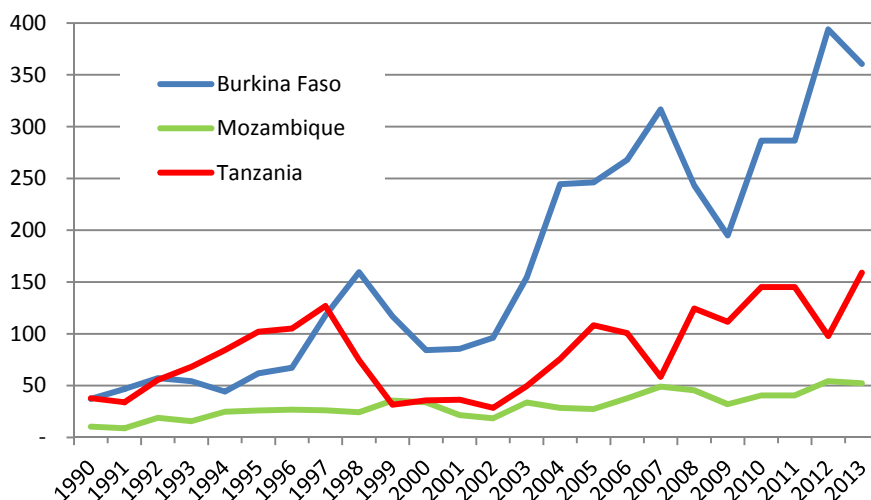
ginning capacities to be filled and fixed costs covered. Exports show a similar trend for the three countries (Figure 3).

**Figure 2: Cotton production in Burkina Faso, Mozambique and Tanzania ('000 tonnes)**



Source: USDA PSD.

**Figure 3: Cotton exports Burkina Faso, Mozambique and Tanzania (HS5201 & 5203, mn USD)**



Source: UN COMTRADE.

Yields and quality are important performance indicators in cotton systems. Yields are generally low in SSA which is a main reason for low production. The average yield of cotton in SSA is estimated to account for 343 kg of lint per hectare for the cotton season 2014/15 – much less than the world average of 758 kg of lint per hectare (USDA 2015). Several reasons explain these low yields such as the lack of access to inputs particularly fertilizers and extension services, inadequate research in new cotton seed varieties, and poor agricultural practices and pest management (ICT 2013). Further, SSA cotton is cultivated under rain fed conditions which makes production vulnerable to weather conditions. Besides these common problems in SSA, there are clear differences between cotton sector systems. This is also seen for our case countries where Burkina Faso's average yields account for 434 compared to 274 in Mozambique and 218 in Tanzania (Table 4). Burkina Faso's yields have

been high throughout the 2000s whereas Mozambique's have increased substantially from 132 in 2000/01. Tanzania's varied between 196 and 307 in the 2000s. Clearly these are averages and in all three countries there are farmers with substantially higher yields. Quality is measured based on the characteristics of the cotton fibre and the degree of contamination. The fibre properties of most SSA cotton are above those of the medium grades used in the calculation of the Cotlook A index. Contamination is a serious problem in SSA – albeit improvements have taken place – given inappropriate infrastructure and tools for picking, storage, handling and transport (Peltzer/Röttger 2013; ICT 2013).

Another important performance indicator of cotton systems beyond the farmers' site is the productivity of ginners which can be measured by the conversion ratio between seed cotton and cotton lint. It differs between the three countries accounting on average for 42 % in Burkina Faso, 38 % in Mozambique and 35 % in Tanzania. The industry world average accounts for 42 % (Dias 2012). Hence, while the output ratio corresponds with the world average in Burkina Faso, the sector in Mozambique and specifically Tanzania perform substantially poorer. This is related to poor equipment, contamination and the mix of different varieties, as well as to underutilization of capacity. In Mozambique overall capacity utilization is estimated to be on average below 50 %. In Tanzania it is estimated that average capacity utilization is around 60 % in private ginneries and 35 % in union ginneries.

**Table 4: Yields in selected countries and regions (kg/ha)**

Country	2000/2001	2004/2005	2008/2009	2011/2012	2012/2013	2013/2014	2014/2015e
World	606	741	770	772	782	800	758
North Africa	940	960	791	738	747	730	739
Sub-Saharan Africa	305	330	295	316	321	338	343
Burkina Faso	440	439	421	403	448	419	434
Mozambique	131	155	175	218	247	277	274
Tanzania	225	229	307	196	218	219	218

Source: Own calculation based on USDA PSD; Yields calculated as production in bales (converted to kg) over area harvested in hectares.

These differences are related to sector structure, particularly the extent to which different systems favour coordination along the local chain with implications particularly on input provision, extension services and quality control (Tschirley et al. 2010). The stronger the relation between farmers and cotton companies and the greater the extent to which side selling and buying can be eliminated the more comprehensive are the services that the cotton company is willing to pre-finance for small holder farmers. The provision of credit is therefore better in concession systems like in Burkina Faso and Mozambique than in competitive systems. In Burkina Faso the input package provided to farmers was particularly intensive including mineral fertilizers.<sup>16</sup> In Tanzania, the majority of chemicals are sourced independently by farmers (Tschirley et al. 2010) although government supported institutions particularly CDTF support input provision by collectively purchasing and distributing inputs through different schemes<sup>17</sup> (Ngaruko/Mbilinyi 2014; George 2012). Quality control is generally also better in systems that support long term relationships between cotton companies and farm-

<sup>16</sup> But the introduction of genetically modified (GMO) (or Bt) cotton in 2009 generally reduced the use of inputs. Burkina Faso has been at the forefront of introducing Bt cotton in SSA, reducing the use of inputs and the number of treatments. Some estimate that GMO cotton increased yields by an average of 18.2 % (Vitale et. al, 2011). Bt cotton is discussed very controversially (for a more detailed discussion, see e.g. Klais et al. 2012).

<sup>17</sup> Since 2006, CDTF collects variable contributions from ginners to collectively import chemical insecticides and distribute them to buyers to be sold to farmers. Further, a passbook scheme was put in place to assist producers accessing pesticides up to the value recorded in their passbooks. The system has been riddled with problems and has made a very limited contribution to the intensification of cotton production (George 2012).



ers as dealing with contamination requires coordination among local actors. Increasing the weights of cotton through contamination is a particular problematic issue in Tanzania – also given the focus on volumes because of ginning overcapacity. Concession systems can be further used to more effectively and quickly implement standards such as Cotton made in Africa (CmiA) or the Better Cotton Initiative (BCI)<sup>18</sup> as cotton companies can use their existing relationships to farmers. Such standards are very difficult to implement in a system with atomistic competition, as they require traceability and implementation by tens of thousands of farmers (Peltzer/Röttger 2013).

The effectiveness in credit, input and extension services provision of concession systems depends however on effective state evaluation and monitoring of cotton companies' and farmers' responsibilities and the possibility to withdraw or not renew licences. In Mozambique there seem to be large differences in the input, credit and extension services provided to farmers and quality control pursued in different concession areas with some cotton companies supporting farmers substantially, including dense networks of extension workers and pilot farmers who advise farmers during the season and others offering only limited pre-finance services. The farmers' association complains that inputs and services received by some cotton companies are of poor quality. Producers, in turn, may break contracts and sell their production to other buyers if prices are more attractive at harvest time which is particularly a problem in border zones in Mozambique. Hence, transparent rules for license allocation, performance evaluation and reallocation are paramount (Tchirley et al. 2009).

A common issue in all three countries and particularly in Burkina Faso and Mozambique where inputs are available on a broader scale is that inputs and equipment received for cotton production are also used for other crops. Given limited access of small holder farmers to credit, the cotton concession system is generally the only instrument in extending credit to farmers, providing them with inputs and guaranteeing credit payments by discounting them from the payments for their seed cotton. Hence, the input provision system also benefits other export crops and food production for which access to inputs cannot be secured. Cotton is seen as insurance for farmers in concession systems in Burkina Faso and Mozambique as it is often the only channel to secure access to inputs and markets as well as stable prices (see below) which is not the case for other crops. For cotton companies and the productivity of the sector this is a problem and farmers might further not be able to repay if cotton production is too low (Peltzer/Röttger 2013).

## 5.2. Price level, stability and risks

Regarding price levels, we analyze the export price received by cotton companies in relation to the Cotlook A index and the share of the farm gate price to the export price in the three countries. Export prices received by cotton companies are aligned with global cotton prices fluctuating within a range of 85 to 125 % around the Cotlook A index for the period 2000 to 2013 (Figure 4). During this period, Burkina Faso's export price accounted for 105 %, Tanzania's for 101 % and Mozambique's for 95 % of the Cotlook A index on average. Realized farm gate prices in US\$<sup>19</sup> follow the same dynamics with prices in Mozambique being however systemically lower than prices in Burkina Faso and Tanzania. Regarding the comparison of export prices to farm gate prices, there is also high fluctuation – on average they account for 56 % in Burkina Faso, 55 % in Tanzania and 45 % in Mozambique for the period 2005/06 to 2013/14.<sup>20</sup> Compared to the Cotlook A index the average accounts for 58 %,

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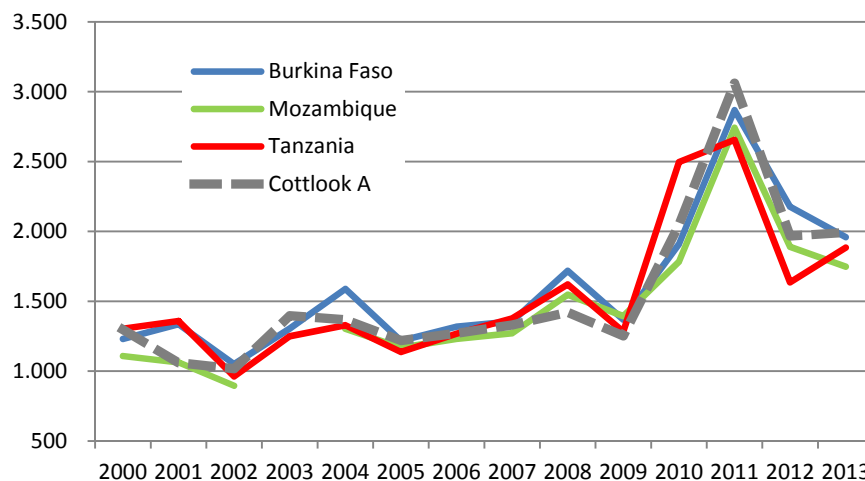
<sup>18</sup> These standards aim to secure social and environmental standards as well as productivity and competitiveness of cotton production by small holder farmers (for more information, see e.g. Peltzer/Röttger 2013).

<sup>19</sup> For comparative reasons we convert national farm gate prices in US Dollars which eliminates exchange rate movements from the analysis. Of course, the exchange rate has an important impact on national prices.

<sup>20</sup> These shares are calculated using a conversion factor of 0.42 from seed cotton to cotton lint for all three countries. In reality these conversion factors are different given the different cost structures and productivity of the ginneries in these coun-

55 % and 44 % respectively (Table 5). Besides these different shares, national prices between seasons in all three countries follow global prices and their instability.

**Figure 4: Export price (cotton lint price, US\$/tonne)**



Source: UN Comtrade.

Note: The value for 2003 is unrealistically low for Mozambique – hence, we excluded it from the analysis.

**Table 5: Share of farm gate prices to export prices (cotton lint price)**

	Burkina Faso	Mozambique	Tanzania
2005/06	65 %	51 %	41 %
2006/07	57 %	46 %	53 %
2007/08	57 %	43 %	62 %
2008/09	51 %	46 %	59 %
2009/10	62 %	38 %	66 %
2010/11	53 %	34 %	41 %
2011/12	48 %	47 %	57 %
2012/13	54 %	50 %	61 %
2013/14	60 %	53 %	54 %
<b>Average share of export prices</b>	<b>56 %</b>	<b>45 %</b>	<b>55 %</b>
<b>Average share of Cotlook A</b>	<b>58 %</b>	<b>44 %</b>	<b>55 %</b>

Source: For farm gate prices MAFAP/FAO (compared with national sources – UNPCB in Burkina Faso, TCB in Tanzania and IAM in Mozambique), exchange rate from WDI; For export prices UN Comtrade.

Note: A conversion factor from seed cotton to cotton lint of 0.42 was assumed for all countries; Marketing year based on season in Burkina Faso.

Of course, such a simple inter-country price comparison is complicated, particularly given differences in production and transport cost structures, taxes and levies and ginning conversion factors in addition to exchange rate issues. But it still serves as an indicator of price alignment and distribution in the three countries, leading to the conclusions that purchasing prices in the fixed price systems in Burkina Faso and Mozambique are not generally lower in terms of farmers' share of world market prices than in the competitive system in Tanzania. This questions the competition-coordination trade-off. Albeit large fluctuations within individual countries, the share is consistently higher in Burkina Faso and Tanzania compared to

tries. Hence, the remaining share that goes to ginners includes costs and profits of ginners that clearly vary in the three countries and for the individual ginners.

Mozambique. Differences between regulated and competitive systems regarding price levels may be less important than the precise price formula and procedures applied in regulated systems. In particular the two-tier price system in Burkina Faso ensures that farmers get a premium if prices increase during the season. Such a premium is not ensured in the minimum price system in Mozambique.

In addition to price levels, price instability and related risks are an important factor to consider in comparing sector structures. High volatility – inter-seasonal and intra-seasonal – of international cotton prices is a major problem for farmers and independent cotton companies. Inter-seasonal price volatility is a reality in all three countries as national prices closely follow world cotton prices through adoption of market-based producer price setting mechanisms in the competitive system as well as in regulated systems where price formulas have increasingly been based on world prices. Hence, in all three market structures producers bear the brunt of inter-seasonal price instability. In Burkina Faso, there is a slight smoothing effect as not current world cotton prices are used as a basis for calculating producer prices but a three year average. Regarding intra-seasonal price volatility, there are substantial differences in national price setting in the three countries with the system in Burkina Faso and Mozambique clearly outperforming the competitive system in Tanzania. In both countries fixed national producer prices are negotiated between farmers, ginners and the government (Table 6).<sup>21</sup> However, there are also differences between Burkina Faso and Mozambique regarding the time of price fixation. In Burkina Faso, prices are fixed before the season, giving farmers price security throughout the season and the possibility to plan the planting of cotton and other crops. In Mozambique, there are two price fixing meetings – one before the season and one before marketing starts where prices may be changed. However, so far, there has not been a downward price revision. In Tanzania, there is an indicative price negotiated between the government, cotton companies and farmers. However, the price is only announced at the beginning of the marketing season and is subject to changes. The price is further not binding – but it is still widely abided by cotton companies (Figure 5). Hence, within seasonal price volatility is a major concern for farmers in Tanzania.<sup>22</sup>

**Table 6: Price setting in Burkina Faso, Mozambique and Tanzania**

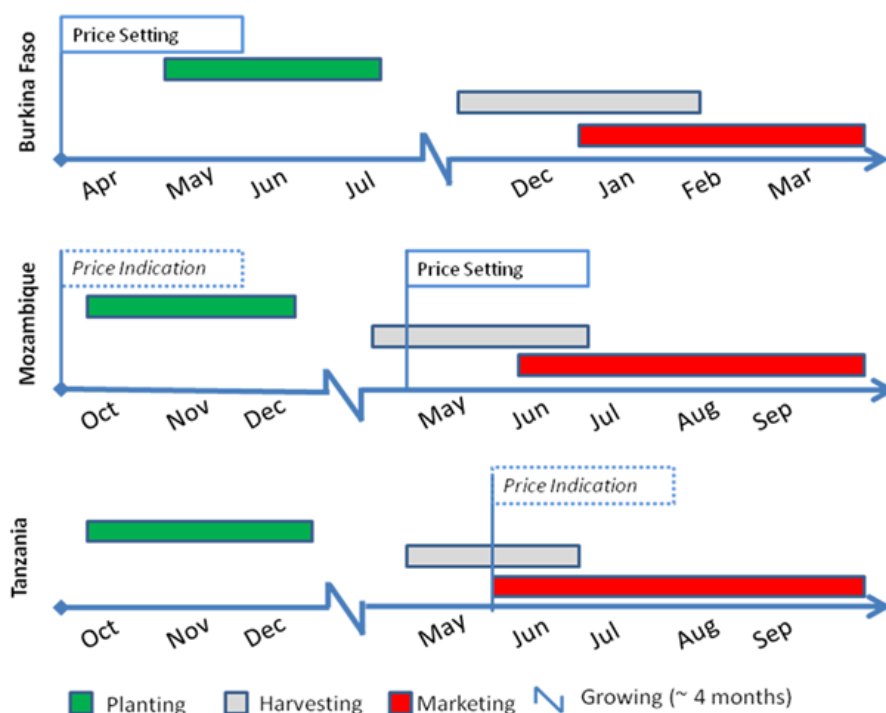
	<b>Burkina Faso</b>	<b>Mozambique</b>	<b>Tanzania</b>
Administered price?	yes (fixed price)	yes (minimum price)	no
Panterritorial & panseasonal price?	yes	yes	no
Announced prior to planting?	yes	yes (since 2007)	no
Announced/Adjusted prior to harvesting?	no	yes but no downward revision yet	yes but subject to changes (indicative price)
Secondary payment after marketing?	yes	no	no
Linked to global price?	yes	yes	yes
Stabilisation fund?	yes	no	no
How is price set?	Negotiated within interprofessional committee (government, cotton companies, farmers)	Negotiated between government, cotton companies and farmers	Competitive market price, indicative price negotiates between government, cotton companies and farmers

Source: Adapted from Tschirley et al. 2009.

<sup>21</sup> Given that international traders refer more to ICE futures than the Cotlook A index related to their hedging activities, there have been discussions of changing the basis for the price formula to ICE futures in Burkina Faso and Mozambique. There is also a trend to look more at ICE futures than at the Cotlook A index as a reference price in Tanzania as is seen in the following quotes: „The futures price is now by far the more important. It's what's everybody looks at as a price guide. The outlook index is not traded so it could just be somebody's opinion.“ (local ginner & trader); „NY is the benchmark on which to judge and decide upon prices.“ (intern. trader); „Everybody is looking at NY futures.“ (local agent).

<sup>22</sup> This is exemplified in the following quote: “If NY goes up, you'll see the price goes up as well in the field. And if next day NY price goes down, you'll see the price going down later that day in the field.“ (local ginner).

**Figure 5: Timing of price setting in Burkina Faso, Mozambique and Tanzania**



Source: Own elaboration based on Mwinuka/Maro (2012) for Tanzania, ITFC-IDB (2014) for Burkina Faso, and Textile-in-depth (2009) for Mozambique; and World Cotton Calendar (ICAC 2015).

Note: In Tanzania cotton is produced in Western and Eastern zones with the former accounting for up to 99 % of production. Dates are therefore only shown for the Western zones.

Related to price volatility, price inequality is also an important issue in Tanzania. Different types of farmers can cope differently with within seasonal price volatility. There is a general seasonal pattern of a gradual rise of prices during the season, before dropping off slightly at the very end of the season in addition to unexpected short term price movements. Only farmers that do not require cash quickly and have access to storage facilities and can bear the related costs and risk can influence the selling time. More wealthy farmers have this opportunity whereas poor farmers have to sell quickly after the harvest. Further, influencing the selling time depends on the location of the farmers and hence access to roads and regularity of buyer visits and competition among them. In remote areas there are often few buyers available and farmers have to sell when buyers come and accept the prices offered (Bargawi 2008). So a major outcome of within season volatility is higher inequality between types of farmers and regions with poorer farmers in remote regions being affected the worst whereas farmers in main cotton areas might profit from competition among buyers particularly if they can influence the time of selling.

Regarding price stabilization mechanism, different opinions exist on the fairness of how the shares going to farmers and cotton companies are calculated. This is particularly problematic as cotton companies are to an important part owned by international traders and hence the question is in which interest prices are negotiated by cotton companies (Bellù/Tortora 2010; ICT 2012). These issues related to power asymmetries between farmers and cotton companies and even more international traders exist however in all cotton systems. The question is if they are better mitigated in price negotiations at the association level as in Burkina Faso and Mozambique or at a market based level between individual ginners or their agents and farmers as in Tanzania. Important for both systems is the organization and power of farmers' organizations as they can either directly negotiate fixed or minimum prices

for farmers or support their members in getting access to information and resources. The role of farmers' organisation is generally quite strong in Burkina Faso with unions at the national, provincial and departmental level, also related to their role as co-owners of the three cotton companies, while it is weaker in Mozambique and Tanzania. This is related to their short existence with FONPA being established in 2005 and TACOGA in 2003, low membership, and limited resources and knowledge on global cotton markets and costs structures of cotton companies. However, in Burkina Faso there are also concerns that the union is too close to the cotton companies and has limited negotiating capabilities. Further, the government promoted the establishment of UNPCB to halt the growing empowerment of independent farmer organizations (Kaminski et al. 2011).

There are a number of different strategies to manage the risk associated with international price instability (Dana/Sadler 2012).<sup>23</sup> Farmers that bear a large part of the price risk in Tanzania have generally no access to risk management strategies besides influencing the time of their sales which only wealthier farmers particularly in main cotton areas where more buyers exist can do. Cotton companies bear the largest price risk over the season in Burkina Faso and Mozambique. The capacity of cotton companies to manage price risks varies depending on their size and expertise but most importantly if they are affiliated to international traders. International traders generally hedge<sup>24</sup> all or most of their trades on derivative markets through their headquarters which have specialized financial units. Independent local cotton companies do not engage in hedging as this is seen as too costly, risky and complex – even more so in the context of financialisation – and requires access to information, financial resources and brokerage services.<sup>25</sup> Even Sofitex, the largest state-owned cotton company, does not use futures or options as hedging is seen as complicated and expensive and not as their business as they focus on the physical market. In Tanzania, the World Bank and CRDB promoted hedging through “Kinga Ya Bei” project with very limited uptake (Newman 2009). Hence, access to hedging gives multinational actors and their local affiliates an advantage relative to independent actors in producing countries (Dana/Gilbert 2008).

Independent local cotton companies are restricted to physical price risk strategies most importantly selling through fixed price forward contracts<sup>26</sup> to international traders at different points in time. Forward sales lead to production risks as contracts are signed when actual production levels cannot be predicted which may lead to oversold situations. Hence, international traders only buy forward from cotton companies if they have confidence that volumes can be guaranteed (ICT 2012). This is the case in Burkina Faso and also largely in Mozambique where forward sales are used extensively to deal with price risks and also as a way to secure input and crop financing. In Tanzania, however, smaller independent ginners are not in a position to guarantee the volume and the quality of their production before it is ginned and to store lint for an extended period. They primarily deal with price risks by adjusting their buying price over the course of the season and by selling the lint as it is ginned. In Burkina Faso price risk for cotton companies are mitigated through the smoothing fund that partly compensates companies. In this context, also the government carries price risks as the fund may run out when prices are low for an extended period and companies may need re-capitalization as was the case in 2007.

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<sup>23</sup> Physical strategies involve storage, back to back trading, fixed forward price contracts, and longer term strategies such as niche and speciality product markets and diversification. Storage possibilities are often limited for local actors and interest rate and insurance costs may be high. There may be even no insurance available which is problematic given the risk of fire. It is also rare that back to back cash business can be transacted. Financial strategies involve hedging through futures and options on commodity derivative markets (Dana/Sadler 2012).

<sup>24</sup> Hedging (through futures or options) means taking the opposite position in derivative markets that one holds in physical markets to offset price risks.

<sup>25</sup> Futures require margins that are adjusted on a daily basis to reflect market movements. Financing margin calls can be very expensive and requires permanent access to financial resources. A problem of options is that the premium is expensive compared to futures contracts (ICT 2012).

<sup>26</sup> Forward sales are commitments to deliver or take delivery of cotton in the future at a fixed price agreed today.

### 5.3. Value addition

Value addition is of crucial development importance but goes beyond the cotton sector organization model as its performance cannot be attributed to the cotton sector market structure but primarily to different manufacturing traditions and liberalization policies. Value addition is limited in the three countries even though it ranks high in policy documents. But there are differences with Tanzania being most successful. Regarding processing of cotton lint (the main output of the ginning process) domestic consumption accounted for 1 % in Burkina Faso, 3 % in Mozambique and 38 % in Tanzania in 2013/14 (Figure 6). In the former two local consumption levels have continued to remain low; in Tanzania local consumption has fluctuated importantly between 10 % to over 50 % in the 2000s. This is in line with global world mill consumption data where Africa has a share of 1.5 % in 2012 and with the domestic consumption shares being highest in North Africa (69 %) followed by ESA (26 %) and WCA (2.5 %). These different processing levels are related to the different historical development of textile and apparel sectors (along with manufacturing more broadly) where East and Southern Africa have been generally more successful than West Africa.<sup>27</sup>

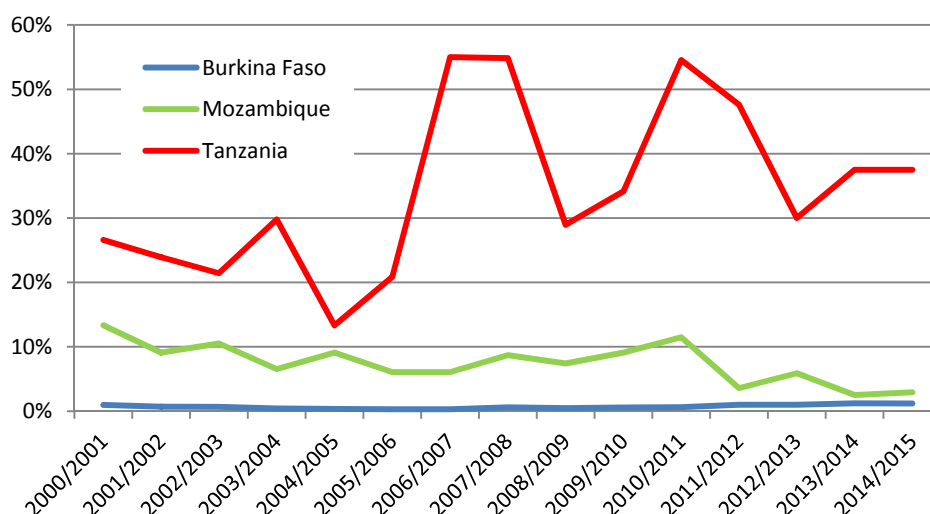
In Burkina Faso and Mozambique, textile and apparel production capacities are limited. In Burkina Faso, there is only one spinning mill that is partly owned by Sofitex. It spins around 2 % of raw cotton and sells around 40 % of its output to local artisanal weavers. Currently there only exists an informal weaving and sewing sector. The one spinning mill has however plans to invest in weaving to supply the local market with fabrics for specific events. In Mozambique, there exists one spinning mill that exports all yarn to Portugal to one of its mother companies that sells it internationally. There are plans to expand into weaving and home textiles but with no implementation so far. There is no traditional artisanal weaving and sewing sector. On the apparel side there are two exporting firms that sell to South Africa and around six firms that produce uniforms and workwear for the local market. There are further traders that largely import but also do some local sewing through small workshops with few machines.

In Tanzania, there exists a larger textile and apparel sector but it is still small in regional and particularly global terms and is characterized by old machines with adverse impacts on productivity, quality and consistency. There are 25 textile and apparel manufacturing firms with around 50 % of the ginners being also involved in spinning.<sup>28</sup> The majority of textile mills manufacture traditional fabrics such as Khanga, Kitenge and Kikoi and home textiles (bed sheets, blankets, etc.) for the local and regional markets. The manufacture of apparel is quite limited. 84 % of textile and apparel exports go to regional markets (with 50 % going to Kenya, Uganda and Zambia) and only the US is another important export destination accounting for 8 % of total exports. Regional exports are dominated by textile products while the US accounts for 57 % of apparel exports followed by South Africa (19 %). Hence, cotton companies have the possibility to sell cotton lint to international traders, to local or regional spinners or they are themselves involved in spinning. Spinners complain that they face problems in buying cotton lint from ginners. This was particularly the case in 2010 where local spinners faced a shortage of lint supply. In this context, an emerging trend is that spinners establish their own ginneries, in order to ensure regular and efficient supply of cotton lint (Salm et al. 2011).

<sup>27</sup> In the context of liberalization in the 1980s/90s after the import substitution period that furthered domestic market-oriented integrated cotton-textile-apparel value chains, textile and apparel sectors declined in most SSA countries. However particularly apparel production remained at a higher level and partly recovered in some East and Southern African countries (particularly Mauritius, Madagascar, Kenya, Lesotho, Swaziland and more recently Ethiopia and Tanzania) based on foreign direct investment (FDI) and exports via preferential market access to the EU and US and, more recently, regional trade (see Staritz/Frederick 2012; Morris et al. 2015).

<sup>28</sup> The textile and apparel sectors were developed in the 1970s and since then the share of locally processed cotton lint has been fluctuating. The sectors declined in the 1990s in the context of economic reform and trade liberalization that resulted in the withdrawal of government support, removal of trade barriers and exposure to international competition.

**Figure 6: Domestic cotton consumption as share of production**



Source: Own calculation based on USDA PSD; Calculated as total domestic consumption in bales as share over production (in bales).

Main problems in establishing or further developing textile and apparel sectors are related to apparel imports from Asia, particularly China and second hand clothing imports from Europe. Local apparel production would need to compete with these imports which is challenging given relatively high production and infrastructure (electricity, transport, etc.) costs. This is particularly problematic for the more capital and energy intensive textile sector. Further, the important role of international traders, also as owners of cotton companies, hampers local processing as they are interested in channeling cotton lint to the international market. To process cotton lint locally or regionally, cotton companies would need to establish direct relationships with local or regional spinners and guarantee sustainable supply of cotton lint. Banks' credit terms further complicate direct sales to spinners – local, regional or international ones (ICT 2013): First, banks pre-finance cotton production, so that cotton companies or farmers can buy seeds and inputs. Common practice is to keep ownership of the crop and often cotton shipments are released only once a reputable international buyer, i.e. an international trader, has signed a contract and opened a letter of credit. Second, banks do not always offer flexible trade finance or credit instruments to particularly smaller ginners making them dependent on quick payments that only international traders can provide. Spinning mills regularly require 60 to 90 days deferred payment, an approach that is quite common in the textile industry.

Regarding end markets for cotton lint, Asian countries dominate with China, Indonesia, Vietnam and Thailand being among the top 5 export destination for all three countries. In Tanzania also India is in the top 5 export markets while in Burkina Faso the EU and in Mozambique Mauritius (Table 7). The importance of the regional market Mauritius that reached 18 % in 2013 is an important opportunity for market diversification in Mozambique. Exports to Mauritius are not intermediated through international traders but based on direct relationships between ginners and Mauritian spinners. Besides Mauritius and South Africa, the formal textile sector is very small in SSA countries – even smaller than the apparel sector – which limits regional export opportunities. There is however more potential for such a strategy in Tanzania which could increase exports to Kenya which has the largest textile and apparel sectors in East Africa and Ethiopia where the sectors have increased significantly in recent years. There are fewer possibilities in Burkina Faso given the limited regional textile and apparel sectors despite small-scale artisanal weaving but Nigeria and Ghana still have formal textile and apparel sectors that could be targeted.

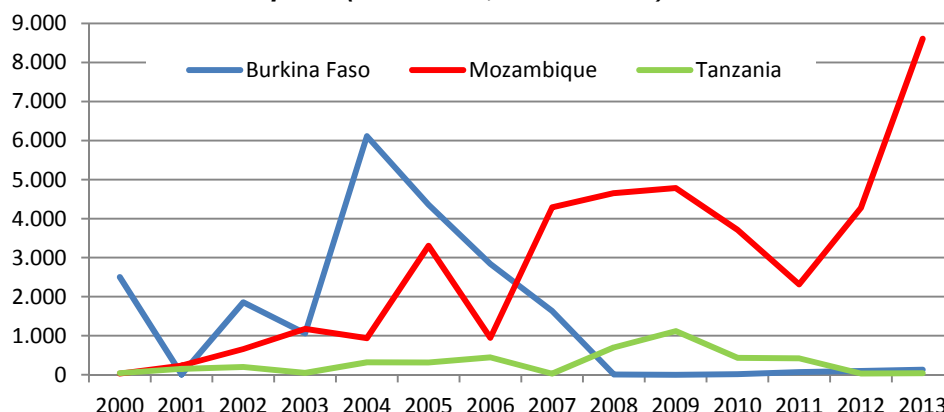
**Table 7: Top 5 end markets of cotton exports from Burkina Faso, Mozambique and Tanzania (2013, mn USD)**

Burkina Faso			Mozambique			Tanzania		
Importers	Value	Share	Importers	Value	Share	Importers	Value	Share
China	186.8	44.2 %	Indonesia	45.8	39.6 %	Indonesia	44.5	25.6 %
Indonesia	86.1	20.4 %	China	17.7	15.3 %	China	43.9	25.2 %
Thailand	40.8	9.7 %	Mauritius	17.6	15.2 %	Vietnam	32.2	18.5 %
Vietnam	33.4	7.9 %	Vietnam	10.7	9.3 %	India	17.4	10.0 %
EU	15.1	3.6 %	Thailand	6.9	5.9 %	Thailand	14.7	8.4 %

Source: UN COMTRADE.

Regarding cotton seed, there is variable local processing with a large potential for expanding local and regional cotton seed oil and cake markets.<sup>29</sup> However, competition particularly from imported palm oil is tough. According to Tschirley et al. (2009), estimates for cotton seed oil production as a percentage of national oil consumption account for 57 % in Burkina Faso, 8 % in Tanzania and potentially 6 % in Mozambique. Demand for cotton seed cake from the domestic livestock industry is stronger in the Sahelian countries (including Burkina Faso). Burkina Faso and Tanzania process the majority of cotton seed locally. In Tanzania this is largely done by ginners that have invested in oil mills whereas in Burkina Faso independent oil mills exist. Many cotton companies in Tanzania have invested in small scale oil mills with around twelve or more cotton companies now having their own mills (Salm et al. 2011). Some of the early oil processors have established brands that are well known within the cotton growing regions. In Burkina Faso there exist around ten oil mills with one dominant private ex-parastatal processing company (SN SITEC) accounting for around two thirds of cotton seed purchases. As common in WCA, until the 1990s parastatal cotton companies were vertically integrated into oil processing with processing operations having been privatized thereafter. Geocoton (earlier Dagrif) that is also a part owner of Sofitex and Socoma became the majority shareholder of SN SITEC (Tschirley et al. 2007). In contrast, there is no significant domestic industry in Mozambique and an important share of cotton seeds is exported, largely to South Africa and Malawi that account for 51 % and 47 % of cotton seed exports (Figure 7). International traders are generally not interested in cotton seed processing which has been left to domestic and/or Asian entrepreneurs (Tschirley et al. 2007).

**Figure 7: Cotton seed exports (HS 120720, in 1000 USD)**



Source: UN Comtrade.

<sup>29</sup> Seed cotton by-products (cotton seed oil and cake) typically represent 20–25 % of the total value of seed cotton. A small portion (typically less than 10 %) of cotton seed is distributed back to farmers as planting seed (Tschirley et al. 2009).



## 6. Conclusions

The paper analysed the cotton sectors in Burkina Faso, Mozambique and Tanzania along main challenges focusing on dynamics in global cotton commodity chains, different national market structures and related development outcomes and asking what can be learnt from the similarities and differences in these countries for policy. The aim of the paper was not to identify the best cotton sector organisation model but to point out issues that are important for positive development outcomes. The main general conclusions are the following:

**Development outcomes:** The analysis shows that the more regulated systems in Burkina Faso and Mozambique generally outperform the liberalized system in Tanzania in terms of production levels, yields, input provision, and price stability. This is particularly explained by challenges in supporting long term relationships between farmers and cotton companies which limits investment in productivity improvements and input provision and by the higher exposure of small holder farmers to global price instability in the liberalized system. But there are also major differences among the more regulated systems with Burkina Faso faring substantially better in yields and farmers' price share. These results show that the precise mechanisms applied in regulated systems and the institutional context are important in ensuring the potential advantages of regulated systems for farmers. The state, however, also bears a greater risk in Burkina Faso through its involvement in the largest cotton company and the stabilisation fund. The system in Tanzania provides similar farmers' price shares as in Burkina Faso albeit with higher price instability and inequality. Tanzania has been further most successful in value addition which, however, cannot be attributed to the cotton sector market structure but primarily to a stronger manufacturing tradition.

**Contract farming:** In the context of small holder farmers, sector models which ensure long term relations between farmers and cotton companies in the form of contract farming and have procedures in place to monitor these arrangements are most effective. Such systems can ensure access to inputs, equipment and extension services as well as implementation of standards and to a certain degree price security for farmers. The government has an important role in such arrangements in setting and monitoring performance indicators. Some type of regulated concession system as in Burkina Faso and Mozambique is most conducive for contract farming. Also market-based contract farming schemes can be effective but they have larger problems with avoiding side selling and buying. Cotton contract farming systems have also impacts outside of the cotton sector as small holder farmers plant cotton along with other cash and food crops. As most of these sectors are less regulated and contract farming systems less prevalent, inputs received through planting cotton are also used for other crops linking specifically food production to cotton input provision systems. While this reduces productivity in the cotton sector it is a reality that has to be taken into account and supports local food production and security.

**Price stabilization:** Price instability is a major concern for small holder farmers and independent cotton companies that have limited access to price risk management strategies. This problem has been exacerbated in recent years by high price volatility and increased amplitude and speed of price changes in the context of financialization of commodity derivative markets. The extent to which volatile global prices are transmitted to producers depends on the market structure. Inter-seasonal price volatility is a reality in all countries explaining the large fluctuations of cotton production as farmers adapt their crop mix to price expectations. Within seasonal price volatility is however a much larger concern in Tanzania than in Burkina Faso and Mozambique. A price stabilization scheme at the national level is an effective way to cushion intra-seasonal price risks for farmers. A good example is the price system in Burkina Faso that is aligned to world prices, ensures price stability for farmers over the whole season but also a high share of world prices (through a potential post-season

premium), and provides a smoothing fund to cope at least partly with the price risk accrued to cotton companies. The minimum price system in Mozambique is less effective. While it secures a minimum price, the share of world prices going to farmers is comparatively low and the actual minimum price is only fixed before marketing reducing price security for farmers. In Tanzania the price share going to farmers is similar to Burkina Faso but there is substantial price instability and inequality. An indicative price is set at the beginning of marketing but it is not binding and subject to adaptations during the marketing season.

***Institutional context:*** The institutional context and specifically strong and independent farmers' associations have a crucial role in all systems to ensure that farmers' interests and rights are respected. This is challenging given the asymmetric power structures between small holder farmers and cotton companies and particularly international traders that have much broader access to information and resources. At the national level, asymmetries can be mediated through farmers' representation that can negotiate with buyers and the government, and improve access to information, resources and services, as well as through tripartite institutional structures. In the concession systems in Burkina Faso and Mozambique, requirements and responsibilities of farmers and cotton companies are largely negotiated in a tripartite structure. In Burkina Faso the farmers' union has an important role in the sector and owns shares of the three cotton company. However, there is still concern that the union is too close to the cotton companies and has limited negotiating capabilities. In Mozambique and Tanzania this concern is more acute given the weak and relatively young role of farmers' associations. In all systems, strengthening of farmers' associations and improving tripartite institutional structures are important to mediate national and global power asymmetries.

***Value addition:*** Value addition is of crucial development importance but goes beyond the cotton sector organization model as its performance cannot be attributed to the cotton sector market structure but primarily to different manufacturing traditions and liberalization policies. Processing of cotton lint has been limited in all three countries with Tanzania being most successful given its local textile and apparel sectors. Limited textile and apparel production is related to local capabilities, costs and infrastructure as particularly textile production is capital and energy intensive, as well as to the important role of international traders as they are not interested in local processing but in trading cotton lint internationally. But there are still opportunities particularly in local and regional markets that are currently largely served through Asian imports or second hand clothing from Europe. One way for independent cotton companies of getting less dependent on international traders and increasing value addition in the region is to build direct relationships to regional spinners. This strategy has been successful in Mozambique with rising direct sales to Mauritian spinners. In Tanzania, regional trade could be particularly extended to Kenya and Ethiopia which have the largest textile and apparel sectors in East Africa. In Burkina Faso this potential is more limited but some countries such as Nigeria and Ghana still have formal textile and apparel sectors. At the cotton seed side, value addition through producing oil and cake is more developed with local processing being widespread in Burkina Faso and Tanzania but limited in Mozambique.

***Coordination in SSA region:*** The issues discussed above could be supported through regional coordination and integration. This can involve lessons learnt from different country experiences but more importantly joint policy initiatives in the areas of contract farming, price stabilization, farmers' organization, and value addition. This is most important regarding value addition as individual countries face difficulties in establishing an entire chain from cotton to textiles and apparel to retailing, and hence the complementary advantages of countries could be leveraged. Intra-regional trade and commodity chains must be actively promoted by facilitating partnerships between cotton companies, textile mills, apparel factories and regional buyers. Regional associations such as the African Cotton and Textile Industry Federa-

tion (ACTIF) play a crucial role in this regard. Also for price stabilization, regional stabilization funds could support national smoothing funds. Even though price risks go in the same direction in participating countries this could make the management of funds less influenced by national political considerations. Further, the tackling of general problems facing the SSA cotton sector such as its negative image in world markets, the improvement of agricultural practices and the implementation of standards such as Better Cotton Initiative (BCI) and Cotton made in Africa (CmiA) could be effectively supported at a regional level. And most importantly power asymmetries in global cotton commodity chains can be mitigated more effectively if SSA cotton producers join forces.

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