

Structure-Conduct-Performance of Cotton Market in Ethiopia



Structure-Conduct-Performance of Cotton Market: The Case of Metema District, Ethiopia

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ABSTRACT

The efficiency of cotton market chain that can have great influence on farm level supply of marketable cotton was evaluated for Metema District of Ethiopia, using structure-conduct-performance approach. Market concentration ratio (CR4) at District level was 49.76 percent and there were observed barriers to entry into the cotton market. These structural characteristics indicate oligopolistic structure of cotton market at the District level. Cotton market at ginneries and textile factories were highly oligopolized by two ginneries and three textile factories. Buying, selling, and pricing strategies, which are indicators of market conduct showed deviation of cotton market from competitive market norms. The performance of cotton market chain analyzed using Marketing Margins supplemented with analysis of costs incurred and gross profits generated for different market chain actors, showed poor performance of the chain. In the chain farmers are the most disadvantaged chain actors.

Keywords: Cotton, efficiency, Ethiopia, market chain, market concentration ratio, oligopoly, marketing margins.

INTRODUCTION

Cotton is an important cash crop to a number of developing countries. In Africa, cotton is typically a smallholder crop, and the main cash crop grown in rain-fed land where the use of purchased inputs such as chemicals and fertilizer is minimal (Baffes, 2004). Cotton has a strong poverty reduction impact because it is cultivated in small family farms in areas where

Structure-Conduct-Performance of Cotton Market in Ethiopia

opportunity for growing other crops is very limited and per capita income very low (Goreux, 2004).

As indicate in Anderson and Valenzuela (2006), low-income countries in Sub-Saharan Africa like Benin, Burkina Faso, Chad and other similarly poor countries elsewhere in the world depend heavily on cotton for earning foreign exchange.

Ethiopia is one of the African countries that produce and export cotton. It has an estimated area of 2,575,810 hectares that is suitable for the cultivation of cotton (ESTC, 2006). Mulat *et al.* (2004) argued that despite its potential capacity to produce abundant cotton, Ethiopia performed weakly in its exports of textile and garment products. One indicator is the fact that the country is largely limited to semi-processed textiles (e.g. woven cotton fabrics and cotton yarn) and to a certain extent, apparels made of cotton.

Cotton crop has direct connections with various agro processing industries like textile, oil mills and the livestock sub sector. In other words, the crop has a direct linkage with the industrial sector.

The main aim of this study was to analyze and evaluate the efficiency of cotton marketing in the cotton market chain. According to Mendoza (1995), making such an analysis and evaluation can enable one to gain information about the flow of goods and services from their origin to their final destination

Westlake (2005) stated that increasing only the value of commodities at export market level cannot make a market efficient and ensure economic growth. In other words, increasing the value of exports is not an end in itself and it is only a means of accelerating the pace of economic growth. In the context of processing and marketing a specific commodity, economic growth is accelerated directly by increasing the value that is added between the producer and the value point of export, and indirectly by improving cost efficiency. Part of this improvement must be captured domestically in the form of higher prices and profits for producers and/or higher profit for traders and processors. Doing this may accelerate economic growth as the increased profits are invested (Westlake, 2005). Thus, if market performance is inefficient, the sustainability of the production become questionable and, as a result, a steady supply of a commodity for the market may become difficult.

Kaplinsky and Morris (2000) outlined three main reasons why value chain analysis is important in this era of rapid globalization. The first is that with the growing division of labor and the global dispersion of the production of components, systemic competitiveness has become increasingly important. The second is that efficiency in production is only a necessary condition for a successful penetration of global markets. Thirdly, entry into the global market and making the best use of globalization requires an understanding of dynamic factors that are inherent in the whole value chain.

The most fundamental factor that constrains increased domestic value added is lack of production. In addition, deficiencies in processing and marketing systems constrain production by reducing producers' prices and

raising uncertainty over future producer price levels. They also constrain production by causing delayed payment and by being incompatible with the effective supply of finance and inputs to farmers (Westlake, 2005).

In Ethiopia, income generated from export of cotton and textile products is low when compared to other commodities. It is important, therefore, to study the efficiency of cotton marketing in the country. The information obtained through rigorously structured studies may provide better insights as to what should be done to improve the production and marketing of the commodity. Therefore, this study was initiated to address these gaps in Metema District of Ethiopia.

MATERIALS AND METHODS

Study location

Metema District (Fig 1) is located about 900 km North West of Addis Ababa and about 160 and 340 km west of Gondar and Bahir Dar towns respectively. It is one of the west most Districts of Ethiopia bordering the Sudan. The district has twenty *kebeles* of which 18 are rural-based peasant administrations.

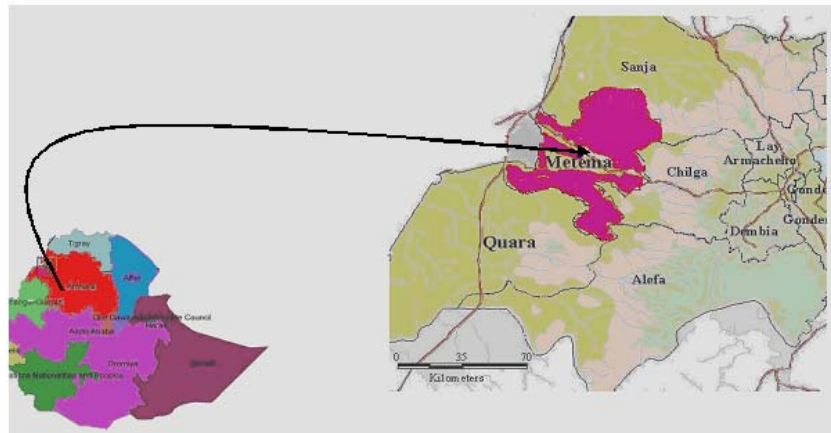


Fig. 1: Location of the study area.

The altitude of the district ranges from 550 to 1608 meters above sea level. Its minimum annual temperature ranges between 22°C and 28°C. The daily temperature is high from March to May and sometimes reaches 43°C. The District is considerably low land with exceptions of some mountaintops

Structure-Conduct-Performance of Cotton Market in Ethiopia

(IPMS, 2005). The mean annual rainfall ranges from about 850 mms to 1100 mms, with unimodal distribution. Thus, the rainy months extend from June to the end of September. However, a considerable amount of the rain falls in July and August.

This study is based on primary and secondary data. The primary data were drawn from small-scale farmers in fourteen purposively selected *Kebele* administrations, assemblers, primary cooperatives, the district's Cooperatives Union, ginneries in Gondar, Bahir Dar Textile Factory and from Gondar Oil Mill that has been using cottonseed as raw material. In addition to these, different government offices having direct and indirect relation with cotton production and marketing were contacted. Semi-structured questionnaires and personal interviews were used to collect the data. Focused group discussions (FGDs) that involved key informants were the other method of data collection. These were complimented with direct observation.

The secondary data were from primary cooperatives involved in cotton marketing, Metema District Agricultural Cooperatives Union, Metema District office of Agriculture and Rural Development, Small Scale Enterprise Development Office, District Office of Trade and Industry, Ginneries, Gondar Oil Mill, Bahir Dar Textile Factory, different reports, bulletins, and websites.

For this study, 139 farm households were sampled and interviewed from the District. A two-stage sampling technique was used to sample cotton farmers. First, 14 *Kebeles* from the District were selected through purposive approaches. During the selection, the *Kebele's* potential for cotton production and the accessibility of the areas to travel were taken into consideration. In the second stage, using the population list of cotton farmers from sample *Kebeles*, the intended sample size was determined proportionally to population size of cotton growers. Then the predetermined size of the sample farmers from each *Kebele* were randomly selected using systematic random sampling.

Prior to formal survey, a rapid market appraisal (RMA) was conducted to get the overall picture of cotton marketing chain. The sample size of cotton traders was 23. Since the number of cotton traders in each locality of the District was few, almost all of them were interviewed. Both licensed and unlicensed traders were included in the traders' survey.

The cooperatives involved in cotton marketing in the year 2005/06 were six out of 18 cooperatives in the District and were used as data source. The Metema Farmers' Cooperatives Union was also one of the sources of data. In addition, *Dess* and *Gondar* Ginneries found in Gondar town were data sources from Ginneries. Bahir Dar Textile Factory was used to represent textile factories as a source of data. This factory is the major purchaser of lint cotton from ginneries in *Gondar* whose source of seed cotton is Metema District and the vicinity. The *Gondar* Oil Milling Factory was also used as the other source of data.

Structure conduct performance (S-C-P) approach was considered useful for analyzing the performance of cotton market chain and used for this study.

To analyze market structure of cotton buyers/ sellers' concentration, product/service differentiation, and entry barriers were applied. Concentration Ratio which is a common measure of market concentration is applied in this study thus:

Concentration Ratio(C):

$$C = \sum_{i=1}^r Si$$

Where Si = the percentage market shares of i^{th} firm and r = the number of largest firms for which the ratio was calculated.

Market conduct

To analyze market conduct, conditions believed to express the exploitative relationship between producers and buyers were analyzed. Since there are no agreed procedures for analyzing the elements of market conduct, the following few questions were taken into consideration to systematically detect indicators of unfair price setting practices and conditions in places or areas where such market injustices are likely to prevail. The issues that were taken into consideration were the existence of formal and informal marketing groups that affect the bargaining power and the availability of price information as well as its impact on prevailing prices.

In analyzing the buying and selling practices, the source of product, the existence of formal and informal marketing groups that affect the bargaining power, the nature of the buying/selling practices in place, the distribution channels used, and observed trading practices that were unethical were taken into consideration.

During the analysis of pricing behavior, the following things were seriously considered: the chief determinants of price (one buyer or many buyers), price setting mechanisms (the degree of personal contact among market participants), factors that influence the setting of price (example, basic supply and demand conditions or artificial price restraint), the basis for price differentiation and the impact of physical location of the market on prices and marketing arrangements.

Market Performance

To evaluate market performance a marketing margins analysis was performed. The total marketing margin was calculated using the following formula:

$$TGMM = \frac{\text{Consumer price} - \text{Farmers' price}}{\text{Consumer price}} \times 100$$

Where TGMM is total gross marketing margin

Structure-Conduct-Performance of Cotton Market in Ethiopia

$GMM_p = 1 - TGMM$

Where GMM_p is producers' participation (farmers' portion).

Consumer price of cotton was taken from purchase price of textile industry and oil mills since these are industries where cotton produced from Metema District is destined.

Consumer price = Lint cotton value + cotton seed value

Conversion factor for lint cotton x price of lint cotton/quintal + conversion factor for cotton seed x price of cotton seed/quintal.

Mendoza (1995) warns that precise marketing costs are frequently difficult to determine in many agricultural marketing chains. The reasons are that these costs are often both cash costs and imputed costs; the gross and not the net marketing margin is advised to be calculated. According to Mendoza (1995), "marketing margins" should be understood as the gross marketing margins. In this study, gross marketing margin was considered instead of net marketing margin, as it was difficult to estimate the implicit costs incurred during transaction of cotton.

RESULT AND DISCUSSION

Cotton market structure

To understand the structure of cotton market at each market level, that is the level of competition existing in the cotton market, the market concentration ratio and barriers to entry and exit into the market were used as evaluation criteria.

Since the number of traders at each local market level was few, the market concentration ratio was calculated at the district level to analyze the concentration of cotton market prevailing in the district as indicated in Table 1.

Kohls and Uhl (1985) suggested, as a rule of thumb, a concentration ratio of 50 percent or more for the four largest enterprises (CR4) as an indication of a strongly oligopolistic industry. The District level CR4 was 49.76 percent (Table1). This indicates that the top four traders handled almost 50 percent of the cotton market. Hence, according to Kohls and Uhl (1985) the cotton market at the district level has an oligopolistic market structure. Except some amount supplied for hand craft purpose (about 1.75 percent from farmers supply and about 8.95 percent of assemblers supply), seed cotton from Metema District is supplied to ginneries found in Gondar. The ginneries found there are only two. This also indicates that cotton market in Gondar is highly oligopolistic. The number of textile factories that

purchased lint cotton in 2005/06 from ginneries found in Gondar were only three. The study revealed that about 52 percent of the purchase was made by Bahir Dar Textile Factory. This shows that at textile factories level, the cotton market is also characterized by a strongly oligopolistic market structure.

Table 1: Cotton traders' concentration ratio in Metema District.

No. of traders	Cumulative frequency of traders	% of traders	Cumulative % of traders	Quantity purchased in Qt	Total quantity purchased in Qt (G = AXF)	% share of purchase $S_i = \frac{G}{7415}$	% cumulative purchase $C = \sum_{i=1}^r S_i$
(A)	(B)	$(D = \frac{A}{23})$	(E)	(F)			
1	1	4.35	4.35	2000	2000	26.97	26.97
1	2	4.35	8.7	700	700	9.44	36.41
1	3	4.35	13.05	500	500	6.75	43.16
1	4	4.35	17.4	490	490	6.61	49.76
1	5	4.35	21.75	400	400	5.40	55.16
1	6	4.35	26.1	350	350	4.72	59.88
4	10	17.39	43.49	300	1200	16.18	76.06
1	11	4.35	47.84	255	255	3.44	79.50
1	12	4.35	52.19	250	250	3.37	82.87
3	15	13.04	65.23	200	600	8.09	90.96
1	16	4.35	69.58	120	120	1.62	92.58
2	18	8.69	78.27	100	200	2.70	95.28
1	19	4.35	82.62	90	90	1.21	96.49
2	21	8.69	91.31	80	160	2.16	98.65
2	23	8.69	100	50	100	1.35	100
23		100			7415	100	

Regulation of entry and exit in cotton market

The Ministry of Trade and Industry, Small Scale Enterprise Development Agency and Customs Authority have district offices that provide services and regulate markets. However, during the survey, there was as such no strict regulation on cotton trade. Due to the absence of strict regulation, about 62 percent of the assemblers in the survey were unlicensed. The measure, which the District Office of Trade and Industry takes against the unlicensed assemblers, is closing their business. However, to escape from this strategy, in most cases the unlicensed assemblers simply store their cotton in an open space where the concerned body cannot take any measure. It is not surprising that the licensed assemblers who have cotton stores also use the same strategy to decrease amount of income tax levied on them.

Factors for entry and exit in cotton marketing

Capital: capital is reported to be one of the major entry barriers to cotton trading. In the survey, about 96 percent of assemblers identified capital as the entry barrier to cotton trading.

Structure-Conduct-Performance of Cotton Market in Ethiopia

Price fluctuation: Price risk of cotton (price fluctuation) is reported to be one of the entry barriers in cotton marketing and processing. The study made clear that about 17 percent of assemblers considered price fluctuation as the entry barrier to cotton marketing.

Licensing: The study revealed that licensing is not such a limiting factor as to constitute an entry barrier. Of the interviewed 21 assemblers, only 38 percent had license to trade cotton whereas the remaining 62 percent of them are without the license. However, according to the rules and regulations of Trade and Industry in the country, licensing is imperative to enter into cotton trading. At the level of ginneries and textile factories, licensing is a necessary condition to enter into the business.

Inability to compete with unlicensed traders: About 26 percent of the interviewed assemblers pointed out that one of their serious problems was competition with unlicensed assemblers in the cotton market. This is one of the indications for the presence of imperfect competition in cotton market.

Generally, inadequate capital, fluctuation in prices, problems in licensing and their subsequent inability to compete with the unlicensed traders are identified to be the major entry barriers to cotton marketing even though there are no exit barriers. Since the market concentration ratio is high and since there are entry barriers into cotton market, the cotton market chain has deviated from the norms of competitive market structure. Because of these, the cotton market chain has an oligopolistic market structure.

Cotton market conduct

Cotton producers' market conduct

The cotton farmers in Metema District have weak or no organizations. Thus, they lack the power to negotiate. Because of this, they simply take price and other terms like payment deadline from input suppliers and buyers of seed cotton. Most of them, therefore, are not in a position to interact effectively with other stakeholders in the cotton market chain. About 18 percent of the farmers reported that they had faced very low sales price of cotton as a problem after they had brought their cotton to market. Asked the action they took after they faced low price on the market, 2.9 percent of them pointed out that they took the produce back home to take it to another market, 3.6 percent of them indicated that they sold it at cheaper price, and 11.5 percent indicated that they stored it and waited for another market day. During survey, it was observed that storing at assemblers storage and waiting another market day is a common practice of cotton farmers in the District.

During the study, all of the farmers identified price as the major determining factor that affect their decision as to whom to sell their seed cotton. Hence, this is an indication of absence of competitive pricing system, which in turn indicates the deviation of cotton market from the norm of

competitive market. Cooperative spirit, family linkages and availability of transport facilities are considered by farmers when they decide for whom they have to sell their seed cotton produce to. Similarly, the farmers use assemblers, cooperatives, friends and personal visit as their sources of market information. Usually, they lack reliable market information and because of this, they are usually unable to decide or influence the market price. About 90 percent of them clearly pointed out that they have no power to decide the price.

Buying and selling strategies in cotton marketing

For about 86 percent of the surveyed assemblers, the purchasing site of seed cotton was adjacent to their home (storage places). About 14 percent of them indicated that they purchased seed cotton from places that were about 12 kilometers away from their residence (storage place) in the 2005/06 production year. In contrast, ginneries purchase seed cotton at the site of the industry.

During the survey, there was no serious competition observed for purchasing seed cotton. It was observed that most assemblers wait supply of cotton by setting their scale at open space near a place where they store their purchased cotton. All days in the week are used for transaction of cotton at district as well as ginneries levels. Respondents from each market level reported absence of government restrictions on the location of cotton purchasing and selling. Financial position of the purchasers and profitability are the only factors considered in selecting the locations. Due to this situation, about 91 percent of assemblers preferred purchasing cotton at nearby storage places (markets). Ginneries' officials also preferred to make their seed cotton purchase at the factories site. Since purchasers at each market level are oligopolysed, there is no need to go to the site of suppliers. The selling site for lint cotton depends on the agreement between lint cotton buyers and suppliers. The recent trend of Bahir Dar textile factory is that ginneries deliver lint cotton to factory site after the assessment of quality by the textile factory. All of these conditions indicate that purchasers at each market level are the main decision-makers.

The survey indicated that no formal contractual agreements have been made between producers and purchasers. As a result, assemblers as well as ginneries purchased what is available on the markets. However, assemblers reported that based on prior knowledge of individuals or family linkage, there is an informal agreement made between assemblers and farmers that are providing credit when farmers are at critical cash shortage and providing packaging materials on credit basis. In turn, farmers supply their seed cotton to those assemblers who helped them when they faced financial problems. About 26 percent of the surveyed assemblers reported that they had provided credit to the cotton farmers in the 2005/06 production year. On their part, the officials of ginneries reported that market risk (price risk of cotton) has limited them from making contractual agreement with cotton

Structure-Conduct-Performance of Cotton Market in Ethiopia

producers. This situation forced them to purchase whatever is available on the market in order to minimize the risk. They said that they adjust purchase price when there is low sells price for lint and/or cottonseed in the absence of contractual agreement. If the contractual agreement is signed and the selling price of lint and/or cottonseed is lower, then there is no room to adjust price.

Comparison of the status of cotton purchasing prices among the assemblers indicated that about 28 percent of assemblers reported that they set somewhat higher purchase prices to attract customers and make big purchase when there is supply shortage. About 72 percent of assemblers reported that they tried to keep purchase price as possibly the same as their competitors. About 95.23 percent of the assemblers suggested an absence of uniformity in the price of cotton in a single market on the same market day at the same time.

Concerning the purchase price of seed cotton at ginneries, recently due to shortage of supply of seed cotton, the existence of some difference in purchase price (imperfect competition) between ginneries to make big purchase was reported.

Assemblers take purchase price of ginneries as a basis to determine the price with which they purchase seed cotton from farmers. The textile factories purchase price for lint cotton and the sale price of cottonseed is used as an input to determine the purchase price of seed cotton for ginneries. The officials from textile factories reported that even though they determine the price of lint cotton by negotiating with sellers of lint cotton according to its quality, there is some communication with other textile factories on general price situation. Therefore, since the number of textile factories in the country is limited and given their collusive pricing system, it is possible to say that lint cotton price is not competitively determined. Thus, selling and buying strategies used by cotton market players and price setting behavior of market players in cotton market chain have generally deviated from competitive market norms.

Cotton market performance

Cotton market performance was evaluated based on the level of marketing margins by taking into consideration associated marketing costs for key marketing channels. Therefore, based on the 2005/06 production year, costs and purchase prices of the main chain actors', margins at farmers', assemblers' and ginneries' level were analyzed.

Marketing Margins

By taking the average sales prices of different participants in the cotton market chain (farmers, assemblers and ginneries), the marketing margins of cotton was calculated (Table 2).

Table 2: Average price of cotton at different market levels, % share from consumer price, and gross profit in 2005/06.

Marketing channel participants	Selling price (Birr/Qt)	% share from domestic textile factories and oil mills price (Gross marketing margin)	Gross profit in Birr/Qt
Producers	244.35	59.21	-65.40
Assemblers	285.03	9.86	5.48
Ginneries	412.69*	30.93	46.07

Note* average value of sum of lint and cottonseed was obtained from one quintal of seed cotton

TGMM (complete distribution channel) = 40.79%

GMM (Assemblers) = 9.86%

GMM (Ginneries) = 30.93%

GMM_p (Producers participation) = 100%-40.79=59.21%

Table 2 reveals that 40.79 % total gross marketing margin was added to cotton price when it reached the final consumers (textile factories and oil mills) at domestic markets. From the total gross marketing margin, 9.86 % was gross marketing margin of assemblers (received by assembler) while 30.93% was that of ginneries. The gross profit of farmers per quintal suggested a loss of 65.40 Ethiopian Birr per quintal. However, the assemblers and ginneries had gross profits of 5.48 and 46.07 Ethiopian Birr. This situation implies a poor performance of the cotton market chain. In this inefficient cotton market chain, assemblers and ginneries are relatively advantaged whereas the farmers are disadvantaged.

CONCLUSIONS AND RECOMMENDATIONS

Ethiopia has great potential for cotton production. However, out of the country's total potential areas of cotton production, only about four percent is being utilized currently. Due to this, the amount of cotton produced in the country is low. A number of factors affect the supply of marketable cotton at the farm level in the country. In the case of Metema District, Structure-Conduct- Performance analysis of the cotton market chain indicated poor performance of the chain that places farmers at a disadvantage. Thus, policy interventions are required to alleviate the problem.

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