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## **GRAIN MARKET AND RURAL LIVELIHOODS IN ETHIOPIA**

***A CASE OF STRUCTURE, CONDUCT AND PERFORMANCE OF GRAIN  
MARKET IN LUME WOREDA OF OROMIYA REGION***



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## **Abstract**

Agriculture Development Led Industrialization (ADLI) has been government development strategy since 1990s; and its objective was to develop a market oriented modernized agriculture sector, with the development of the industry to follow this as a next development stage using the raw material from agriculture. The strategies for the agriculture development have focussed on extension and research services and development of infrastructure.

Drawing on the data collected through interviews with government officials, cooperative leaders, farmers, traders and a survey of rural households, the ambition of this thesis is to asses the structural organization, conduct and performance of the grain marketing system with an objective of looking at how it benefits the rural livelihoods, in terms of fair prices for agricultural produces. Three major staple food grains – teff, wheat and chickpea – produced in the study area, were selected to conduct the market analysis.

The structural organization of the grain marketing system appeared to be well structured and competitive. However, the conduct and performance of the grain market was influenced negatively by the presence of informal grain traders in the market, timing of loans return, and uncertainties created by price fluctuations in terminal markets; with a result causing a lot of potential benefits from the growing market opportunities missed out for both traders and producers.

From the rural household survey, it was observed that the small scale agriculture is challenged by shrinking farm size from population growth, soil degradation, frequent drought and lack access to improved technologies. This has put the small scale agriculture in a question, as how long it will support the ever increasing population. Improvements of institutional support to smallholder agriculture, promotion of farmers' cooperatives and control of the informal traders, were suggested as short term solutions. However, in long term transformation of the agriculture sector needs a moving away from the traditional subsistence oriented production by introducing modern technologies and consolidation of the fragmented farm for efficient use of the modern inputs.

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### **Achronyms and abriviations:**

ADLI	Agriculture Development-Led Industrialization
AMC	Agricultural Marketing Corporation
BoFED	Bureau of Finance and Economic Development
CIMMYT	International Maize and Wheat Improvement Centre
CSA	Central Statistical Authority of Ethiopia
ECPA	Ethiopian Cooperative Promotion Agency
ECX	Ethiopian Commodity Exchange
EGTE	Ethiopian Grain Trade Enterprise
EIAR	Ethiopian Institute of Agricultural Research
ESSP	Ethiopia Strategy Support Program
ETB	Ethiopian Birr
FEWS	Famine Early Warning System
FRG	Farmers Research Group
GDP	Gross Domestic Production
GiNi	Gini Index
GMRP	Grain Market Research Project of Ethiopia
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
ITU	International Telecommunication Union
LAFCU	Lume Adama Farmers' Cooperative Union
LZ	Livelihoods Zone
MoFWD	Ministry of Finance and Economic Development
MDGs	Millennium Development Goals
PRA	Participatory Rural Appraisal
RATES	Regional Agricultural Trade Expansion Support Program
SAP	Structural Adjustment Program
SCP	Structure Conduct Performance
WBWDR	World Bank – World Development Report

## **1. Introduction and motivation**

Ethiopia, with a population of about 85 million, covers a total land area of about 1.13 million square kilometers of which only 12 percent is arable land; and a landlocked country, its climate is characterized by tropical monsoon with wide topographic-induced variation (CIA world fact book 2009). Its terrain is characterized by a high plateau with a central mountain range divided by the Great Rift Valley. In general, the highlands receive more rain than the lowlands with annual rainfalls of 500mm to over 2000mm for the highland and 300mm to 700mm for the lowland. Irregularity of rainfall is a characteristic feature of Ethiopian climate which makes the country prone to recurrent droughts and famines (ibid).

The economy is dominated by agriculture that accounts for 47 per cent of the country's GDP, 60 per cent of the export earnings and 80 per cent of the labor force (WB/WDR, 2008:320). A variety of crops are grown seasonally in different parts of Ethiopia including cereals (maize, teff, wheat, sorghum, barely), coffee, pulses, oil seeds, root crops, fruits and kat. Ethiopia is ranked first in Africa for its livestock population (Berhanu, 2007:39). And the smallholders' sector is the most dominant sub-sector in the agriculture sector, accounting for about 95 per cent of crop production. The largest share of the small-scale production however goes to household consumption and re-seeding (Grember et al., 2008:31). Moreover, agricultural productivity in Ethiopia is very low compared to other Sub-Saharan African countries and is dominated by rain fed agriculture (CIA-World Fact book, 2008).

Even though agriculture is central to the government's development policy (MoFED 2006), there is a long way to its transformation. Severe soil degradation and low use of improved technologies by farmers and the recurrent droughts have left the sector less productive. In addition to this, access to market and market information is constrained by lack of adequate infrastructure leading to a leakage of income from agricultural marketing along the marketing chain. Studies show that the share of marketing costs in agricultural marketing in Ethiopia is about 40 to 60 percent of the total price difference

between producers and consumers in bigger cities (GMRP 1997:12). Hence, reducing these costs would potentially lead to the improvement of income for rural households and reduce costs for urban consumers.

Production of food grain have shown improvement over the last decade, however the income of rural producers and food security for urban population remains low because of the poor functioning of the grain market. The proportion of the population dependent on the market for all or part of its food demand is about 42 per cent of the total population (Alemayehu 1993:48) and the urban population depends entirely on good functioning of the agricultural markets to get its food, which is 65 per cent of the total household expenditure (Bereket et al. 1996:14). This indicates that a well-functioning grain marketing system would significantly improve incentives for rural productivity and would reduce substantial costs for low income urban consumers.

The well functioning of the grain marketing system on the other hand depends on its organizational structure and vertical-spatial integration of the marketing system (see section 2). However, there is a little empirical information on the structural organization of the grain market, the nature of different market participants and the subsequent impacts on the performance of the grain market (Alemu, 2008:9). An informed policy decision in regards of improving the performance of the agriculture marketing system needs an updated information on the – existing structure, conduct, and performance – of the market. The objective of this study is therefore to assess the structure, conduct and performance (SCP) of the grain market and identify the constraints facing market participants that influence the performance of the grain market in light of the rural livelihoods in Ethiopia.



## **1.1. Purpose and research questions**

The objective of this research is to assess the structure, conduct and performance of the market for three major staple food grains produced by smallholders in Lume wereda<sup>1</sup> of Oromiya region in Ethiopia. The research starts with the study of the supply side through rural household survey of their production and consumption.

### ***Specific research questions:***

- How is the grain market organized and coordinated?
- To what extent has the organizational structure of the grain market served as an incentive or disincentive to the conduct and performance of the grain market?
- To what extent does grain price vary spatially and temporally in the study area as well as between the study area and the major terminal markets?
- What are the implications for rural livelihoods?

## **1.2. Significance of the study**

The market structure and conduct have direct and indirect links to rural households' income as well as the food security of the low income urban population, which depends on the good functioning of food market. A well structured and competitive market delivers maximum benefit to the society and apparently poor structure of markets disincentive the players through increasing transaction cost and other associated costs. This study expected to deliver information regarding:

- The organizational structure and coordination of the grain market in the study area.
- The potential impact of structure and conduct of grain markets on the income of rural households and all other participants in the grain marketing.
- The measures that should be taken and commitments that should be made by the government and the international community to improve the performance of the grain market. and
- Filling the information gap on grain market structure, conduct and performance.

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<sup>1</sup> *Wereda* is a smallest administrative units where government institutions like agricultural offices, legal institutes, bigger health posts, and secondary schools are located; they divided in to *Kebeles* (the smallest or local administrative units)

### **1.3. The role of agriculture in poverty reduction and economic development**

*Eradicating extreme poverty and hunger* is the first and foremost goal of the Millennium Development Goals (MDGs). However, there is no empirical evidence that this will happen in most of the poor Sub-Saharan African countries at least by 2015. The economies of these Sub-Saharan African countries depend on agriculture, which accounting for more than 30 to 40 per cent of the GDP, 40 percent of the export values and employs more than 70 percent of the population (Diao et al., 2006:3; Hazzel and Diao, 2005:28). The African agriculture is dominated by small scale agriculture and the 1970s Green Revolution of Asian has still to happen.

A debate is going on with regard to the role of agriculture in poverty reduction in rural Africa where the majority of the population is living on it under extreme poverty situation. Among those in support of the significance of the role of agriculture in poverty reduction are (Diao et al. 2006; Hazzel and Diao 2005), who argue that a agriculture based development, especially increased production in staple food crops, is more important in poverty reduction than the service and the industry sectors. The World Development Report of the 2008 also draws on many reports of these types and stresses the key role of agriculture in poverty reduction in African context.

In Ethiopia more than 85 per cent of the population lives in rural area and their livelihood entirely depend on small scale agriculture. Even though its contribution to the GDP is declining from 54 per cent in the 1990s to about 48 per cent in the 2008 agriculture is still vital to vast populations living in rural Ethiopia, and it makes 60 per cent of the export earnings (CIA-World Fact book, 2008). Agriculture in Ethiopia, as in other Sub-Saharan countries, is dominated by small-scale. The small scale sector remains subsistence-oriented and is entirely dependent on weather with little investment in irrigation. Only 1.4 per cent of the total crop area was under irrigation in 2008 cropping season (CSA, 2008:12). Given that the country is hit by recurrent drought almost every decade – but has a number of irrigable water sources – the contribution of irrigation could have been significant in Ethiopian agriculture.

Given the size of the population it employs and its status as a major source of foreign exchange revenue, the agriculture sector has a key role to the overall economic growth in Ethiopia, and if effective poverty reduction is to be achieved the agriculture sector has to be transformed. However, although agriculture have been central to the government policy through the Agriculture Development-Led Industrialization (ADLI) policy since 1990s (MoFED, 2006), development of the sector is progressing very slowly, and is not yet in a position to transform the rural economy.

To add more on the debate of the key role of agriculture in the economy of developing countries, like Ethiopia, few sentences on studies emphasizing agriculture in poverty reduction are added. Increasing food production at the local level not only draws the rural population – more than 70 per cent of the total population in most Africa countries – out of extreme poverty but enables the low income population living in urban centers and resource poor rural dwellers to access food at lower prices (WDR 2008:32; Ellis, 2005:136; IFAD, 2001:16). However, the challenge may be how to make the small scale agriculture – under the threat of shrinking farm size, soil degradation and drought – play this crucial key role in poverty reduction and overall economic development in African context.

Nevertheless, given that market is poorly functioning, the government needs to continue efforts – for infrastructure development, strengthening the agricultural research and extension system and trying to raise yields of smallholders – (de Janvry & Sadduoleit 2005:83). In addition to investment in research and infrastructure, real commitment from relevant institutions and their personnel is vital to transform the sector. Diao and Pratt suggest that “business-as-usual”, vis-à-vis the traditional way of production, will only continue to deteriorate the food security situation of the country and will not enable the objective of halving poverty by 2015 (2008: 215). Evaluating four agriculture sub-sectors – staple crops, livestock, traditional exportable crops (coffee), and non-traditional exportable crops (horticulture and oil crops) – these researchers found out that staple food crop production has greater contribution to the GDP growth and poverty reduction (Diao et al., 2008:39).

#### **1.4. Policy and the grain market in Ethiopia**

Ethiopia has gone through three major regimes since 1920s. The feudal regime, which stayed up to 1974 and was referred to as ‘liberal economy’, was characterized by an elite – a few landlords who were loyal to the king – controlling the resources and the masses suffering from poverty and forced to work on the farms of the elite. It was replaced by a socialist government in 1974. Since then the country has undergone two major policy changes.

The first was when the socialist regime introduced command economy policies. The State controlled the economy with almost no participation from the private sector and tariffs, quotas and bureaucratic procedures were put in place to control free inter-regional commodity flows and foreign trade. Farmers were ordered to sell to a government owned Agricultural Marketing Corporation (AMC). The implications of this policy on the overall economy and the agriculture sector development have been documented in (Franzel et al., 1989:45) which described that the economy was stagnated for about two decades under this economic policy until it was ended in 1991.

Since 1991 the government has fully liberalized the market. State-owned enterprises have been privatized and the role of government in the economy has gradually declined with increasing participation of the private sector. Agricultural Development Led Industrialization (ADLI) was designed as a central government policy (MoFED-PASDEP, 2006). The Agricultural Marketing Corporation (AMC) was also reoriented to fit into the free market economy with a new name: the Ethiopian Grain Market Trade Enterprise (EGTE), which focuses more on market stabilization to improve market gains for smallholder producers, protect urban consumers from grain price inflation, participate in export marketing wherever there is a bumper harvest and keep grain for emergency needs.

studies on the impact of these major policy changes following the end of the command economy focusing on the performance of the grain marketing and the participation of the private sector was conducted by Mulat and Ferede in 2005, Dessalegn, et al. in 1998,

Negassa in 1998, Dercon in 1995, and Gabre-Madhin in 2001. As was also discussed in the literature review part, these studies indicated that the co-integration of some major grain markets in the country have improved, but worsened in some markets while other markets remain unchanged. The participation of the private sector was reported to increase, however the better performance of the grain marketing system was challenged by lack of access to credit services, low level of marketing margins and low investment in marketing facilities.

Due to the decreased involvement of the government in agricultural input supply, farmers considered organizing themselves into cooperatives. These cooperatives are increasingly playing a significant role in some parts of Ethiopia in terms of input supply to their members and searching for markets for farmers' agricultural output. Unions of cooperatives, for example, are participating in the export of coffee, pulse and oil crops. The recent food price inflation is sometimes attributed to the grain export and hoarding by farmers' cooperatives and their unions in the Ethiopian context (Mulat et al., 2007:40). The agricultural development policy emphasizes the importance of cooperatives and cooperative unions in the transformation of the rural economy. A government agency, the Ethiopian Cooperative Promotion Agency (ECPA) was also established in 2002 to promote cooperative development at the national level.

Just as agricultural production relies on rainfall production and variant weather conditions; the price of food grains also exhibits a nature of high volatility. In addition to this, studies also indicate that the grain market in Ethiopia is characterised by high transaction costs, low access to market information by producers and traders, lack of quality standards and poor physical infrastructure (Alemu, 2008:36). To help reduce the problems of market information, quality standards, provision of storage facilities and coordination of the marketing of agricultural commodity, a marketing platform known as the Ethiopian Commodity Exchange (ECX) was established in 2007. The aims of ECX were to create a platform where market information, grades and standards, contract enforcement, regulation, and trade and producer groups, mutually reinforce each other (IFPRI/ ESSP, 2008).

### **1.5. Review of past studies on grain marketing**

Before 1990 Ethiopia was under a socialist government running command economy and at the time the grain marketing was dominated by a state owned grain marketing enterprise, Agricultural Marketing Corporation (AMC) with a minimal involvement of the private sector. After the fall of the socialist regime in 1990, a liberal market policy was put in place, partly pushed by the Structural Adjustment Program (SAP) of the World Bank and IMF of the 1980s and onwards. Following this, few studies were conducted to understand the structure, conduct and performance of grain marketing system in Ethiopia.

Negassa and Robert (2007), Mulat et al., (2007), Dorosh and Ludovic (2007) assessed the marketing system and the reasons for high price increase by taking three major staple food grains in Ethiopia: maize, wheat and teff. Their major finding was that the spatial efficiency of the grain market has improved in some markets following grain marketing reforms at different points in time since 1990s; it remained unchanged in some markets; and it even worsened in others. Regarding the growing grain price the researchers found out that the increasing demand, hoarding by farmers' cooperatives, collusion among big grain traders and increasing marketing costs were the major reasons.

Tanguy et al., (2007), have looked at the recent development in farmers' cooperatives in terms of the distribution and marketing opportunities they provide for their member farmers. The results indicate that the existence of cooperatives increased from 15 per cent of the districts in Ethiopia in 1994 to 35 per cent of the districts in 2005. Poor households were found to participate less in cooperatives. In terms of marketing opportunity, the market prices that cooperatives realize for their members has generally increased, but the volume on grains that were supplied to the market by their members has stayed the same.

Kindie et al., (2006), Mulat and Tadele (2005), Abebe and Bekele (2005), have conducted spacial and temporal market integration research by taking three major staple food grains: wheat, teff and maize. The findings indicate that the major markets for wheat – Shashemene, Nazareth, Jimma and Addis Ababa – were co-integrated while Mekele

and Dirre Dawa were not integrated either with each other or with the rest of the four markets. The low household storage capacity and the demand for money to pay for loans and household consumptions by producers were found to be the major reasons for sale of grain immediately after harvest.

Dessalegn et al., (1998), Asfaw and Jayne (1997), and Asfaw (1997) have studied the spatial integration of the major regional markets with the Addis Ababa market, the major actors in grain marketing and the vertical and spatial coordination of the grain market. The results found were that following the grain market liberalization in 1990 the Ethiopian grain marketing system showed low volatility, a high degree of vertical and spatial integration, and price differences between the wholesale and major regional markets exhibited decline.

In 1994 a study conducted by Welday identified that the private sector grain trade has become competitive and more efficient than the state-owned grain trade enterprise, the Agricultural Marketing Corporation (AMC). The study also found that spatial price spreads were higher compared to the estimated transfer costs and cost of transporting grain from rural to urban markets were particularly high for small trucks. There were also indications of collusive behavior in some rural markets to the detriment of grain producers. The grain trade was highly concentrated in the hands of a few licensed wholesalers, but increasing participation of unlicensed traders helped improve the competition, and seasonal price differences were high compared to the estimated storage costs.

These studies provide useful information on the organization and functioning of the grain market system. However, the impacts of the growing role of cooperatives and improving infrastructure were not grasped in these studies. These new developments might have introduced a new organizational structure in the marketing system. Moreover, the previous studies did not start the market analysis with an assessment of the supply side, which could have been useful to see its performance as well. Therefore, this research will shed light on the more recent developments in the structure and conduct of the Ethiopian grain market system and the performance of the small scale agriculture.

## **2. Conceptual Framework – the Structure, Conduct, Performance (SCP) approach.**

‘Market structure’ consists of the relatively stable features of the market that influences rivalry among buyers and sellers operating in a market. Some examples of market structure include: the number and size distribution (size of their business) of buyers and sellers of food commodities in the market; barriers to entry into the market and the nature of trading relations (vertical coordination mechanisms<sup>2</sup>) among market participants. ‘Market conduct’ refers to the patterns of behavior that firms or traders and other market participants adopt to affect or adjust to the markets in which they sell or buy; these include behaviors such as price setting, lobbying of politicians to control market and merger habits of traders or firms to maximize their market gain and the market performance is extent to which markets result in outcomes that is deemed or preferred by market participants (this paragraph draws on FEWS NET, 2008:2-5; Cubbin, 1988:3).

The principle behind the structure-conduct-performance approach, mostly used in industrial organizations, is that there exists a relationship between the structural organization of a market and the competitive behaviours of market participants and this would influence the performance of the market (FEWS NET, 2008:4, Scott 1995:10; Pomeroy and Trinidad, 1995:219; Cubbin, 1988:2). And a typical structure-conduct-performance (SCP) approach in marketing system research tends to evaluate market functioning in terms of the consistency of marketing margins<sup>3</sup> with marketing costs incurred in market transactions; the major marketing costs being in pre- and post-marketing. The pre-marketing costs are the costs of searching for goods or services and negotiating the marketing prices. Post- marketing costs are transport, labor, processing and contract enforcement costs. In the case of agricultural marketing in Ethiopia the pre-marketing costs are invisible – or perhaps immeasurable – and hence the post-marketing costs will be used for subsequent analysis in this research.

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<sup>2</sup> Coordination mechanisms refer to the trading relations or ways in which transactions are conducted between market participants. Examples are spot market transaction, contracts, cooperatives, vertical integration and strategic alliances between or among farmers, traders, transporters, processors and consumers (FEWS NET, 2008:2).

<sup>3</sup> The difference between the purchase price of commodity by consumers and its sale price by producers (Ellis, 1992:97)



The SCP analysis also evaluates markets in terms of whether the number of firms or traders operating in a market are large enough – in number and size distribution – to ensure that competition exists between the firms, which is assumed to reduce prices (for sellers in a market) or increase market prices for goods or services (for buyers competing with each other for a good) (FEWS NET, 2008:3; Samad, 2008:183).

There are also several shortcomings to the Structure-Conduct-Performance (SCP) approach that should be kept in mind while using it in market analysis. Among these concerns is the idea of evaluating market performance by looking at the marketing margins; whether it is consistent with the marketing costs does not necessarily indicate that the market is performing well or not. This is because if technologies are used in the marketing system and are appropriate to reduce the risks and high costs in the system, and if more developed institutions and coordination arrangements were implemented that can absorb risks of investment in new technology and reduce transaction costs of exchange, the approach would not apply. (Samad, 2008:184; Hooks, 2003:69-70). This is because the analysis of marketing system performance on the bases of the consistency of marketing margins and marketing costs fails to take into account the dynamic issues of technological and effective management development in a marketing system (Jayne 1997:3).

The SCP approach is also criticized for the second criteria of assuming that competition will exist as the number of firms increase and will hence lead to a better market performance. Due to the existence of economies of scale, where there are thin and isolated markets, as in the case of Ethiopia, the number of traders that can operate profitably in an area can go down. Hence, in this case the low number of traders may not necessarily indicate the existence of a non-competitive environment, nor would large number of small traders handling small quantities of goods indicate that per unit marketing costs are reduced and the market is performing (Dessalegn et al., 1998:5).

However, in the Ethiopian context – where there is a lack of technological development and effective institutions which could have enable the existence of low cost and efficient firms or traders in the marketing system – the structure-conduct-performance approach

seems applicable in the marketing system analysis and would potentially generate useful information that can help improve the performance of the marketing system. It was on this ground that the SCP approach was selected to be used in the analysis of the marketing system in this research.

### **3. Production and the study area**

#### **3.1. Production trends of the three crops in the last decade**

To highlight the production status of the three crops considered by this study, the two graphs below were used. The data was compiled from the past ten years' statistical bulletin of the Central Statistical Authority of Ethiopia (CSA). The data represents the national production trends and land allocation, representing localized production, as in the study area. However, the primary data obtained through a survey of about 360 smallholder households is also presented for comparison in Figure 9.

Figure 1 shows that teff, wheat and chickpea production was increased respectively from 13 million, 1 million and 1 million quintals<sup>4</sup> in 1998 to 30 million, 23 million and 3 million quintals in 2008. This is equivalent to the respective increase in 130, 2200 and 200 per cent of teff, wheat, and chickpea production within the past ten years.

The land allocation (see figure 1 also) for the three crops in the same period of time was 1.7 million, 0.8 million and 0.1 million hectares in 1998 and 2.6 million, 1.4 million and 0.2 million hectares of land for teff, wheat and chickpea respectively in 2008. And this is also equivalent to an increase of 53, 75 and 100 per cent respectively for teff, wheat and chickpea production area. As the figures above show the increase in production is much more accounted for by the per unit area increase than the horizontal expansion of cultivated land.

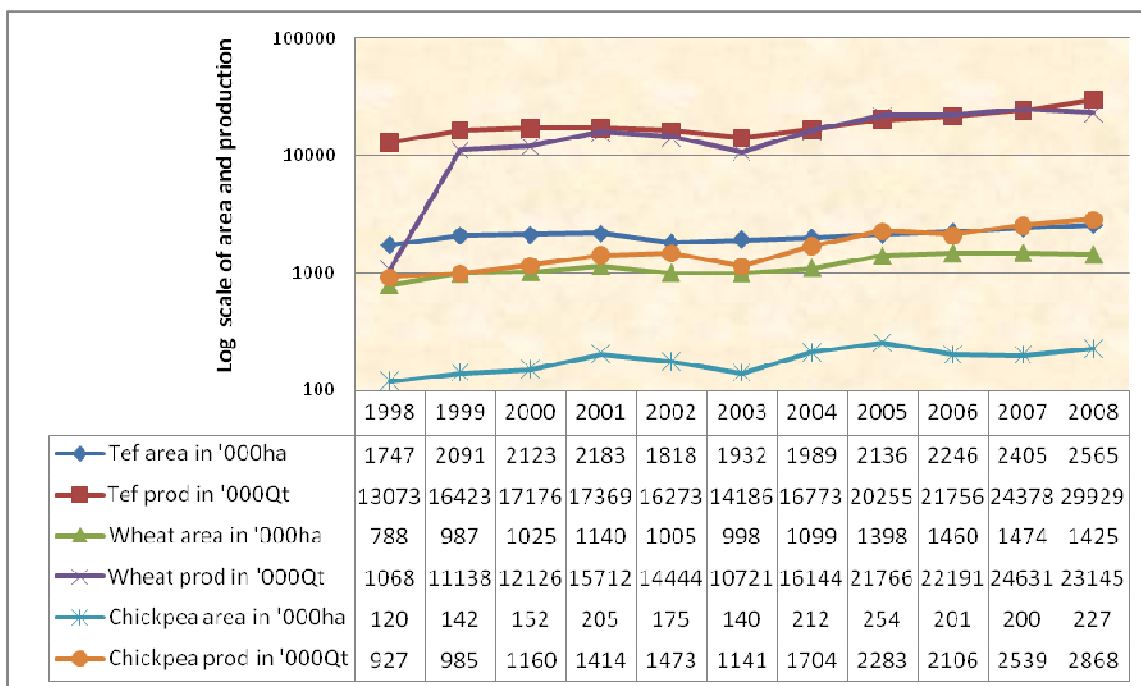
And compared to the increase in the volume of crop production, the increase in the size of land allocated to the three crops in the last decade was small. Therefore, one of the reasons for the increase in production in the last decade could be an increase in per unit area production which could be attributed to the increased level of inorganic fertilizer and

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<sup>4</sup> 1 Quintal = 100 kg

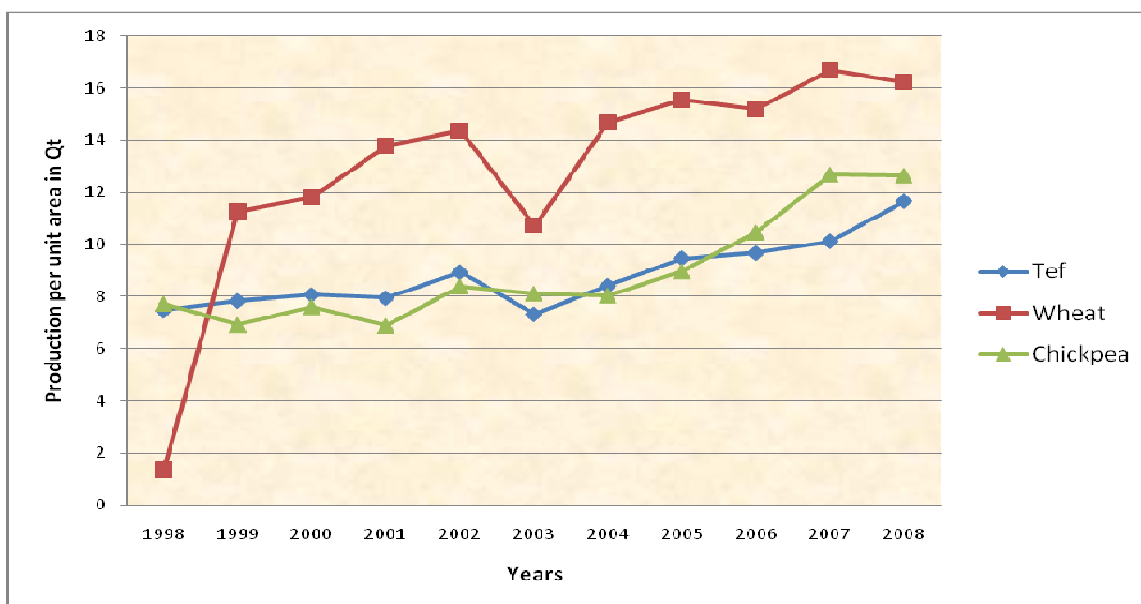
herbicide (for weed control) use by smallholder farmers. The production per unit area was presented in figure 2 and indicates that increase in per unit area production was high for wheat production in the period covered by this data set.

Figure1. Land allocation and production of: teff, wheat, and chickpea in the last ten years.



Source: Data compiled from CSA statistical bulletins, 1998-2008.

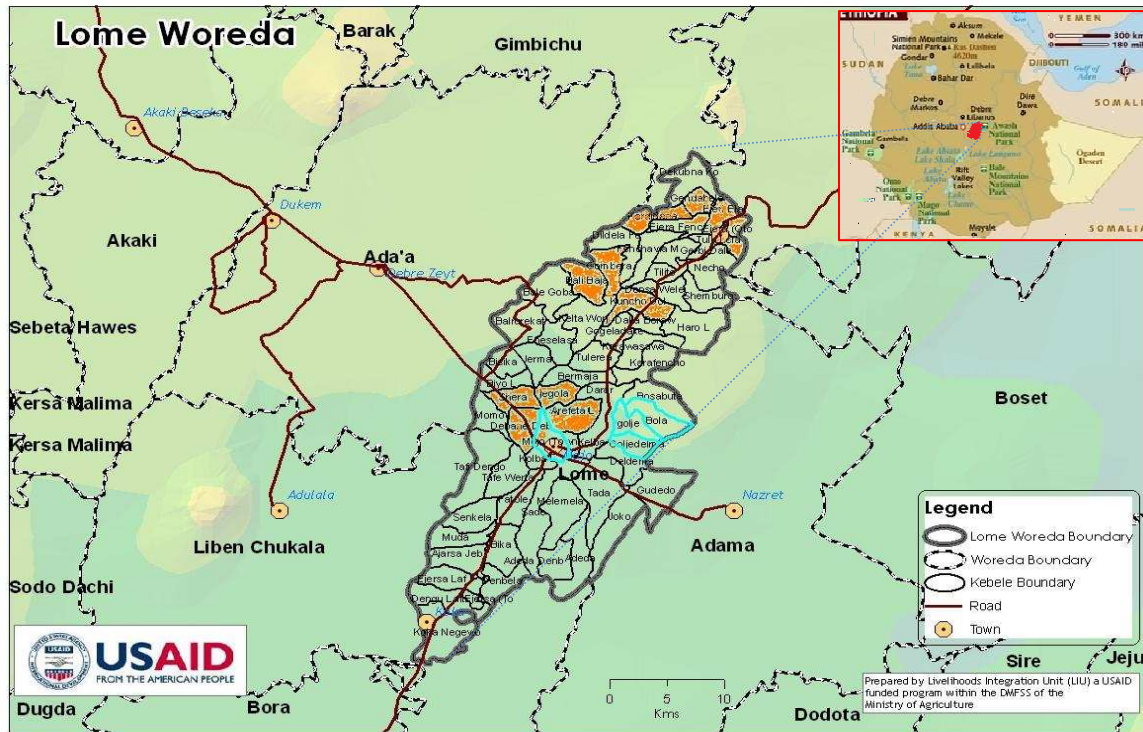
Figure2. Production per unit area of: teff, wheat, chickpea in the past ten years.



Source: Data compiled from CSA statistical bulletins, 1998-2008.

### 3.2. The study area

Figure3. Kebeles<sup>5</sup> where market and household survey were conducted (highlighted).



Source: DMFSS-USAID livelihood mapping unit.

Lume *Woreda* is located in East Shewa zone of the Oromiya region, on a cross-road running from Addis Ababa to Djibouti, and Addis Ababa to southern part of Ethiopia. An old Ethiopia-Djibouti railway also crosses the Woreda, which is located 70 km to the east of the national capital, Addis Ababa, and about 25 km to the west of the regional capital, Adama. It is located between 8<sup>o</sup>12' – 8<sup>o</sup>50' latitude north east and between 39<sup>o</sup>01' – 39<sup>o</sup>17' longitude east and has an altitude of 1500 – 2300 masl. The Woreda is divided into 35 Kebeles (see footnote 3), of which 45 per cent is highland, 30 per cent is mid-altitude, and 25 per cent is lowland. The total are of the Woreda is 65,130 hectare and the total population is 75, 211 (See table 1).

<sup>5</sup> A smallest administrative unit headed by Kebele chair man (have some primary and sometimes secondary educations or no education), elected from community members, though not applicable for all some primary schools and health clinics can be found at this level.

Table1. General information on the Woreda

Population	<b>Men</b>	38,947	<b>Dominant soil</b>	Vertisol
	<b>Women</b>	36,264	<b>Rainfall</b>	700 - 800 mm
	<b>Total</b>	75,211	<b>Temperature</b>	18 - 28 <sup>0</sup> C
	<b>&lt;1year</b>	1,688	<b>Primary school (1-4):</b>	23
	<b>1 - 14</b>	28,269	<b>Junior schools (1-8):</b>	14
	<b>15 - 64</b>	43,347	<b>Health post</b>	10
	<b>&gt;65</b>	1,907	<b>Clinics</b>	2
Land (hectare)	<b>Farm</b>	45,758	<b>Livestock clinic</b>	3
	<b>Pasture</b>	326	<b>FTC</b>	18
	<b>Degraded</b>	5,720		
	<b>Forest</b>	3,385		
	<b>Other</b>	9941		

*Source: Compiled from Woreda BoARD and BoFED sources.*

According to the Federal Disaster Mitigation and Food Security (DMFS) department of Ministry of Agriculture and Rural Development (MoARD) Lume *Woreda* is located in the Becho-Ada'a teff and chickpea (BAT) Livelihood zone (LZ) (DMFS, 2008:1). The LZ is categorized as mixed farming of crop and livestock production and its agro ecology is dominated by mid-altitude with few highland agro-ecologies. The main rainy season is from June to September. It is also considered to be a surplus production area mainly depending on rain-fed agriculture. The major crops in the area are teff, wheat, and chickpea for own-consumption as well as for the market. Better-off farmers use hired labor for on-farm activities (land preparation, weeding, harvesting) and poor households and migrant workers from other parts of the country sell their labor for income generation.

### **3.3. Why Lume?**

Lume Wereda is located about 70 km from the national capital, Addis Ababa, and about 25 km from the regional capital of Oromiya, Adama, which are the major terminal<sup>6</sup> markets in the country, on the main asphalt road running from Addis Ababa to Djibouti. Moreover, the area is one of the foremost surplus producing parts of Ethiopia, supplying the regional and the national capitals. This is the key factor underpinning for the selection of the Woreda for this research: to see whether the grain market is competitive enough to benefit producers and traders in this “dynamic” environment within the Ethiopian context. However, it will be difficult to generalize about the structure, conduct and subsequent performance of the marketing system at the national level with the findings of this research, because it raises a question of whether one Woreda is representative at the national level (Yin, 2003:10; Gomm et. al., 2000:5). Nevertheless, inferences would be made from the findings of this single case at least for those Woredas which are not very remote from the major markets in Ethiopia.

## **4. Methodology**

### **4.1. Research methods**

During data collection in the field, the Participatory Rural Appraisal (PRA) approaches as outlined in Mikkelsen (1995:63) were employed in interviews and surveys. The qualitative data was collected through focus group discussions of smallholder producers, cooperative leaders, development agents and Wereda agricultural exporters. The objective was to get an overall understanding of the opportunities and constraints in the smallholders’ production and marketing in the study area. Pre-selected topics were used to guide the discussion with emphasis placed on the voice of the participants while the interviewer focused on recording and note-taking (Dewalt and Dewalt, 2002:120). Individual interviews were also held with market participants: farmers’ groups, traders, wholesalers and retailers. The objective was to construct the picture of interaction among

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<sup>6</sup> Where the highest possible prices for commodities are paid by ultimate consumers in the country

market participants, market chain and commodity flows, opportunities and constraints they face in the market.

A structured survey questionnaire was used to collect the quantitative data through: enumeration of what small scale households produce, how much of this they consume at home and how much of it they take to the market. Furthermore, the survey was used to uncover the sources of their other incomes to determine the relationship between these factors and the timing and amount of grain sale by small scale households. The objective of conducting the farm household survey was to identify the major problems constraining the supply side and factors influencing the marketable surplus. And an effort was made to keep the balance between the qualitative and quantitative data (Silverman, 2005:115).

#### **4.2. Sampling**

For the focus group discussions with farm households, respondents were selected, with assistance from development agents, based on an assumption that the selected farmers would have the requisite knowledge of the production and marketing system of their villages. Therefore, more focus was given to including village elders, farmers' group leaders, past and present Kebele chair persons and religious leaders wherever applicable. Five focus group discussions were held with farmers to generate the data on the general production and marketing situation in the study area. For interviews, individual farmers and traders were selected at random until the saturation was reached where no new ideas arose in the next interview of the investigation (Ragin, 1994:86; Kvale, 1996:101; Silverman, 2005:110).

One focus group discussion was also held with grain traders<sup>7</sup> in the study area in order to generate information on the general situation in the grain marketing activities *vis-à-vis* policy opportunities and constraints to their business and so on. In addition to this, 30 sample traders were randomly selected from a list of 80 traders operating in the Woreda with the help of Woreda bureau of Finance and Economic Development (BoFED). The

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<sup>7</sup> Traders in rural market include all market participants in rural primary markets whether they are collectors, wholesalers or retailers of agricultural commodities.

purpose was to generate data on where the traders buy grains, where they sell, how they decide market prices, their major costs and constraints they face in the market.

For the quantitative data on rural households, a survey questionnaire was designed to enumerate smallholders' production, consumption, marketing and household assets in the study area. Kebele list of the farm households was used as a sampling frame and the formula below was used to draw a representative list of household samples for the survey.

$$s = \frac{x^2 NP(1-P)}{d^2(N-1)} + x^2 P(1-P)$$

$s$ = sample size,  $x^2$ =table value of chi square for 1 degree of freedom (3.841),  $N$ =population size,  $P$ =population proportion, and  $d$  =degree of accuracy (Bryan, 2004:161)

### **4.3. Data analysis**

Qualitative data underwent transcription and the findings are presented in descriptive forms by using graphs, charts and tables. A chart flow indicating the major participants in agricultural marketing and commodity flow directions was drawn and presented in figure 4. Kvale (1996) provides important insights to analysis of qualitative data from interview and discussions. For the quantitative data gathered through household surveys, statistical analysis using SPSS version 13 was conducted to determine the relationship existing between the amount of marketable surplus that were taken to the markets by sample rural households and households' asset endowments, the level of production for house households as compared for land size and number of oxen for ploughing the land.

### **4.4. Challenges and criticism of the sources**

I took an advantage of my knowledge of the local language in the study area and it was not too difficult for me to conduct the field data collection. However, this does not mean that every move was so smooth, especially when it comes to getting information on sensitive issues from producers and traders. Producers were suspicious to give out exact



information on their assets and production as well as consumption-marketing volumes for fear of incurring higher taxes from the government side; no matter how much I tried to convince them that I am just a student writing a paper, this remained an obstacle and made the data collection time consuming. Similarly, traders were also reluctant to give sensitive information like the volume of their annual purchase and where they get price information; such data was gathered with more effort.

Regarding the secondary data sources, especially the long term price data that I have used in my thesis, it was difficult to get data collected only by one organization. This required taking price data collected by two different organizations Ethiopian Grain Trade Enterprise (EGTE) and Disaster Mitigation and Food Security (DMFS) and combining them to get full information. However, the data was sometimes inconsistent between the two sets because different prices were collected for the same place at the same time owing to the different procedures used by the two organizations. After the data collection procedures were discussed with the two organizations, data from EGTE was found to be more reliable and only part of the DMFS data was used to fill gaps in the EGTE data, and the DMFS data was interpolated when there is much discrepancy with the later.

## **5. Results and discussion**

### **5.1. Grain market structure and conduct**

A sample of 28 grain traders were randomly selected from the list of 80 grain traders registered at the Woreda bureau of finance and economic development. These traders were the primary sources of information presented in the following sections. The socio-economic profile of the traders is presented in table 2. In addition to the grain traders, officials from the Woreda finance office, Bureau of Trade and Industry and a marketing extension expert at Bureau of Agriculture and Rural Development were interviewed for their view on the administrative, tax and grain marketing situation in their area.

As indicated in the table 2, only 4 of the 28 traders interviewed were women. 64 per cent of the sample traders own at least one store, 79 per cent own a weighting scale while only 18 per cent of the traders have their own vehicle to transport the grain. 93 percent of the

traders have a mobile phone, 94 percent have a radio and about 54 per cent own a TV, and even 11 per cent of the sample traders own a computer.

Table2: Socio-economic profile of the sample traders.

Characteristics	No. of Respondents	Per cent of total sample
Have ware house	18	64
Have weighing scale	22	79
Have truck	5	18
Communications	Telephone	26
	Radio	27
	TV	15
	Computer	3
Sex	Male	24
	Female	4

*Source: Own survey of traders.*

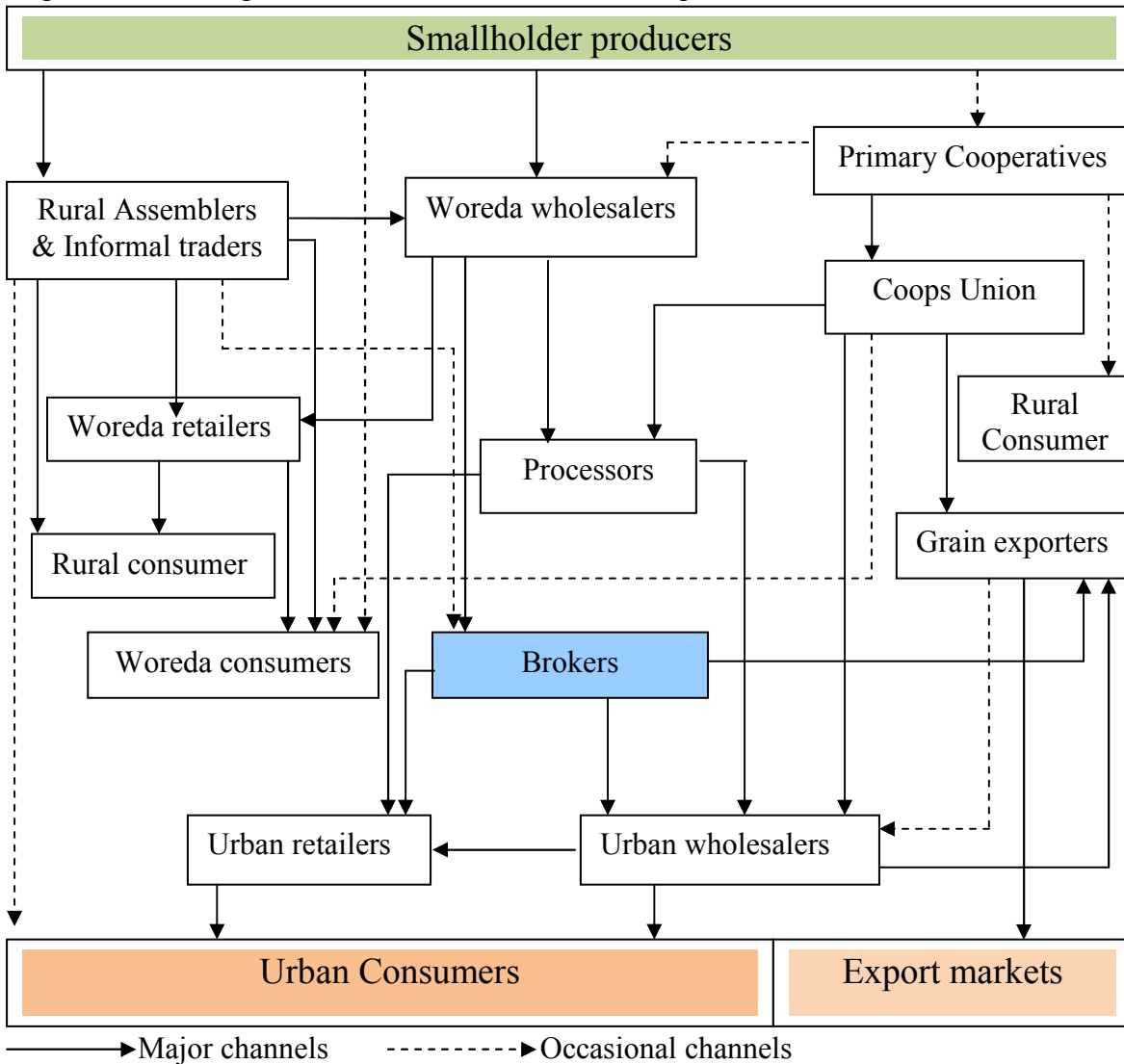
## 5.2. Overall organization and structure of the grain market

Organizational structure and integration of a market is one of the factors that determine market efficiency. The routes that grains pass through from producers until it reaches the ultimate consumers represent this organizational structure. In the upper stream are producers who produce the grain, retain some of it for own consumption and take some amount to meet household expenses and loan repayments. Farmers, traders and consumers meet in a market place where an exchange takes place. As indicated in figure 4 the food grains pass through different levels of market channels to go from producers to consumers in urban centers and export markets.

If the length of the chain between producers and consumers becomes longer then there will be many transactions which may result in an increase in marketing costs. This leakage of benefits from agricultural marketing all along the lengthy chain may result in lowered income of producers and high food costs for urban consumers. The following

figure was drawn based on the information obtained from interviews and surveys to indicate the organization of the grain market in the study area. The figure will be used as an analytical framework in the subsequent sections.

Figure4: Marketing structure for teff, wheat and chickpea.



Source: own data from surveys and interviews.

As indicated in the figure above smallholder producers bring their produce to small rural markets on limited days of the week and sell to small rural assemblers or wholesalers from Wereda town and occasionally to their primary cooperatives whose offices are not far away from these small rural markets. Most of the farmer respondents were not

interested to sell to their cooperatives, either because they felt that the cooperative leaders are corrupt or the cooperative management itself was too constrained by vague responsibilities and lengthy bureaucratic process to be at their store to buy the grain. The farmers also have an option to sell their produce to urban and rural consumers in the Woreda whom they prefer to sell to because they pay them good prices compared to traders and cooperatives but are not much in number and are occasional buyers.

Woreda wholesalers collect the grains from small assemblers in rural markets and farmers and transport most of it – about 80 per cent of their purchase – to the terminal markets in Addis Ababa and Adama. More than 90 per cent of the total traded volume of pulse crops from the study area goes to the exporters in Adama. The remaining amount goes to the Addis Ababa retail market.

Brokers in the terminal markets play a role in coordinating transactions between wholesalers from the study area and other parts of the country and big wholesalers in the terminal markets. They negotiate prices with wholesalers and rural assemblers, sell the grain, and collect the money and grain bags on behalf of the traders from supply areas.

### **5.3. Market structure – Four firm concentration ratio**

Market structure refers to stable features that would influence the competition between firms or traders in a market, with the examples including the number of firms or traders, their size distribution, and vertical relations among market participants (FEWS NET, 2008:2). The structural organization (see also figure 4) of the grain market in the study area was assessed to identify if it is competitive enough to fairly benefit both smallholder producers and the grain traders. To meet this objective 28 sample traders were surveyed for the amount of the three major food grains in this study – tef, wheat and chickpea – that they handle annually, the constraints they face in their marketing activities and their source of market price information.

The four-firm market concentration ratio was calculated using the data from the traders' survey. As discussed in the conceptual framework section, 'four firm concentration ratios' refers to the proportion of the marketed volume that is controlled by the biggest

four firms in a market (see also Hooks, 2003:69). If a smaller number or proportion of buyers or sellers controls a significant proportion of the marketed commodity, there is a possibility that this small proportion comprised of bigger traders will participate in a non-competitive behavior to maximize their gain from the market transactions, thus leading to an inefficiency of the marketing system.

However, the market concentration approach in studying marketing systems efficiency is also contested for its inability to take into account organizational efficiency, barriers to entry and economies of scale (Hooks, 2003:70, Scott 1995:125). The critics of market concentration argue that firms with low cost structure can reduce price and increase market share in competition and concentration emerges from this. Hence the existence of positive relation between profit and market concentration is attributed to gains made in market share by efficient firms, which in turn leads to market concentration, as opposed to collusive activities. (Molyneux and Forbes, 1995:155-158). However, the fact that there is a lack of well developed infrastructure and institutions that would have enable the existence of efficient firms makes the ‘four firm concentration ratio’ useful as an indicator of market performance in Ethiopian context.

In the four firm concentration analysis there are certain levels of market concentrations that are identified by empirical studies conducted in the field of industrial organizations and suggested to lead to non-competitive behaviors. Among these Kohls and Uhl, (1985) suggest that the market share of the largest four firms (CR4) that is less than or equals to 33 per cent is indicative of the existence of competition in the market, and a CR4 of 33 to 50 per cent and more than 50 per cent shows a weak and strongly oligopsonist<sup>8</sup> market structure, respectively. In general the higher the CR4 ratio the more concentrated the market is (Hooks, 2003:71).

The annual purchase of the three food grains studied – tef, wheat and chickpea – by the sample traders surveyed was used to calculate the four firm market concentration ratios in the study area. As indicated in table 3, below, the level of market concentrations (CR4)

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<sup>8</sup> Control of the purchase of a commodity or service in a given market by a small number of buyers (<http://www.yourdictionary.com/oligopsonist>)

for teff and wheat were found to be below the level that would be considered as a non-competitive market. The largest four teff and wheat traders handled annually only 27.1 per cent and 28.1 per cent of the total volume of the crops purchased by the sample traders respectively (Table 3). That means the market structure for teff and wheat is fairly competitive and does not exhibit the nature of few big-traders controlling significantly high volume of the grains that they can use to participate in a non-competitive activity to influence the market in their favor.

However, the four firm market concentration ratio (CR4) for chickpea indicates that few traders control a sufficiently larger share of the chickpea handled by sample traders in the study area, implying that these few traders may manipulate the market to maximize their marketing gains. About 34 per cent of the traded chickpea volume was controlled by four largest traders. This may be explained by the fact that following the global food inflation, the government interfered with the market, particularly by cereal crops export ban and the sale of subsidized wheat to low income urban populations. However, the export of pulses was not banned, which would have to lead to more interest among traders to exert more effort to buy more chickpea, the situation that would lead to a more competitive market for chickpea as opposed to the result obtained in this analysis. The situation may also be attributed to a relatively smaller volume of the crop handled by the traders due to mainly low supply of the crop compared to teff and wheat.

Table3: Estimates of four-firm market concentration ratio for teff, wheat and chickpea.

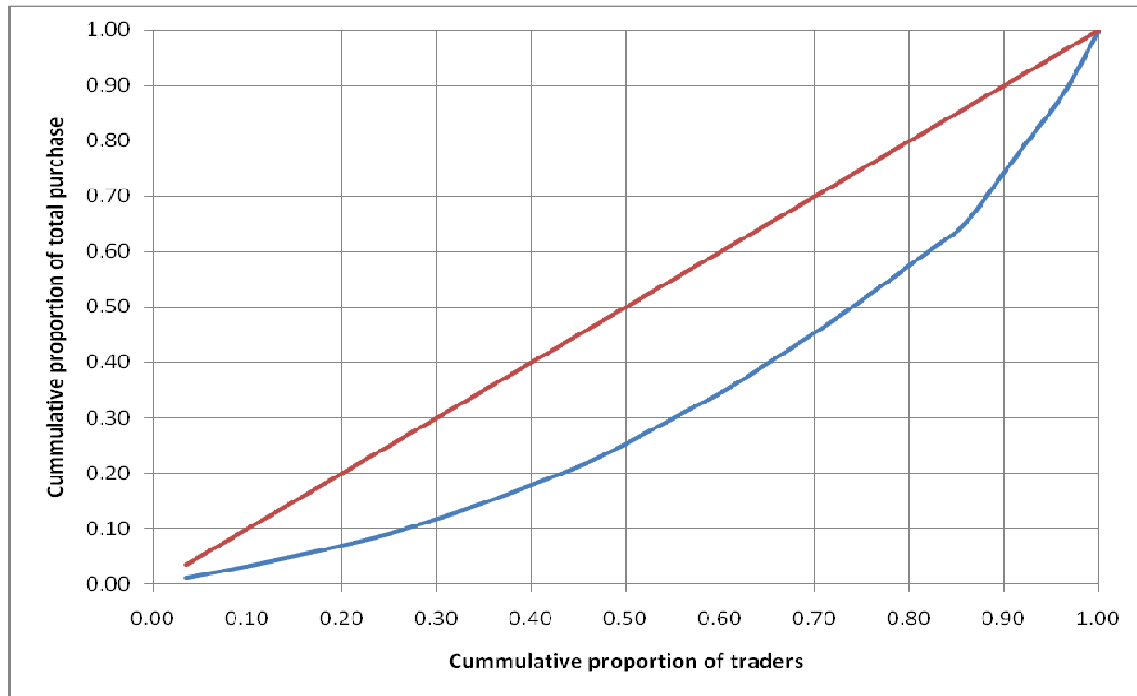
<b>Market</b>	<b>Crop</b>	<b>CR4 (per cent)</b>
<b>Mojo</b>	Teff	27.09
	Wheat	28.05
	Chickpea	34.88

To aid these indications of annual purchase inequalities among the sample traders surveyed, the Lorenz Curve was also used. The Lorenz Curve (1905, in EASYPol/FAO, 2005:2) is a tool to represent income distribution and it tells which proportion of an income is in the hands of which proportion of the population. The straight line in the

Lorenz curve (Figure 4) indicates a situation where there is an equal volume of grain purchase by the sample traders and the convex line indicates the actual annual purchase of the grains by the sample traders. The concept behind the Lorenz curve is the more convex this line, visually, the more inequality in the annual handling of the grain among the sample traders and if there is more or less equal annual purchase the curve for actual annual purchases would tend towards the equal distribution line (ibid, 2005:6).

The GiNi index is also used in connection with the Lorenz Curve to numerically indicate the strength of the inequality. The GiNi index is measured by the ratio of the area between equal distribution line and the Lorenz curve (actual distribution curve) and the total area below the equal distribution line. The value for the GiNi varies between 0 and 1. (EASYPol/FAO, 2006:3). And the more the value is close to 1 means there is higher inequality or vice versa. Accordingly, the calculated GiNi index for the sample traders of annual handling of teff, wheat and chickpea in the study area were found to be 0.49, 0.42 and 0.39 respectively. This indicates that more inequality was observed for teff, which may be attributed to its higher price, prohibiting smaller traders from handling higher amount of the crop. The Lorenz curve presented in figure 5 was for the total of the three food grains added and individual curves for individual crops are presented in Annex 1.

Figure5: Size distribution, proportion of grain, handled by sample traders in Mojo.



Source: Own survey of the sample traders.

#### 5.4. Barriers to entry to grain trade business

Barriers to entry are elements of market structure that could potentially hinder new entrants to the market and hence the efficiency of a market. Among these barriers are access to credit services, high government taxes, quotas, access to market places and storage facilities (Karakaya and Stahl, 1989:81). Lack of access to these facilities may put prohibitive barriers for traders to enter the market and conduct grain trade and hence affect the development of the market for agricultural commodities. The sample traders were asked for the difficulties they face in their marketing activities, starting from the time they started their business, and their reaction was summarized as follows.

It was discussed in the policy review section that most of the institutional obstacles to market entry and operations – including forced sale to government corporation (AMC), price setting by government, and the overall upper-hand of the government in the economic system – have all been abolished since the end of the socialist government, following with a liberal economic policy introduced in the 1990s. However, the



constraints in the grain trade are so persistent that they were more than letting the market free and abolishing quotas and other restrictions. According to the sample traders response the major persistent barriers in the market are lack of adequate financial sources and access to market information. Lack of collateral made it difficult to most of the sample traders to access the financial sources like bank.

Availability of accessible and timely information both on market supply and price is a crucial factor in marketing decisions. Even though attempts were made to establish a public market information system following the market reforms in 1990s, the status of a market information system in Ethiopia is still very limited (Alemu et al., 2008:6). As a result traders depend only on the market information they get by calling grain brokers, retailers and processors before they decide market prices in supply markets. Sometimes this price they get from their contacts in the terminal markets change due to arrival of large volume of grain from other regional markets causing them high loss.

### **5.5. Market conduct**

Market conduct is the way firms or individual traders behave in order to influence or adjust to the market they are operating in. These behaviors include price setting and collusive behaviors in a market. These behaviors, as explained in the conceptual framework, are determined by the organizational structure of the market (see also Pomeroy and Trinidad, 1988:227). The analysis of the market conduct below relies on the qualitative information gathered through interviews with sample traders, producers and officials.

Government tax and agricultural input loan collection is designed to coincide with the harvest season to increase the probability of their repayment by farmers. That means farmers are forced to take their produce to the market following the harvest season. This also shaped the way traders behave, during the harvest season, in the grain market to increase their benefit from the agricultural marketing. Most of the respondents from the producers' side and a market extension expert from the agriculture office agree that at this time traders offer low prices for agricultural commodities. Lack of adequate

infrastructure, especially roads also constrained farmers from traveling longer distances to search for alternative markets in bigger cities. This means that farmers have fewer options to bargain the price, and this reduced their income by 50 to 100 Birr per quintal of grain, as most of the farmers respondents estimate.

Another factor influencing the way the traders behave in the grain market comes from the existence of a number of informal traders in the grain market. Even though the law forces traders to have a trade license, its enforcement has been weak leading to an existence of high number of traders without license. A data from the Woreda Trade and Industry Office indicates that among the 90 grain traders operating in the Woreda only 29 have a trade license.

Hence, their presence has resulted in a fierce competition between the informal traders themselves and the licensed traders. This has caused the traders to behave abnormally in the grain marketing in order to attract more farmers (sellers) to their store (market place). Such behavior is manifested in practices such as giving some extra money to the farmers than the prevailing market price, but cheating them through their weighing scales to compensate for the extra money they paid. The major measuring units in the market are a traditional measurement like grain bags with a carrying capacity of 50 to 60 kg per bag and weighing scale (see the picture on the cover page). There is no control on the quality of the weighing scales and the traditional measurement has no standard at all, this has made the cheating more convenient for the traders. The informal traders have the advantage of not paying a license fee, sales and income taxes; even they do not pay more for the grain in actual sense.

Grain flows between main regional markets and the terminal markets, mainly Addis Ababa, is coordinated by grain brokers (see figure 4). The role of these brokers is mediating price negotiation between regional traders and wholesaler traders, exporters, and processors in the terminal market without the two (buyer and seller) meeting with each other. This is a major area of concern for most of the sample traders in the study area. It is because their working relationship was based only on trust, established through working together for a longer time and there is no legal institution for the operation of the

brokers than this. The traders also found it difficult to be sure whether the price paid by the wholesalers is equal to the price received by the traders, because they do not meet them physically.

However, even though their operations lack transparency, the traders acknowledge that it is difficult for them to sell the grain in Addis Ababa without the help of the grain brokers. Therefore, they prefer to use their services, tolerating the lack of the transparency in their relationship, as long as they get some margins after they cover their marketing costs. The brokers also help the regional traders by collecting grain bags and the money from the grain sale and haul it back to the traders.

## **5.6. Grain market price relationships**

### **5.6.1. Spatial relationship**

Spatial relationship exists when prices in one market changes in relation to prices in another market. The factors determining this relationship could be changes in supply or demand, changes in transaction costs in one of or both of the two markets considered (Paul and Berry, 2001:986, Pomeroy and Trinidad, 1988:219). Under competitive marketing system it is assumed that price spread<sup>9</sup> between two market places is determined by factors like transport costs and the cost of handling commodities, that is, if the market is competitive enough price differences between the two places will be equal to or will not be much higher than these transaction costs and traders' margins.

The decision of traders to conduct agricultural marketing between two different markets is largely determined by the existence of profitable price differences between the two markets. The underlying assumption is that the existence of a substantial price difference between two markets will trigger traders to buy and transport commodities from where they are produced to where there is demand for the commodity, and this will go on only until the competition between traders causes the price in the supply area to increase and the price in demand area to decrease that would lead to a situation where the price spread equates to the transfer costs (Tomek and Robinson, 1981:230).

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<sup>9</sup>Price difference between two places,

However, the existence of substantial price differences between the two market places could not lead to a conclusion of the existence of higher traders' margins. As most of the sample traders interviewed explained. This is because there are unforeseen encounters like unexpected change in terminal market prices after purchases are conducted in the supply markets, sometimes leading to losses for the traders. Therefore, comparison of marketing costs and margins to determine the substantiality of price differences means will bypass such risk factors. Despite this, the information on price spreads seems useful in marketing systems analysis.

Addis Ababa was taken as a destination for grain from the research Woreda and Adama, one of the biggest regional markets. To estimate the price spread between the two markets and Addis Ababa, a 12 months – from January 2008 to December 2008 – was selected and the average price for teff, wheat and chickpea were taken from the price data collected by EGTE and DMFS. Data on traders' margin, cost of handling and transport costs were taken from averages of the sample traders surveyed in this research. The method used for the calculation of spatial price spread was adopted from Hays and McCoy (1978), in Dessalegn et al. (1998:26) (For detailed calculation procedures please refer to Annex 2).

The results from the analysis indicate that the price spread between Addis Ababa and Mojo were positive for all the three crops, teff, wheat, and chickpea. However, between Adama and Addis Ababa it is positive only for chickpea (Figure 7). That means there is a substantially low market price in the supply market, indicating certain levels of market inefficiency and more marketing margins for the traders. This could be attributed to the risk minimizing efforts of traders, to compensate for losses due to unexpected changes in price discussed above at the Addis Ababa market. The possible explanations for the negative price spread between Adama and Addis Ababa for teff and wheat grains could be the existence of high demand in the regional market in Adama, and transportation of the grains from this market to markets as far as Dire Dawa in eastern Ethiopia and Djibouti could be more profitable than Addis Ababa market.

According to a study conducted by Asfaw and Jayne on the response of Ethiopian cereal market to liberalization, grain wholesale price differentials between markets in deficit and surplus areas have generally declined since the reform of 1990s (1997:9). Further more, findings of the study show that while wholesale prices in deficit markets declined by 6 to 36 per cent, those of surplus markets increased by 12 to 48 per cent in real terms. Despite this positive trend since the market liberalization of 1990, the magnitude of the price differentials between producing and consuming areas appears to be still considerable compared to the transfer cost of grain between markets.

Figure7: Spatial price spread between Addis Ababa - Adama and Mojo.



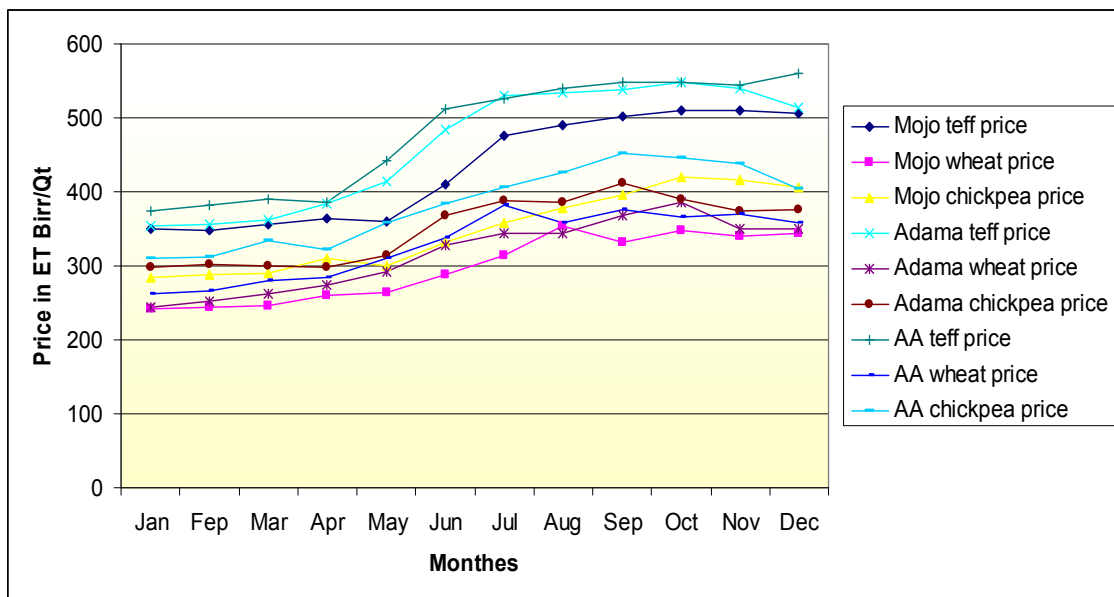
Source: EGTE/DMFS price data and own survey.

### 5.6.2. Temporal relationship

The grain marketing system in Ethiopia is known for its volatility of prices, owing partly to the variation in agricultural production depending on weather conditions. Many respondents suggest that most of grains are taken to the market soon after harvest causing price falls. Dessalegn et al., (1998:31) also reported that about 79 per cent of annual grain sales by producers occur immediately after the harvest season.

A four-year price dataset from EGTE and DMFD, January 2005 to December 2008, was deconstructed to remove seasonal and irregular movements of the prices, and prices of each month in all years were averaged to be used to estimate seasonal fluctuations in prices. These average prices were used to construct figure 8. As can be seen from the figure, the lowest grain prices occur around January to April, this months are after the harvest season in Ethiopia, and then gradually start to rise until it starts to decrease in November and December, which are before the next harvest season.

Figure8: Seasonal price movement for teff, wheat and chickpea.



The T-test was also conducted to test the significance of differences in prices across the months. The result obtained from this analysis indicates that all the means differ significantly from each other ( $P \leq 0.001$ ) (Table 4).

Table4: T-test for seasonal<sup>10</sup> variation in price (ETB/100kg) of teff, wheat, and chickpea.

One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
MTP	20.702	11	.000	432.0000	386.0708	477.9292
MWP	22.915	11	.000	298.5000	269.8289	327.1711
MCP	22.562	11	.000	348.7500	314.7278	382.7722
ATP	19.617	11	.000	463.5833	411.5708	515.5958
AWP	22.560	11	.000	316.5833	285.6964	347.4702
ACP	27.664	11	.000	350.5833	322.6909	378.4758
AATP	21.549	11	.000	479.7500	430.7489	528.7511
AAWP	24.887	11	.000	329.0833	299.9791	358.1876
AACP	24.718	11	.000	383.1667	349.0478	417.2855

MTP= Mojo tef price, MWP= Mojo wheat price, MCP= Mojo chickpea price, ATP= Adama tef price, AWP= Adama wheat price, ACP= Adama chickpea price, AATP= Addis Ababa tef price, AAWP= Addis Ababa wheat price, AACP= Addis Ababa chickpea price,

### 5.7. Long term grain price trends

The objective of looking at the four years trend of market price for the three food grains studied was to give a picture of how the price changed over this period, which includes the recent price surge in food prices globally, and it was perceived also there would be some effects on the traders' activities. The four years data was taken from EGTE and DMFS monthly price data. This time series price data was adjusted for seasonality and irregularities before using it in this report. The idea was to go further back a decade and look at the trend, but after looking at the data there was not significant change in price before March 2005.

As can be seen from figure 6, the market price for the three grains started to increase sharply from March 2005, during which prices for teff, wheat and chickpea in Addis Ababa were 271, 191 and 192 Birr/Qt<sup>11</sup> respectively and reached a maximum of 453, 291 and 500 Birr/Qt respectively in October 2006. This price was more or less maintained until a price surge that started in April 2008 and market price for these three grains

<sup>10</sup> Average of four years price data was taken for analysis after the time series data of price (from EGTE/DMFS) was decomposed for seasonality and irregularities.

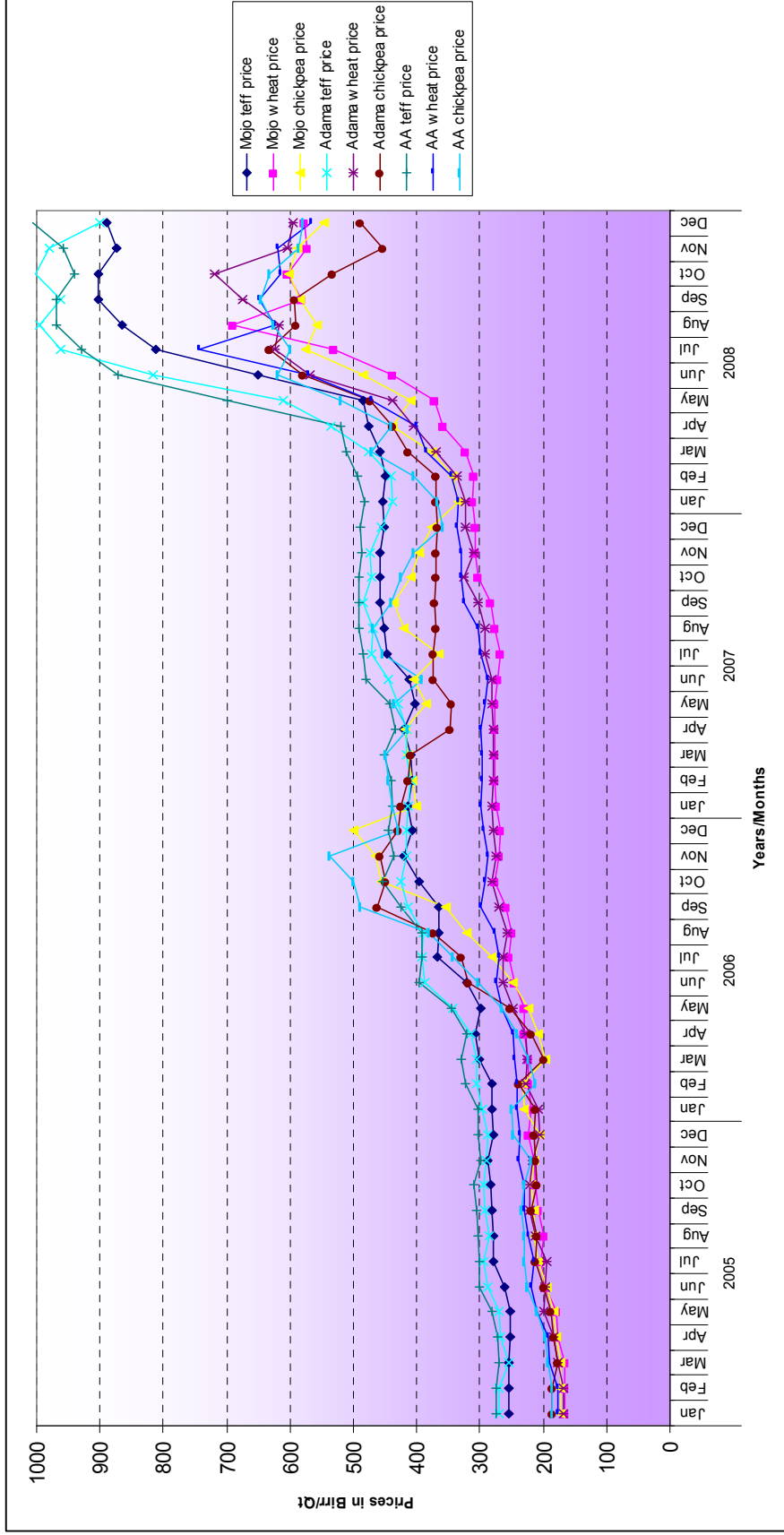
<sup>11</sup> Qt=Quintal=100kg

reached 970, 648 and 646 Birr/Qt respectively in September 2008 in Addis Ababa. The percentage increase in prices of teff, wheat and chickpea between March 2005 and September 2008 were 258, 239 and 236 per cent respectively.

The effect of the increasing market price on the traders, as most of the sample traders explain, was on the volume of the grain they handle compared to the time before the price increase. This was because the amount of grain they can purchase by using the same amount of money has largely decreased due to the high increase of price per unit of grain. Moreover, the amount of grain taken to market by producers has also decreased due to the fact that rural households can cover their expenses by selling only a small portion of what they have been selling before the price increase. However, the views of producers' were opposite to the traders claim that producers are selling a smaller portion of the grain and cover all their expense. According to them, the prices of inputs and goods for home consumption have also been increased and the income of the producers has not necessarily increased, and they have got to sale the same amount as before.



Figure6: Monthly price tend - January 2005 to December 2008 - for three major markets (Addis Ababa, Adama, and Mojo).



Data source: DMFS and EGTE monthly market data.

## 5.8. Performance of the grain market

The principle behind the structure-conduct-performance approach is that the structural organization of a market would affect the competitive behaviour among market participants and subsequently influence the performance<sup>12</sup> of the market (see section 3). As it was discussed in section 5.3, the markets assessed by this study appeared to be well-structured and competitive, even though the conduct was constrained by the factors like timing of the government tax collection, informal traders and lack of transparency in the role of grain trade brokers (section 5.5). Hence, the existence of a competitive market structure does not necessarily mean that the market is performing well and that either the grain traders or the smallholder producers are getting fair benefits from the agricultural marketing system.

The sample traders described that the market is not performing well for them due to the existence of high costs of transfer of the grain from supply markets to terminal markets (transport, labor, broker fees, and costs for grain bags), the absence of transparent role from the brokers, and fluctuations in the grain prices at the terminal markets. This result was also in tandem with a research by Negassa et al. (2004); by taking the costs of transfer in to account, they have shown that the temporal and the special performance of the grain market, especially maize and wheat, remains inefficient despite the policy interventions made since the 1990s.

The lack of reliable and accessible market information in the grain marketing system has made the grain trading highly risky. Most of the traders in this research call brokers and traders at the terminal market before they decide market prices in rural supply markets. And then they deduct transaction costs and a net profit margin from the wholesalers' price in Addis Ababa to buy the grain in rural markets. Sometimes the wholesalers' prices, based on which the traders buy grains in rural markets, change before they sell their grain; the change occurs especially when large volume of grain arrived at the terminal market on that specific date. These results losses and caused uncertainty in the grain trade. Demeke and Ferede (2005) also found that the Addis Ababa terminal market

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<sup>12</sup> The extent to which markets result in outcomes that is deemed or preferred by market participants (FEWS NET, 2008:2).

is performing weakly due to high risk (of loss), limited access to credit, low trade margins and a consequential low investment in an improved system.

## **6. The rural livelihoods**

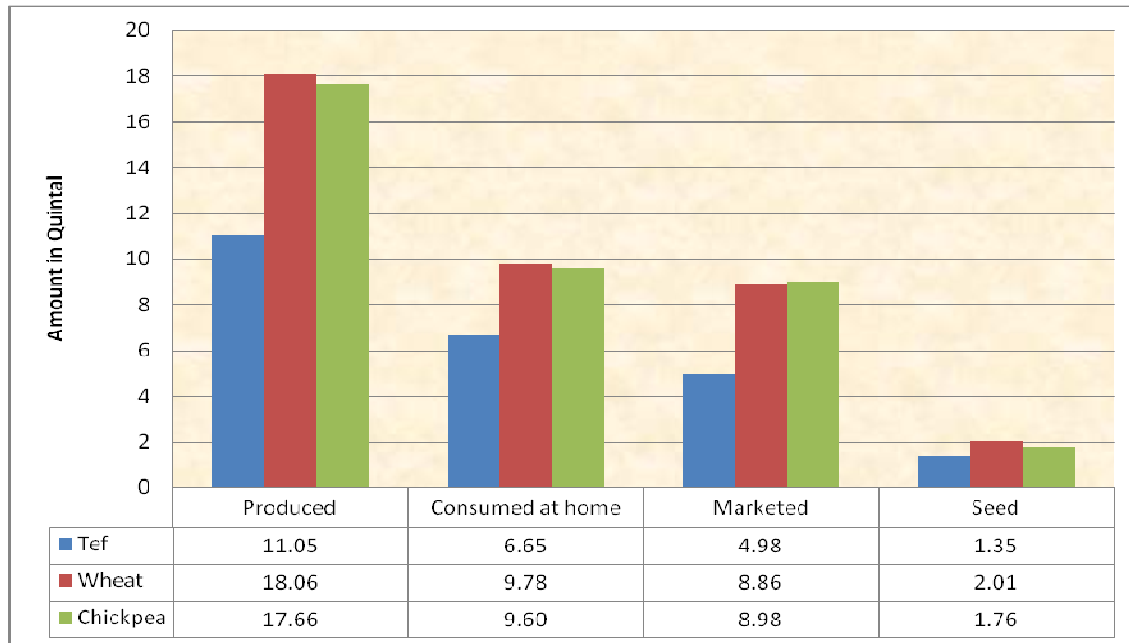
During the rural household survey it was observed that the rural livelihoods in the study area is based on a small scale agriculture and the problems that are challenging the improvement of its productivity can be attributed to the increasing degradation of the land, farmers sticking to the primitive ways of production (traditional agricultural implements, unimproved seeds, dependence on rainfall – the rain occurs once in a year and varies in its arrival time and distribution). Moreover, the increasing growth in population has led to an increasing fragmentation of farmland, now reaching an indivisible size according to the interviewed community elders and *Kebele* elects. One of the key informants indicated that the number of people who have no access to land is now exceeding those who have access to it.

Data from the household survey, indicated in figure 9, shows that the production by the surveyed households is very small with a mean production being 11, 18 and 18<sup>13</sup> Quintals of teff, wheat and chickpea respectively (figure 9). Much of this produce goes to home consumption and a small amount is marketed just to meet loans and other household expenses. Moreover, marketing of crops by these smallholders does not necessarily mean that the marketed amount is surplus. Perhaps producers have their crops as an only one option to pay loans and other expenses regardless of whether they retain enough for consumption at home. The shrinking landholding sizes also forced families to downsize livestock holding, which would have serve as an alternate source of cash, as most of the interviewees argue. During the lean season, when there is a scarcity of food grains, the rural households buy cheap food grains like maize and sorghum to meet family food demands, even though these are not the preferred tastes of the family.

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<sup>13</sup> All average of the 360 households surveyed.

Figure9: Mean crop produced, consumed, marketed and used for seed by sample producers.



Source: Own survey of rural smallholder households

Therefore, except for a few well-off farmers who have been able to capture the opportunity of the late season increase in price and more importantly the recent market price surge – which has little to do with the organizational structure of the market – the situation in the market is “business as usual” for the majority of rural smallholders. Given that their production is small they are unable to capture the opportunity created by the relative accessibility of their area and the growing market opportunities. The government taxes and loans collection schedule following the harvest season, during which traders cut market prices, forces producers to receive low return from marketing of their produce. The well-off farmers bypass this time and wait for higher prices in the lean season because they have enough finance in their disposal to settle their loans.

## **7. The way forward**

This chapter provides some insights as to what needs to be done in the future in order to improve the productivity of the supply side as well as the development of efficient marketing system for the transformation of the smallholders' agriculture and rural livelihoods. These ideas for future actions are based on the discussions in the main part of the thesis and a survey of smallholders, which was discussed selectively in the thesis.

### **7.1. Strengthening support to small scale producers**

Given that there is limited option for increasing land allocation for crop production within the increasing land scarcity; efforts should be to increase production per unit area by using improved production techniques. The progress made by the national agricultural research system so far has been encouraging, whilst the extending out of the findings to the smallholders remains an area of concern for research personnel interviewed at the Ethiopian Institute of Agricultural Research (EIAR). For the past 40 years collection of land races, importing and adapting of improved varieties from international research centres like the International Maize and Wheat Improvement Centre (CIMMYT) has been going well and many success have been achieved.

At least 13, 58 and 8 improved varieties of teff, wheat and chickpea respectively, among which some listed in table 5 below, have been developed by crossing land races with varieties from international sources or adaptation of the varieties from the international source at Debre Zeith agricultural research centre, which is one of the research centres under the Ethiopian Institute of Agricultural Research (EIAR). The productive capacity of these improved varieties reach 25, 60 and 48 Quintals per hectare respectively for teff, wheat and chickpea (see table 5). While the land races, farmers' varieties, were estimated to have a productive capacity of less than 10 Quintals per hectare for teff and less than 20 Quintals per hectare for both wheat and chickpea.

Table5: Improved varieties of teff, wheat and chickpea and their productive capacity.

	Name	Altitude (masl)	Rainfall	Productivity (Quintal/ha)	
				On-station	On-farm
Teff	Quncho	1800 - 2500	800 – 1200	24 – 28	16 - 22
	Tseday	1800 – 2700	500 – 1200	18 – 28	14 – 19
	Dukem	1600 – 2200	800 – 1200	24 – 34	20 - 25
Wheat	Wabe	1850 – 2800	-	45 – 55	25 - 35
	Kubsa	1850 – 2800	-	45 – 60	25 - 45
	Galema	2200 – 2700	-	45 – 65	20 - 45
Chickpea	Worku	1900 – 2600	700 – 1200	19 – 40	19 - 29
	Chefe	1800 – 2600	700 – 1200	12 – 48	18 - 36
	Shasho	1800 – 2600	700 – 1200	16 – 46	20 - 42

*Source: D/Zeit agricultural research centre (EIAR)*

However, the seed system of the country and extension services to the producers remain underdeveloped compared to the progress made in the agricultural research system. As a result a very limited number of producers, especially who are not far away from roads, have been able to access these improved crop varieties. And most of producers in remote areas are still using their low productive traditional varieties. Therefore, strengthening the research–extension–farmer connection and institutionalization of the seed multiplication and distribution system are of a paramount importance and would lead to significant improvements in the productivity of the smallholders’ agriculture. WB/WDR, 2008 provides useful insights on this.

## **7.2. Control of the informal traders and brokers in the grain market**

The unfair competition from the informal traders and the lack transparency in the role of brokers were identified as the major obstacles in the grain marketing system by the sample traders. Therefore, the enforcement of the business law that forces traders to have a license to operate in a market would contribute to the well functioning of the grain marketing system and fair competition between traders.

Traders use brokers to sale in terminal markets and the absence of formal institutions or guidelines for these grain brokers operations was seen as a problem by grain traders. The services of the brokers depend entirely on thrust. They negotiate prices without the presence of both regional traders and wholesalers. Most of the sample traders interviewed stress for the need of formalized institution of the grain brokers to make them transparent and improve their efficiency in the marketing system.

### **7.3. Improving the rural feeder roads**

Low access to road challenges producers in terms of getting fair bargaining power for their produce. The study area is found in a relatively accessible environment. However, most of the sample households found themselves in a “near but far” situation, as they refer to it, because the highest distance they can transport their produce using their pack animals is not more than 15 to 20 km to the nearest road or urban centres. Those outside this radius are forced to sell their produce at the village level with a limited option of market opportunities. This demands measures to connect these rural villages to the main roads and the urban centres through construction of rural feeder roads and small and medium bridges. In addition to getting fair market for their produce these farmers also face difficulties with access to input supplies. Even though inputs are transported by cooperative union vehicles (see section 8.2), this reaches only a limited number of Kebeles accessible by all weather roads.

## **8. Opportunities to build the future on**

### **8.1. Mobile phones in the hands of farmers**

The promotion of market orientation in agricultural production is constrained by the lack of well-functioning institutions and underdeveloped infrastructure. Among these is also a severe lack of access to market information by rural producers. Even though Ethiopia has the smallest network coverage for both fixed line and mobile phone for rural villages in Africa (Figure 10), a growing number of rural dwellers are getting access to mobile phone services. Research by the Adami Tulu Agricultural Research Centre in Ethiopia has shown that there is an encouraging improvement in decisions of members of Farmers

Research Group (FRG) farmers in their production and marketing strategies using their mobile phones (Gutu, 2008:1).

Rural households are now using cell phones not only to contact their relatives in urban areas, but also getting market information from friends, traders and government officials using their cell phones. The farmers' awareness of the importance of market information in terms of improving their gain from agricultural marketing is also improved and a farmer told the researchers that his extra gain of 80 ET Birr on sale of two heads of goats using correct timing due to the mobile phone (ibid). The following quote shows a similar reality:

I got 1000 ET Birr from selling a head of ox by learning price change within 2 hours due to this precious mobile. Not only this, I made a price assessment at different markets through the phone and finally called a wholesale trader in Addis Ababa from my home. On that day, I sold haricot beans of 2500 Birr and pepper of 50000 Birr. You can imagine how information can change livelihood (Ayelech in Gutu, 2008:1).

The survey of rural households in this research also revealed that a significant portion of the sample households own mobile phones and radios (Table 6). In actual figures 40 percent of the farm households surveyed in this research own cell phone in Sherra Dibandiba, and almost all of the farm households own a radio. This means that the situations are now getting better with more and more rural households getting access to information. This opportunity can be used by the government and its partners to pass information on market and improved production techniques to smallholder producers and help them to come on the development track out of their subsistence orientation.

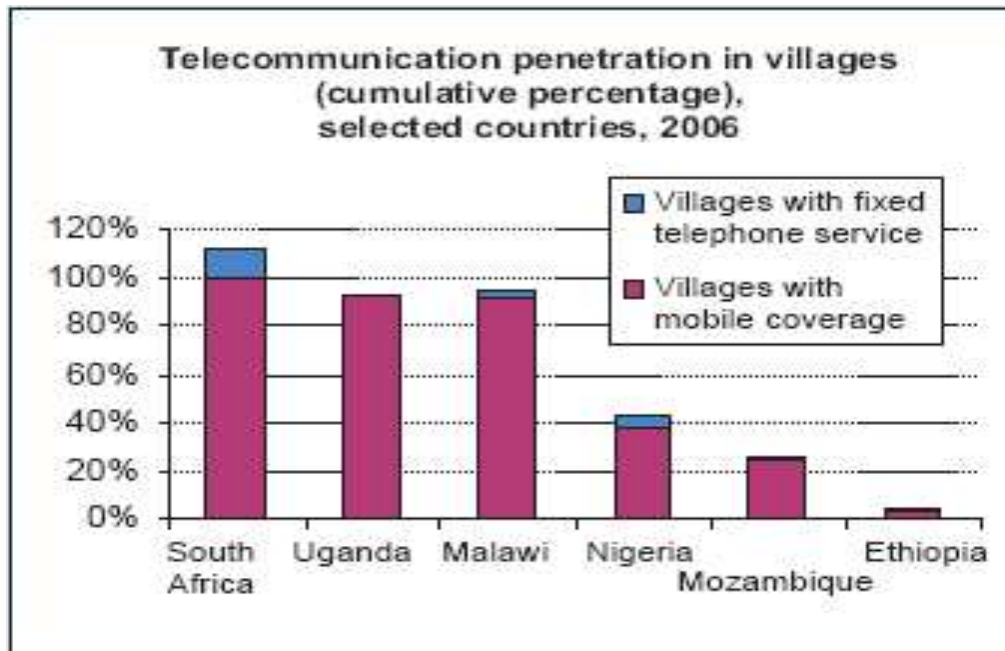


Table6: Ownership of cell phone and radio in the surveyed kebeles.

Name of kebele	No. farm households who have			
	Cell phone	Per cent of sample HH	Radio	Per cent of sample HH
Arifeta Jogola	11	19	43	73
Sherra Dibandiba	40	66	59	97
Kiltu Baja	9	21	28	67
Dhaka Bora	15	43	29	83
Ejere Walkite	5	9	25	44
Ardaga Kordida	9	17	31	58

Source: own survey of farm households.

Figure10: Telecommunication penetration in villages, selected countries, 2006.



Source: International Telecommunication Union (ITU)/ICT marketing in Africa 2007.

## 8.2. Cooperatives<sup>14</sup> and their union

Following the Structural Adjustment Program (SAP) of the 1980s, the role of government in providing agricultural inputs on subsidy and credit bases was reduced. As a result, farmers, who in most cases were a resource poor population, were exposed to a liberal market where they were forced to get input from the market by themselves. Following this the smallholder farmers started to consider organizing themselves into cooperatives. The government also established a Cooperative Promotion Agency (ECPA) in order to facilitate their development, and now these cooperatives and their union are doing well in some parts of the country and are replacing the role government in agricultural input marketing. This section draws on an interview held with the deputy head of Lume Adama Farmers Cooperative Union (LAFCU) and the union's records.

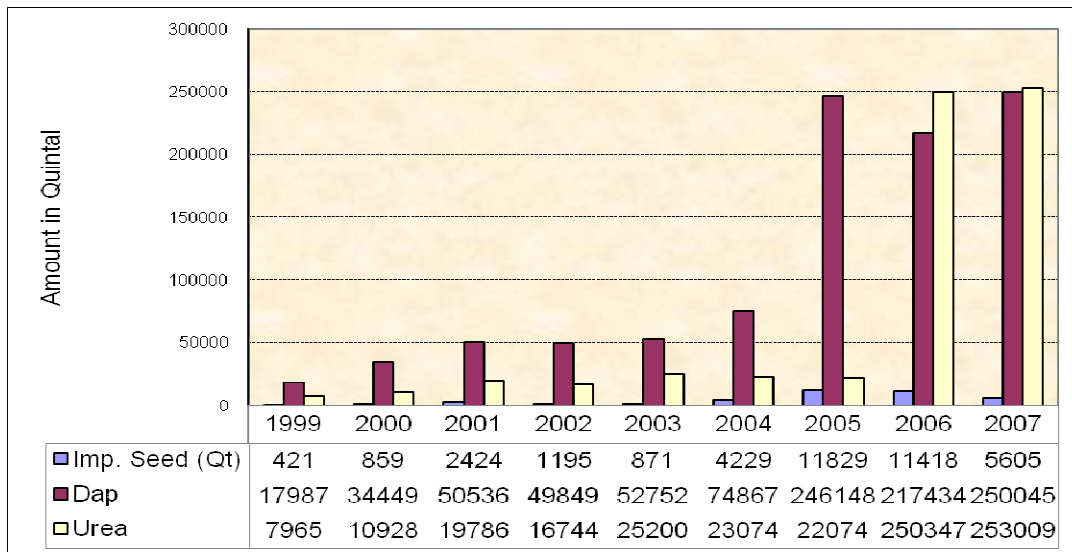
Cooperatives in Lume and Adama, a neighboring Woreda, together formed Lume Adama Farmers Cooperatives Union (LAFCU). This cooperative union is among the successful cooperative unions in the country. Input supply constitutes to be the most important part of its activities, and this, as most respondents suggest, has decreased transaction costs and shortens the time of delivery of inputs to farmers. The union charges only transport, operating cost and cost of insurance between port and its stores. The fertilizer distribution by the union increased from 17,987 and 7,965 Quintal of DAP/UREA in 1999 to more than 250 thousand Quintal of both DAP and UREA in 2007 (Figure 11).

The union is also serving as a bridge between agricultural researchers and farmers. Selected farmers participate on seed multiplication of improved crop varieties. The union liaises with researchers and provides trainings to the farmers on seed multiplication. After the seed multiplication it recollects the seeds on a premium price from the farmers. The seeds will be cleaned and packed for redistribution to more farmers for the next cropping season. The amount of improved seed distributed by the union remains very small with a maximum distribution of 11,829 Qt in the year 2005, (Figure 11), nevertheless this is a good indication that more can be done through cooperatives and their unions.

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<sup>14</sup> A co-operative is an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise (ICA, <http://www.ica.coop/coop/principles.html>)

Figure 11: Distribution of fertilizer and improved seeds over the period of 1999-2008.



Source: Compiled from LAFCU documentations

Therefore, these cooperatives and their unions could be used as an entry point in the future efforts to transform the smallholder agriculture by introducing new production techniques and practices through them. Moreover, these farmers' groups need support for capacity development in the areas of management and community mobilization for them to go on growing.

### 8.3. Presence of three DAs per Kebele

The government structure in Ethiopia urges the presence of three development agents (DAs), each with different background – from crop production, animal production and natural resource management – at the local administrative level (Kebele) to help farmers in their agricultural production and resource management. This is also another structure that can be used by the government and the development communities to kick start development of the small scale agriculture in rural Ethiopia.

#### **8.4. Concluding remarks: Is the small scale agriculture the way forward in development?**

The Structure, Conduct and Performance (SCP) approach in market analysis was used to assess the structural organization, conduct and the subsequent performance of grain market. The objective was to look at how the agricultural marketing system benefits the rural livelihoods, in terms of getting fair prices for their agricultural produces that would improve their income, within the context of the relatively accessible environment of the Woreda selected for this study.

Competitiveness of the grain market was tested using the four firm market concentration ratios that take into account the number and size distribution of grain traders to estimate the existence of competition between them. The structural organization of the grain marketing system appeared to be competitive for teff and wheat, for which the four firm market concentration ratios calculated from the annual grain handling of the sample traders indicate the concentration ratio below the level that would be considered as a non competitive market (Table 3, section 5.3). However, the four firm market concentration ratios for chickpea indicate that few traders control a sufficiently larger share of the chickpea handled by the sample traders annually.

The market conduct, the behavior that traders manifest in issues like price setting, was found to be influenced by factors like timing of loans return by farmer, the presence of informal traders, and uncertainties created by price fluctuations in the terminal markets. Knowing that the farmers are forced to pay their loans and taxes following the harvest season, traders reduce prices to the detriments of rural households' income. The competition from the informal traders also did not result in a real increase in income of producers'; but has just made the market unstable and created unprofitable environment for all. Fluctuation in grain prices at the terminal market has led to a careful move by the grain traders, because it has not been easier for them to be sure whether the price information, based on which they buy grains in supply markets, will not change before they sell their stock. Hence, the agricultural marketing system does not seem to be benefiting either the grain traders or the rural households.

On the other hand, the small scale agriculture is facing challenges from soil degradation, recurrent drought and shrinking farm size due to population growth. The rural household survey and group discussions with key informants from government offices, village elders, cooperative leaders and farmers indicate that the agriculture has become a struggle for survival. Average yearly productions by sample smallholder households of average 6.4 family members was 11, 18 and 18 Qt of teff, wheat and chickpea respectively (Figure 9), much of which is consumed at home. The farmers found themselves in a trap of producing small, selling some of it to meet expenses, face food shortages in the lean season and repeating the same every year. Except for few well off farmers, this has been and continued to be a way of life. This may raise these questions:

- How long the subsistence low input small scale agriculture will support the growing population, within the context of shrinking farm size and severing recourse degradation and recurrent droughts?
- Is it not time for land consolidation and introduction of improved production techniques (tractors, improved seeds, irrigation etc) for the transformation of agriculture? Could this be possible for a resource poor country like Ethiopia?



A farmer preparing his land for cropping, using his oxen drawn traditional plough, Wereta area of Northern Ethiopia (photo by Archil Zhorzholiani).

It takes at least 4 to 5 days to plough a hectare of land in this way; and it needs 3 to 4 ploughing before the crop is sown.

Working hard but living in poverty! ♥

**Word count:** 14435

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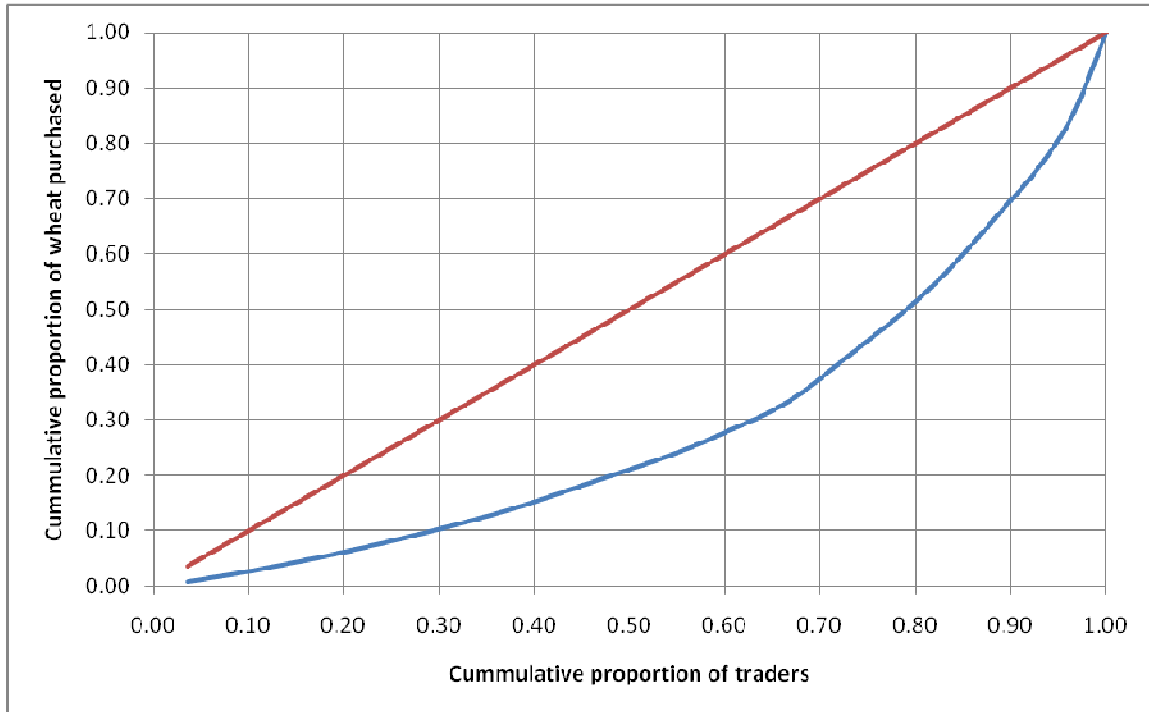
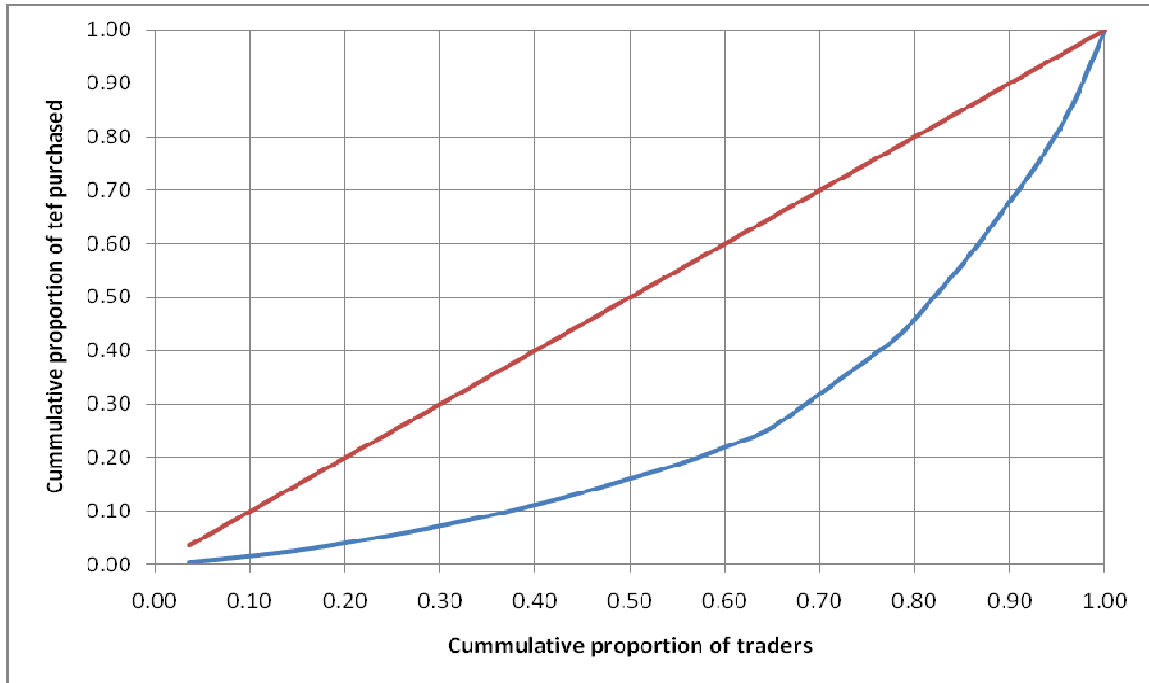
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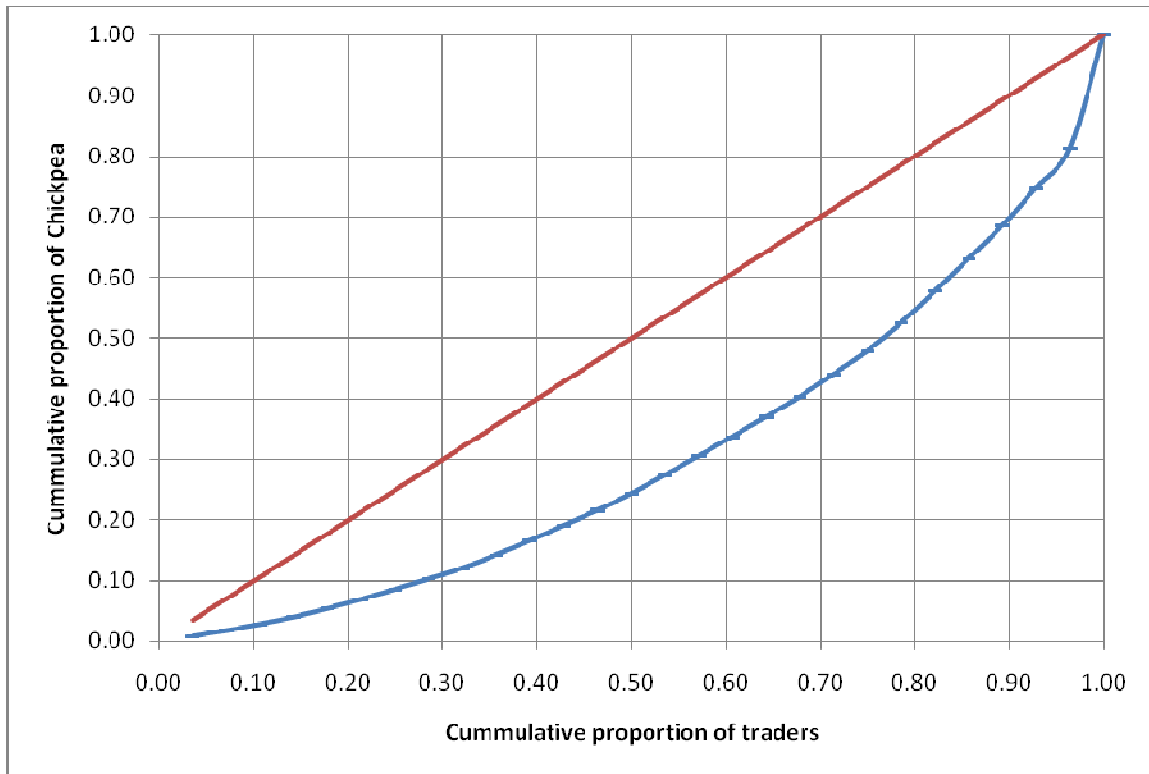


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**Appendix 1:** Size distribution, proportion of grain, handled by sample traders in Mojo  
(individual graphs for tef, wheat and chickpea respectively).





## Appendix 2: Calculation of price spread

According to Hays and McCoy the expected price in supply market is:

$$PP_{ij} = P_i - (Hc_{ji} + Tc_{ji} + As_{ji})$$

Where

$PP_{ij}$  = the calculated price in the  $i^{\text{th}}$  market in relation to the  $j^{\text{th}}$  market,

$P_i$  = the actual price at the  $i^{\text{th}}$  market (Addis Ababa),

$Hc_{ji}$  = handling costs for moving grain from the  $j^{\text{th}}$  market to the  $i^{\text{th}}$  market,

$Tc_{ji}$  = transport cost of grain from the  $j^{\text{th}}$  market to the  $i^{\text{th}}$  market, and,

$As_{ji}$  = normal trader profit margin

And the price spread is calculated as  $PS_{ij} = PP_{ji} - P_j$ , where  $PS_{ij}$  = the price spread between the  $i^{\text{th}}$  and  $j^{\text{th}}$  market and  $P_i$  = the actual price in the  $j^{\text{th}}$  market. As discussed above, under competitive market conditions  $PP_{ji}$  and  $P_j$  are equal and therefore  $PS_{ij} = 0$ .  $PS_{ij}$  greater than zero means, that there is an opportunity for the traders to get more marketing margins.

**Appendix 2 Table 1: Spatial price spread between Addis Ababa - Adama and Mojo.**

Market (1)	Crop (2)	Actual price at market (Pj) (3)	Distance from AA (km) (4)	Transport cost (Birr/qt) (Tc <sub>ji</sub> ) (5)	Handling cost (Birr/qt) (Hc <sub>ji</sub> ) (6)	Trader margin (Birr/qt) (As <sub>ij</sub> ) (7)	Actual price at AA (Pi) (8)	Expected price in market (PP <sub>ij</sub> ) (9)=(8-5-6-7)	Difference (Ps <sub>ij</sub> ) (10)=(9)-(3)
Mojo	Teff	685	70	14	4	9.87	779	751.13	66.13
	Wheat	472	70	14	4	9.87	527	499.13	27.13
	Chickpea	486	70	14	4	9.87	541	513.13	27.13
Adama	Teff	760	100	18	4	9.87	779	747.13	-12.87
	Wheat	523	100	18	4	9.87	527	495.13	-27.87
	Chickpea	495	100	18	4	9.87	541	509.13	14.13

Source: DMFS and EGTE monthly price data.

### Appendix 3: List of questions used in data collection

#### 1. Questions for farmers, key informants, group discussions

Date of discussion	Focus group composition
Kebele/village	Facilitator

##### 1.1. Introduction

- What are the major grains grown in this *woreda*?
- Can you rank the major grain products produced at surplus level by farmers on average in terms of their importance in household food and source of income for the family?

##### 1.2. Production/cultivation

- Cropping activities , Land preparation, improved practices
- Planting, weed control, pest control/ rodents
- Harvesting, trashing, storage, storage related problems
- Yield/productivity
- Land availability issues , Land ownership
- Government extension support in production, Support from NGOs
- What are the major problems related to production?
- Soil related/productivity, Pest, Moisture/rain

- How the group perceive the difference in productive capacity of different wealth groups

### **1.3. Utilization of harvested products**

- Home consumption
- Production for market
- Level of self-sufficiency

### **1.4. Marketing of produce**

- Do you sale part or all of the produce?
- When produces are sold? Why?
- Access to market and market information?
- Transport facilities/distance from market centers/roads?
- Role of cooperatives and their union?
- Who are the major buyers? And how many of them are there?
- Who sets market prices in markets?
- Seasonal price fluctuations?

### **1.5. Major production related problems**

- Soil and soil management
- Access to productive inputs (improved seed, fertilizer, herbicides)
- Lack of extension services
- Improved technologies
- Credit facilities (availability/access, adequacy)
- Gender issues in marketing
- Storage problems (post harvest problems and losses)
- Time of government tax/loan repayment

### **1.6. Socio-economic**

- Impact of agricultural marketing on rural livelihood
- How is the balance between production costs and market prices
- How different wealth groups differ
- How do livelihoods influenced by marketing price fluctuations
- How food security and income of a HH influenced by price fluctuations

- Have cooperatives improved market access and market prices

## 2. Questions for traders

Data of visit	Nam of respondent
Place/village/market name	Interviewer

### 2.1. Market structure

#### 2.1.1. Introduction

- What are the major grains that you trade?
- Do you process/to add quality after purchase
- Do you store and sale when the price is high?

#### 2.1.2. Number of grain buyers

- How many traders are operating in this market?
- How many informal traders are in the market?
- How many transporters operate in this market? Between production area and market? Between this market and to the market where you sale?

#### 2.1.3. Vertical coordination/integration

- Where do you get the major grains you buy?
- Do you buy from farmers, middlemen, use brokers or contract farmers?
- Do you buy from farmers groups/cooperatives?
- Do you get the quantity you want to buy? When is the supply from farmers high?
- Is there a seasonal fluctuation in demand and supply?
- When do you buy and when do you sale?
- Where do you sale? What are market prices where you do sale?
- What are the major constraints in market?
- Who do you sale to? Have you reliable buyers?
- How much do you sale?
- Where do you sale (local markets, wholesalers, consumers in bigger cities)?

### 2.2. Barriers to enter the market

- How much is paid to get a license? Is it too much for a trader?
- How much tax is paid by a trader? In what time interval taxes are paid?
- Do you have a store of your own? If rented how much is a monthly payment?

- Do you have storage of your own? How much is monthly payment if you rent?
- Do you use your own financial resources?
- Do you get sufficient credit services for your business?
- What are the rates of interest?
- Do you have your own place in the market or do you rent it?
- What are the major policy bottlenecks to your business activities?
- How do you get market information?
- Is it easy to start a trade business? How many traders do think is there in this market? What are the criteria's to get a trade license?

### **2.3. Market conduct**

#### **2.3.1. Price setting**

- How do you decide market prices?
- Do you agree with other fellow traders on prices to offer to farmers?
- Does government interfere with market pricing?
- How do you get information on prices in terminal markets?
- Do you pay more/premium prices for good quality?

#### **2.3.2. Buying and selling practices**

- Are market prices are transparent? Do you share market information with your fellow traders? Are market prices negotiated in private arrangements?
- Are there qualities and standards for commodities?
- Do use standard units for measurement for volumes traded? What is your a preference standard unit or traditional measurement units?
- Do you pay premium prices for good qualities?
- Farmers' sale in small quantities, is this a problem in quality control?



**Appendix 4:** List of sample grain traders participated in the interviews.

No.	Name	Gender	Category	Town/village	Own store	Own vehicle	Own cell phone
1	Yalew Wude	M	Formal trader	Mojo	✓	-	✓
2	Berhane Tegene	M	"	Kiltu Baja/Mojo	✓	-	✓
3	Mulat Degife	M	"	"	✓	✓	✓
4	Yimegnushal	F	"	"	✓	✓	✓
5	Kebede Regassa	M	Farmer Trader	Shera Dibandiba	✓	✓	✓
6	Dibaba	M	"	"	✓	-	✓
7	Legesse Adane	M	Informal trader	Ejere Walkite	✓	-	✓
8	Tesfaye Tilahun	M	Informal trader	"	✓	-	✓
9	Hailemariam	M	"	"	✓	-	✓
10	Dachew Aboye	M	"	"	✓	-	✓
11	Asnake Alemayehu	M	Forma trader	Mojo	✓	✓	✓
12	Girma Berhanu	M	"	Dhaka Bora	✓	-	✓
13	Adefris H/Mariam	M	Processor (2BBF)	Adama	✓	✓	✓
14	Agide Fikad	M	Formal Trader	Ejere Walkite	✓	✓	✓
15	Tollosa Namara	M	"	"	✓	✓	✓
16	Tadesse Alemayehu	M	"	"	✓	-	✓
17	Taye Terefe	M	"	"	✓	-	✓
18	Wubit Abebe	F	"	"	✓	-	✓
19	Welela Tesema	F	"	"	-	-	✓
20	Mitiku Badeg	M	Farmer Trader	Dhakabora	-	-	✓
21	Tesfaye Bedhadha	M	"	Shera Dibandiba	✓	✓	✓
22	Watat Ababa	F	"	Kiltu Baja	-	-	-
23	Abera Korsu	M	Formal trader	Mojo	✓	-	✓
24	Aselef Kebede	F	"	"	-	-	-
25	Olana Benti	M	Informal trader	"	✓	-	-
26	Mesele	M	"	"	✓	✓	✓
27	Cherinet Getachew	M	Formal Trader	Adama	✓	-	✓
28	Admasu Abebe	M	"	Mojo	✓	✓	✓
29	Admasu Kebede	M	Broker	Addis Ababa	-	-	✓
30	Chalachew Degu	M	"	"	-	-	✓
31	Tamiru Koru	M	"	"	-	-	✓
32	Abinet Kassahun	M	"	"	-	-	✓
33	Ketema Worku	M	"	Adama	-	-	✓
35	Dano Gutu	M	"	"	-	-	✓
36	Tilahun Kormu	M	"	"	-	-	✓

**Appendix 5: List of Key Informants**

No.	Name	Gender	Category	Organization	Department	Position	Town/Village
1	Haile Melka	M	Extension	BoARD	Extension	DA Supervisor	Shera/Dibandiba
2	Diriba Mekonen	M	Coop Union	LAFUCU	-	Deputy manager	Mojo
3	Tesfaye Tarekegn	M	Farmer	-	-	-	Arifeta Jogola
4	Abera Negash	M	Primary coop	Arifet coop	-	Chairman	"
5	Fekadu Bedada	M	"	"	-	Secretary	"
6	Tegene Gebre	M	Farmer	-	-	-	"
7	Brehane Haile	M	"	"	-	-	"
8	Ararsa	M	Market extension	BoARD	-	Head	Mojo
9	Mamitu Janka	F	Input distribution	"	-	Staff	"
10	Mengistu Beriso	M	Community leader	-	-	-	Kiltu Baja
11	Minda Bekele	M	Kebele Chairman	-	-	-	"
12	Yilma Tilahun	M	Coop accountant	Haro G. Coop	-	-	"
13	Tesfaye	M	Farmer	-	-	-	Ejere Walkite
14	Worku Shewa	M	Brokers association	Coop	-	Head	"
15	Getahun Fелеke	M	Tax collector	Municipality	-	Staff	"
16	Eshetu Gebru	M	Farmer	-	-	-	Mojo
17	Ararsa	M	Extension worker	BoARD	-	Supervisor	Ejere Walkite
18	Dajene Tulu	M	Kebele Chairman	-	-	-	Dhakabora
19	Nigusse Gudeta	M	Farmer	-	-	-	"
20	Legesse Beyene	M	DA	BoARD	-	Staff	Ejere Walkite
21	Taye Girma	M	"	"	-	"	"
22	Debebe Tadese	M	Coop chairman	Dhakabo coop	-	-	Dhakabora
23	Girma Wakena	M	Coop secretary	"	-	-	"
24	Nigusse Bekele	M	Extension worker	BoARD	-	Supervisor	Kiltu Baja
25	Dejen Tilahu	M	"	"	-	Staff	"
26	Dr. Getachew	M	Research	EIAR	-	Head of tef res. D	DARC
27	Alemayehu Girma	M	"	EIAR	-	Staff of agrono.	MARC
28	Malik	F	Research	EIAR-JAICA	-	Staff	MARC
29	Taji Tiki	F	Farmer	-	-	-	Shera Dibandiba
30	Getachew Ketema	M	Extension worker	BoARD	-	Supervisor	Kiltu Baja