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The Ethiopian Coffee sector in an Era of Commodity Exchange; The road less traveled?

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*To my father **Shumet Tamirat,** whom I proudly say was my greatest inspiration of all, a special one who lived and let me watch how to be good, simple and courageous. I wish you were alive to share this moment with me. They told me that the soreness of your absence would get easier over time. It however, only seems to get harder to go on without you and that scares me more than anything does.*

Summary

The recent broadening in research agenda from building up farmers' production capabilities to facilitating their access to markets underlines the fact that the opportunity to escape from poverty heavily depends on the ability to participate successfully in markets. Helping farmer's access markets requires countries to have flexible marketing institutions and sound marketing approach. Besides access, the persistent problems of price volatility and high transactions costs in agricultural market of developing countries provide a strong theoretical justification for development of commodity exchanges through taking examples of the market models from Western Europe and Northern America. As such, the government of Ethiopia introduced a commodity exchange approach to coffee marketing by establishing Ethiopia Commodity Exchange (ECX) in 2008. Besides ease market access, the ECX is expected to help farmers make sound decision in choosing market outlets through generating market information. Ethiopia coffee farmers have the option to sell all, partial or none of their coffee beans to cooperatives, local suppliers or both. Market channel choices are among the most challenging decisions facing farmers as each channel creates a different level of revenues (for instance, suppliers usually pay less for farmers) and costs (to sell to cooperatives, farmer have to have access to roads), and reaches a different segment of target customers as selling to cooperatives is a direct way to have access to customers whereas the supplier channel has a lot of intermediaries..

This thesis is motivated by the need to better understand the borderline conditions in which agricultural commodity exchanges function and the development impacts that may follow in developing countries, and to identify the factors that affect the coffee farmers' market outlet choice decisions Our understanding of the functioning, impacts, and major bottlenecks can benefit greatly from an in-depth analysis of a specific exchange. As such, this thesis focuses on the Ethiopia Commodity Exchange. To do so, data were collected using survey from 200 coffee farmers selected at random. Data purification through factor analysis, reliability and validity of the constructs was done on the multi item scales before the data analysis. We run multinomial logistic regression model to explore the factors that affect farmers marketing channel selection decisions of coffee farmers. In order to have the most complete picture, we make use of and transaction cost, resources based view theories, and market orientation theories as analytical framework

The findings imply that, to make the coffee market works for all, the ECX and policy makers work on the practicality of introducing future commodity market as the existing spot trading without the possibility to enable market risk management through offering futures contracts has limited chances of sustainability and development impacts. Besides, findings indicate that institutional factors (access to cooperative and market information) found to be the fundamental determinants of farmer's channel choice decisions. From the social capital factors, only farmers' tie in the society is significant in determining their preference to markets. Interestingly, market orientation moderates the influences of cooperatives membership and farmer's network on channel choice.

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1. General Introduction

1.1 Background

"When I asked a group of coffee farmers [in Ethiopia] how much they thought I would pay for a [cup] coffee in London, they reckoned 1 Birr (5 USD cents) would be about right. When they heard it was more like 50 times that much, they wondered where the money went. It would be extraordinary (and only fair) if a lot of more of it could go to the people who invented and now grow it"

Gresser and Tickell (2002).

In literatures, less arguably, we learn Ethiopia as the origin of coffee Arabica. The country grows a wide variety, highly differentiated, most of which are shade-grown by small farmers (Dempsey, 2006). Coffee has accounted for an average of 60% of the total export earnings for the past five decades(Shumeta et al., 2012). Besides, the sector affects the livelihoods of approximately one-quarter of the population by providing jobs for farmers, local traders, processors, transporters, bankers and exporters (Worako et al., 2008). The number of coffee growers has been estimated in about one million smallholder farmers and grow nearly 90% the coffee output (Petit, 2007). Despite its economic and social importance for the economy, performance of the coffee sector, however, has remained unsatisfactory due to absence of significant change in the mode of production and processing (Zewdu, 2010), poor market regulations (Gemech and Struthers, 2007) ,and most importantly unorganized commodity marketing approach and low base of market infrastructure (Gabre-Madhin, 2009; Gemech and Struthers, 2007) .

In addition, studies conducted on the Ethiopian coffee sector prior to establishment of ECX, highlighted that the sector has survived a number of structural difficulties due to changes in the political and economic landscape of the country. A series of changes in the policy arena like stabilization, adjustment, and market liberalization programs were introduced in 1992 (Conforti, 2004; Frey and Manera, 2007; Gebre-ab, 2006). These changes were aimed at increasing coffee growers' share from export value and total exchange earnings from coffee export by increasing the volume of coffee exported. Some positive results were obtained in the immediate aftermath of the reform, to mention few; involvement participation of the private sector at different levels of the marketing chain(Gemech and Struthers, 2007; Mariam, 1989) , positive supply response, and improved coffee export performance compared to the pre-reform periods (Amha, 1994; Gabre-Madhin, 2009).

Many argue that the opportunity for smallholder coffee farmers to escape from poverty heavily depends on the ability to participate successfully in markets. Helping farmers access markets requires countries to have flexible marketing institutions and sound marketing approach (Milligan et al., 2011). Besides access, the persistent problems of price volatility and high transactions costs in agricultural market of developing countries, provide a strong theoretical justification for development of commodity exchanges (Rashid et al., 2010; Sitko and Jayne, 2012) through adapting the market models from Western Europe and Northern America.

As such, the government of Ethiopia introduced a commodity exchange approach to coffee marketing by establishing the Ethiopia Commodity Exchange (ECX, here after) in 2008. A commodity exchange is a centralized market place where sellers and buyers meet to transact commodities in an organized fashion with certain clearly specified and transparent "rules of the game", allowing for maximum effective competition among buyers and sellers (UNCTAD, 2009).

Establishment of commodity exchanges became popular in many developing after economic liberalisation. These exchanges, however, exhibit a high degree of structural variability resulting from differences in the market context within which they operate (UNCTAD, 2009). Moreover, the specific conditions needed for commodity exchanges to work, roles the exchanges should play in linking farmers to markets and structural adjustments that will follow seem to be poorly understood in the development and policy communities. However, recent literature hints that commodity exchange models from Western countries seems not suitable to developing countries for reasons like problems of assuring market integrity (Coulter and Onumah, 2002), difficulty of overcoming political intervention (Gabre-Madhin and Goggin, 2005; Milligan et al., 2011), and difficulty of ensuring that smallholder farmers benefit from the exchange without having to sacrifice sustainability for short- term benefits (Sitko and Jayne, 2012). Specific to ECX, even if it is proposed as an innovative institution tailored to the particular requirements of the Ethiopian agricultural commodities, the country has still faces lack of efficiency in terms of infrastructure, access to technology, financial and technical services which ultimately make the road to transformation of the country's coffee market steeper.

The concern for this thesis on Ethiopian coffee sector is thus fourfold: first, the future of coffee is at stake as there is an increasing trend toward farmers replacing coffee with ***khat*** (Catha edulis) as the net return from the latter is better and takes way less time to grow. Second, a variety of distinctively flavoured beans produced in different regions (such as Harar and Yirgacheffee) are recognized internationally and marketed at high price. As quality is being compromised, maintaining the brand and competitive advantage of the Ethiopian coffee will be a major concern for many years to come. Third, because of its huge influence on the economy, coffee is usually considered as a political crop and will be affected by the structure and workings of the world coffee market. What happens in international coffee markets has a profound bearing on Ethiopia's prospects for achieving the Millennium Development Goals (UNDP, 2010). Fourth, the growing presence of coffee producers/competitors from the emerging economies in global South like Brazil which has the potential to heighten structural changes in the global value chain justifies in depth scientific enquiry.

By addressing those concerns, the key scientific contribution of this thesis looks to provide insights for a better understanding of the borderline conditions under which a commodity exchange will work in emerging countries. Besides, this thesis aims to contribute to literature by giving better insights on how market orientation behaviour of farmers and social capital elements determine their market outlet choice.

1.2 Aim and research question

This paper aims to empirically investigate the structure and performance of the Ethiopia coffee sector in an era of commodity exchange. By doing so this thesis entails to answer the general question, how the establishment of commodity exchange changes the structure of Ethiopian coffee sector and major impacts on actors involved.

Specific Objectives;

- To explain how commodity exchange works in linking smallholder coffee farmers to markets.
- To examine how the establishment of commodity exchange has changed the existing market structure of the coffee sector
- To investigate basic determinants of market outlet choice decision of coffee farmers
- To explore the major challenges basic actors are facing along the supply chain

1.3 Outline of the Thesis

The thesis is organized in three chapters. Chapter 2 (*Commodity Exchanges in developing countries: A Blessing in Disguise? Evidence from the Ethiopian Coffee Sector)* deals with the functioning and development al impacts of Ethiopia commodity exchange on the coffee sector. This thesis is motivated by the need to better understand the borderline conditions in which agricultural commodity exchanges function and the development impacts that may follow in developing countries. Our understanding of the functioning, impacts, and major bottlenecks can benefit greatly from an in-depth analysis of a specific exchange. To do so, primary data through interview and focus group discussion with key informants along the supply chain and extensive secondary data were collected. We also use an impact assessment framework to analyse the data. Based on the findings, we argued that one of the development impacts of commodity exchange is facilitate access to markets for farmers and foster the moment from the informal to formal market channels. In chapter 3 *(Coffee Farmers at the crossroads; Determinants of Market outlet choice decisions in an Era of Commodity Exchange*), we follow a deductive approach using the transaction cost, resource based view and market orientation theories from the literature to analyse the determinants of market outlet choice decision by farmers. The chapter focuses on investigating which factors influences farmer's channel choice. The extent to which the different market orientation components (customer orientation, competitor orientation, and inter-functional Coordination), intuitional factors and level of social capital influence the channel choice is empirically investigated in a quantitative survey thesis. Specifically, the thesis also tests the moderating effects of market orientation.

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Commodity Exchanges in developing countries: A Blessing in Disguise? Evidence from the Ethiopian Coffee Sector

Abstract

Commodity exchanges became popular in many developing countries as ways of reducing the persistent problems of price volatility and high transactions cost. This thesis is motivated by the need to better understand the borderline conditions in which agricultural commodity exchanges function and the development impacts that may follow in developing countries. Our understanding of the functioning, impacts, and major bottlenecks can benefit greatly from an in-depth analysis of a specific exchange. As such, this thesis focuses on the Ethiopia Commodity Exchange (ECX). To do so, primary data through interview and focus group discussion with key informants along the supply chain and extensive secondary data were collected. We use an impact assessment framework to analyse the data. The thesis shows how the ECX brings a system of price discovery which results in a better price paid to farmers from intermediaries. By introducing a standard quality inspection schemes and a new warehouse receipt system in the coffee sector, the exchange is able to reduce contract risk for market participants. This thesis also argue that the quality, production and export of coffee would have been improved had the ECX facilities access to finance, ensure market integrity, and able to overcome political interventions. The findings imply that, to make the coffee market works for all, the ECX and policy makers work on the practicality of introducing future commodity market as the existing spot trading without the possibility to enable market risk management through offering futures contracts has limited chances of sustainability and development impacts.

Keywords: *Developing countries, Ethiopia Commodity Exchange, Coffee, Impacts, Commodity Exchanges*

2.1 Introduction

A commodity exchange is a centralized market place where sellers and buyers meet to transact commodities in an organized fashion with certain clearly specified and transparent "rules of the game", allowing for maximum effective competition among buyers and sellers (UNCTAD, 2009).

Commodity exchanges became popular in many developing countries as means of filling the void that has arisen due to the substantial withdrawal of government after extensive economic liberalisation (Coulter and Onumah, 2002). Prior to liberalisations, governments used to facilitate subsidiary services that include price setting, market information, warehouse, finance, extension services, and input supply. Following liberalisation governments ceased facilitating those services and as a result, transaction costs have risen, prices became volatile and access to markets became less predictable (Sitko and Jayne, 2012). These persistent problems in agricultural markets of developing countries provide a strong justification for development of commodity exchanges taking examples of market models from Western Europe and Northern America (Rashid et al., 2010; Sitko and Jayne, 2012). As such, the government of Ethiopia introduced a commodity exchange approach to coffee marketing by establishing Ethiopia Commodity Exchange (ECX) in 2008.

Studies argue that a properly functioning commodity exchanges in developing countries can help reduce poverty by promoting efficient production, storage, marketing, agro-processing operations, and improving overall agriculture sector performance (Jairath, 2009; Worako et al., 2008). Besides, a commodity exchange reduces transaction costs by offering services at lower cost than that which participants (producers, buyers, intermediaries) in the commodity sectors would incur if they were acting outside an institutional framework (Milligan et al., 2011). Further studies on the potential development impacts of commodity exchanges, studies revealed that where spot, forwards and futures transactions take place on a commodity exchange; the price information provides an accurate reflection of the actual supply and demand situation. These signals help participants make informed production, purchasing and investment decisions so that total risk will be minimised (Scott, 1995).

Within the commodity market literature, recent findings give signals that commodity exchange models from Western countries seems not suitable to developing countries because of problems of assuring market efficiency (Coulter and Onumah, 2002), difficulty of overcoming political intervention (Gabre-Madhin and Goggin, 2005; Milligan et al., 2011), and difficulty of ensuring that smallholder farmers benefit from the exchange (Sitko and Jayne, 2012). Studies on the Ethiopian coffee sector after ECX highlighted the increase in participation of private sector (Worako et al., 2008), the trading service help facilitate price determination (UNCTAD, 2009), strict government controls remain in several fundamental areas (Seifu, 2010).

From the literature we don't know first, the net effect of ECX in terms of potential development impacts remains a puzzle. Second, given that most of the studies focus on the commodity exchanges of developing countries that offer both spot and future contracts, whether the Ethiopia commodity exchange that offers only a spot trading will succeed in achieving its objectives remains a question that this paper attempts to address.

This thesis attempts to fill those gaps in existing literatures by addressing two important questions: (a) what impacts does the introduction of commodity exchange bring on the Ethiopian coffee sector? (b) Does the Ethiopia commodity exchange have a future without future contract?

Answering those questions is important because: First, the future of coffee is at stake as there is an increasing trend toward farmers replacing coffee with khat (Catha edulis) and other cash crops. Second, as coffee quality, Ethiopia's advantage in the world coffee marker has been compromised, maintaining the brand and sustaining the competitive advantage will be a major challenge. Third, because of its huge influence on the economy, coffee is usually considered as a political crop. What happens in international coffee markets has a profound bearing on Ethiopia's prospects for achieving the Millennium Development Goals (UNDP, 2010). Fourth, the growing presence of coffee producers and competitors from the emerging economies that have the potential to heighten structural changes in the global value chain justifies in depth scientific enquiry. To answer the questions, we collect primary and secondary data. The primary data was collected in a nine-week field visit from March 11 to May 22, 2013. Besides the survey, we also conducted a focus group discussion with key informants in the coffee sector. For the sake of triangulation, we also collect secondary data from the Ethiopia commodity exchange, World Bank, International coffee organization, Central Statistics Agency, prior researches and other data providers. A descriptive method is used to analyse the data collected.

the contribution of this thesis are (a) provide insights for a better understanding of the functioning and potential development impacts of commodity exchange in emerging countries and (b) propose a framework for analysing a broad range of development impacts that may arise from commodity exchanges so that other researchers may also modify and use if they should decide to evaluate the impacts of commodity exchanges in emerging countries.

Result shows that Ethiopia commodity exchange brings a system of price setting which results in a better return for farmer, facilitates a physical trade so that contract risk is reduced, and encourages market development that helps to improve coffee export and lower the market concentration. All these are attained via offering an end-to-end operation of warehousing, grading, central trading, clearing and settlement, market information system, and compliance. However, without the possibility to enable market risk management through offering futures contracts, the existing spot exchange has limited chances of sustainability and development impacts. Ensuring market integrity and rewarding quality are also found to be the major concerns that need to be addressed shortly if farmers have to get the benefit of participating in markets.

2.2 Commodity Exchanges in Developing countries

2. 2.1 Why is a commodity exchange relevant in developing countries?

The usefulness of a commodity exchange lies in its institutional capacity to remove or reduce the high transaction costs often faced by entities along commodity supply chains in developing countries (Rogstadius, 2009). A commodity exchange reduces transaction costs by offering services at lower cost than that participant would incur if they were acting outside an institutional framework. These can include – but are not limited to – the costs associated with finding a suitable buyer or seller, negotiating the terms and conditions of a contract, securing finance to fund the transaction, managing credit, cash and product transfers, and arbitrating disputes between contractual counterparties (UNCTAD, 2009). By doing so, commodity exchanges become relevant to the situation faced by commodity sectors in developing countries in a way that by filling the gap arises due to the structural changes after liberalisation that has seen a substantial withdrawal of government support for the agriculture sector (Breuer et al., 2011).

Box 1: Commodity Exchanges in South Africa

Africa`s most active and important commodity exchange is the South African Futures Exchange (SAFEX). It was informally launched in 1987 and has evolved into one of the leading emerging markets (Yartey, 2008). SAFEX only traded in financial futures and gold futures for a long time but the creation of the Agricultural Markets Division led to the introduction of a range of agricultural future contracts for commodities such as white and yellow maize, bread milling wheat, and sunflower seeds (Smith, et al. 2002). The exchange has become a core institution in the deregulated South African grain markets, following the sudden withdrawal of the government after many years of heavy state control (UNCTAD 2008). Not only does the exchange provide a mechanism for hedging, it also supports trade in the physical markets, provides transparency on import/export conditions, supplies pricing information, facilitates access to credit for the commodity supply chain, and smooth the integration of South African grain into world grain markets through an efficient pricing mechanism (Moss and Kenny, 2006).

For exchanges that offer spot trade or supporting activities, the institutional function is to facilitate trade – bringing together buyers and sellers of commodities (Hudson and Hudson, 2003), and then imposing a framework of rules that provides the confidence to transact (Brorsen and Fofana, 2001). Commodity exchanges offering trade in instruments such as forwards and futures contracts also provide sector participants with a means of managing exposure to commodity-price volatility. This is important, as world commodity prices are often highly volatile over short time periods – sometimes fluctuating by over 50 per cent within a year (Breuer et al., 2011). Where spot, forwards and futures transactions take place together on a commodity exchange, the price discovery mechanism performs a vital economic function. As exchange prices come to reflect the information known about the market, they provide an accurate reflection of the actual supply and demand situation. This provides important signals that market participants can use to make informed production, purchasing and investment decisions.

Box 2: Commodity Exchanges in Kenya

There are three commodity exchanges in Kenya: The Nairobi Coffee Exchanges dealing with coffee, the Tea Auction in Mombasa, and the Kenya Agriculture Commodity Exchange (KACE), a spot exchange that deals with a variety of commodities but mostly maize and beans. The Kenya Commodity Exchange (KACE) was set up to provide the basic services of a commodity exchange. The products chiefly traded are agricultural, like cereals, dairy products and cotton. Whereas, the Nairobi Coffee Exchange was set up in 1998 and equipped with an electronic trading system.

Furthermore, the availability of a neutral and authoritative price reference can overcome information asymmetries that have often disadvantaged smaller or less connected sector participants in the past (UNCTAD, 2009).

There are a number of commodity exchanges in developing nations which are distinct in their mode of operation. Exchange in these countries (see box 1, 2 and 3) play a constructive role in a diverse set of circumstances in political transitions (South Africa and Kenya), help the industry adapt to changing situations where a country swings between being a net exporter and a net importer (in case of India and South Africa), bring innovation, liquidity and better risk management to the market by fostering competition among different exchanges (for example India,) and facilitate the integration of market breadth and depth using updated technology that allow for bearing trading and clearing at very low cost (the case in India and South Africa)

Box 3: Commodity Exchanges in India

Commodity markets have a long history in India. The first organized futures market, for various types of cotton, appeared in 1921 (Leuthold, 1994). During the 1960s, the Indian Government either banned or suspended futures trading in several commodities until the late 1970s when the government policy was relaxed and made recommendations to revive futures trading in a wide range of commodities (UNCTAD, 2009). After a series of detailed investigation, the government of India revolutionised the structure of commodity exchanges on three basic principles: the exchanges would offer trade across the country not only in regions, operate under professional management (demutualised), and offer exclusively trading through electronic trading systems (Ahuja, 2006). As a result, three new exchanges were established in 2002-2003: the Multi Commodity Exchange of India, Mumbai (MCX); the National Commodity and Derivatives Exchange, Mumbai (NCDEX); and the National Multi-Commodity Exchange, Ahmadabad (NMCE). These institutions have undergone rapid growth in their trading volumes and become among the world's leading commodity exchanges (Thomas, 2003).

Moreover, our understanding of the functioning of commodity exchange in developing countries can benefit greatly from an in-depth analysis of a specific exchange. As such, the functioning of the Ethiopian commodity exchange and steps involved in coffee trading is presented in the next section.

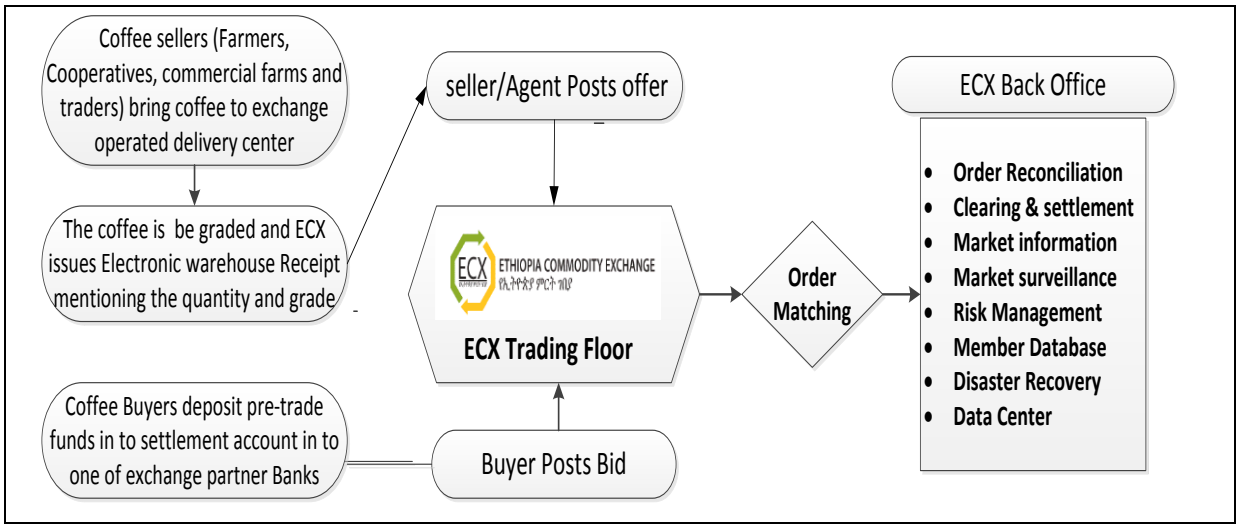
2.2.2 The Functioning of the Ethiopian Commodity Exchange

The Exchange is currently trading five commodities: Coffee, Sesame, Haricot Beans, Maize and Wheat. The strategic importance of coffee to the economy, nevertheless, is evidently reflected in the Exchange's trading sessions and the volume of the transaction.

Coffee trading at ECX is explained in Figure 2.1 below. The seller of coffee uses electronic depository, which clearly describes amount and quality of the deposited coffee to trade at the exchange. The seller then instructs his/her broker to post offer in the trading floor. On the other side, the buyer deposits fund into settlement accounts in one of the exchange partner banks and instructs his/her broker to bid price(ABDUREZACK; Fernández; Rogstadius, 2009). There is a spot exchange on ECX's octagonal trading floor and uses an *open-outcry* system to ensure competitive method of price discovery(Zewdu, 2010). Trading can only occur on the basis of warehouse receipts and can only be conducted by registered members of the exchange, trading either for themselves or on behalf of clients.

A typical coffee trading day at the exchange can be explained in the following few steps: (a) The Exchange staffs make announcement to brokers of both buyers and sellers with a specific coffee category in same warehouse to enter the trading floor. Surveillance persons also enter trading floor and there is also a surveillance camera to record the trading. (b) Following the ringing of the bell, buyers shout out the coffee grade, the price and the quantity they want (e.g to buy 5 lots of grade 2 of Sidama B coffee at a price of 600 Birr[1], the buyer shouts out ***"Sidama B2 at 600 5 lots")*** making his palm inward toward his face. (c) If a seller agreed with the bid, he/she shouts out the same quote showing one hand with the palm facing outward and if he/she does not get what it wants the seller shouts out its own different offer (whenever offers/bids are made it has to be pronounced loudly). (d) When offers and bids are matched, the two traders shake hands and they record their contract on Order Tickets. (e) Finally, the exchange staffs make a voice announcement to traders when one minute is left to end the trading and ring the desk-bell when the time is up.

Fig 2.1 Coffee trading at ECX



Source: Authors' compilation from the Ethiopia coffee trading manual, 2012

As a response to the pressure from premium coffee buyers of Western Europe and USA, the exchange launches Direct Specialty Trade (DST) as monthly bidding session in February 2010. It is a new platform in which producers of specialty coffee can transact directly with international buyers seeking to purchase premium beans on a fully traceable basis (Daily Ethiopia 2010).

To manage the operations, ECX is designed as a Public-Private Partnership enterprise in which the government is the owner whereas the exchange sales membership seats. It is a demutualized corporate entity with clear separation of ownership, membership and management as owners cannot have trading stake, members cannot have ownership stake and the management can be neither drawn from the owners nor from the members (Alemu and Meijerink, 2010).

[1] One Ethiopian Birr is equivalent to 0.05 US dollar for September 2013.

2.2.3 Conceptual Framework

Impact in this thesis means changes in a situation, whether planned or unplanned, positive or negative, that a project brings about that will be extended to social, economic, political and environmental as used in UNCTAD, 2009 where we base our conceptual framework too. To measure the impacts, we use quantitative, qualitative, and proxy indicators depending of the availability of the data and the nature of the impact being assessed.

The impact assessment approach is applied in this thesis in a way that first the basic functions of commodity exchanges stated in literatures were identified and then hen based on the expected benefits arising from each of these functions, the potential impacts are argumented. Details of the conceptual framework are discussed as follows.

From literatures we have identified six core functions that commodity exchanges are intended to perform: price discovery, price-risk management (hedging), venue for investment (speculation), facilitation of the physical (or cash) commodity trade, facilitation of financing to market actors, and a role in market development. Of these, ECX currently don't conduct the functions of risk management and investment venue.

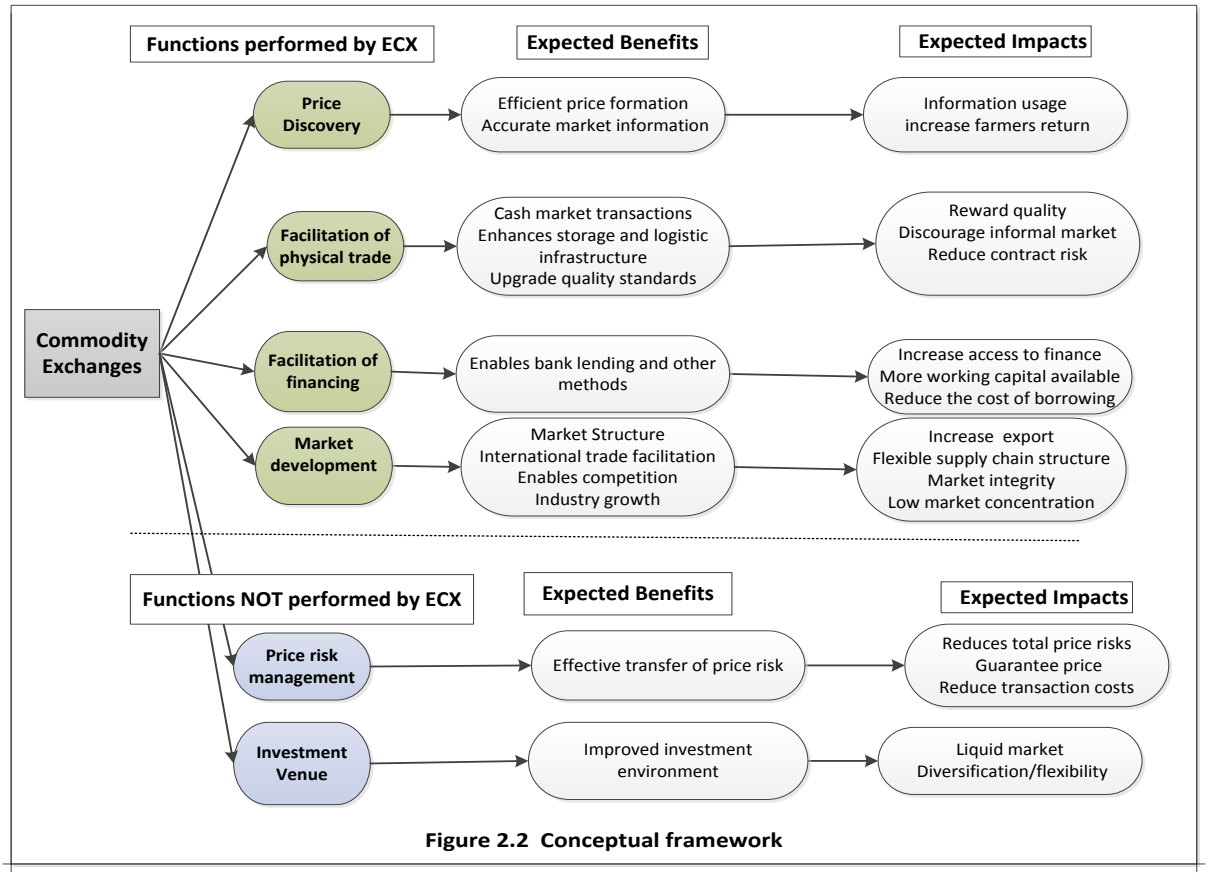


Figure 2.2 Conceptual framework

Price discovery refers to the mechanism through which prices come to reflect known information about the market (UNCTAD, 2009). The price level established on the open market can therefore represent an accurate depiction of the prevailing supply and demand situation in the underlying commodity markets. . This in return provides important indications that market participants can use to make informed production, purchasing and investment decisions. By performing this function, we hypothesize that *ECX will improve farmers return*.

The second function, facilitation of physical trade, usually is performed by introducing a warehouse receipt system in the trading operation. The system then helps to reward quality and reduce contract risks. By contract risk, we mean that the establishment of Ethiopia commodity exchange reassures market participants while transacting in the coffee market in the face of at least four major uncertainties: Will I be able to procure or sell the goods when I need to? (Farmers), Will my contractual counterparty fulfil the terms of the deal? (Buyers and sellers) Will the goods I receive meet the quality standards I require? (Buyers), and will the purchaser accept the goods I deliver as being of good quality? (Sellers) As such, *we hypothesize* that by facilitating the physical trade through warehouse receipt system, ECX will help reduce contract risks and reward quality along the coffee chain.

According to UNCTAD (2009) lack of access to affordable sources of finance is a significant constraint faced by many farmers in the developing world. Banks usually consider agriculture to be a particularly high-risk and low-profit proposition for standard modes of lending. To facilities farmers' access to finance, forms of commodity finance have been developed that can reduce financiers' risks and costs of delivery by linking traditional financial tools such as inventory financing. By performing this function, *we hypothesize* that ECX will increase farmers access to finance as well as reduce the cost of borrowing.

Market development is also one of the functions identified in literatures that commodity exchanges will perform. Since commodity exchanges bring multiple buyers and sellers in one location, export will be facilitated because transactions cost of international trade that would have been high otherwise due to distance, more pronounced information asymmetries, barriers to trade, divergent business practices, and cultural and linguistic differences is minimized. In order to be responsive to the international marker, supply chain will become more flexible. Based on the above arguments, we hypothesize that after ECX, the Ethiopia coffee export is increase, the supply chain become flexible and following the expected completion to be fostered by the exchange, the coffee sector will have a low market concentrations.

Price risk management (hedging) and venue for investment (speculation) are found to be the core functions of commodity exchanges in developing countries. These functions become very important after economic liberalization that made the agricultural prices dependent on the domestic and international market forces (Easwaran and Ramasundaram, 2008). As a result, the need for the protection of commodity sector from price volatility has been realized earnestly. For infamously volatile price of primary commodities like coffee, many literatures suggested that commodity futures markets might play a role in mitigating price instability along with spot markets. Nevertheless, ECX only offer spot trading, which ultimately means the exchange could not fulfill a central function of addressing market risk. This becomes a *motivation* to ask the question whether ECX will succeed without future commodity markets.

To test our argument, we bring together qualitative and quantitative indicators from a range of data sources. The next section presents details of the methodology for assessment of each function.

2.3. Materials and Methods

In this thesis, we use an impact assessment approach to examine potential developmental impacts the commodity exchange brings to the coffee sector. The assessment is through a systematic identification and analysis of the micro- and macro-level impacts generated by the activities of the commodity exchange as hypothesized in the framework *(see figure 2.1).* To do so, we collect primary and secondary data. The primary data is collected in a nine-week field visit to Ethiopia that took take place from March 11 to May 22, 2013. 200 farm households are sampled and interviewed from Dale and Aleta Chuko districts of Sidama Zone and Yirgacheffee woreda of the Gedio zone. Table 3.2 summarizes key characteristics of respondents. The majority of coffee farmers interviewed are males (77.5%) and they are equally distributed in the two zones. 75.5% of the respondents went to formal school while only, 16.5% of them completed high school. The majority (57%) of coffee farmers in the thesis area have less than 1.5 hectares, whereas 85 farmers own more than 1.5 hectare land, of which only (4%) own plots larger than 3 hectares.

Besides the farmer survey, we conduct a focus group discussion with key informants from coffee experts, top officials in the exchange (CEO), leaders of cooperatives, brokers, coffee suppliers, regional and woreda coffee marketing experts, and political leaders. For the sake of triangulation, we also collect secondary data from the Ethiopia commodity exchange, World Bank, International coffee organization, Central Statistics Agency, prior researches and other data providers. Details of the methodology for assessing the impacts of each function are discussed below.

Table 2.1 Demographic characteristic of respondents

Household characteristics	**Frequency**	**Percentage**
Gender		
Male	155	77.5
Female	45	22.5
Kebele/Districts		
Wara/Sideman	50	25
Dengora/Sidama	50	25
Wote/Yirgacheffee	100	50
Level of education		
Cannot read and write	35	17.5
Read and write	45	22.5
Primary Education	49	24.5
Junior	38	19.0
High school and above	33	16.5
Land holding size		
Land size less than 1.5 ha	115	43
Land size above 1.5	85	57

To evaluate the impact of price discover function of the exchange, we use 20 years price data from the International coffee organisation (ICO) to compare the price paid to farmers before and after the exchange. To describe the price discovery function ECX's website, personal observation during the field work and interview with the chief operation officer of the exchange are also used. To test the argumented impacts lowering contract risk and rewarding quality, we use the farmer survey to check if farmers have been rewarding for

quality. To see whether contract risk has been reduced, a focus group discussion conducted during the field visit where buyers, sellers, managers of cooperatives, and officials from the exchange were the participants.

To check whether the exchange indeed facilitate access to finance, we use the data from farmer survey which asks their access to finance, if they do the source and if they don't, the reasons. It was also one of the issues raised during the 35 minute focus group discussion with the key informants. Further, a two round interview with former CEO and founder of the exchange is used to supplement arguments.

In order to test our argument that ECX will increase export by facilitating international trade, we use secondary data from ICO for 22 years. We depend also on desk research and document review to sketch the structure of the Ethiopian coffee supply chain in an era of commodity exchange. Furthermore, one of the argumented impacts of the exchange on market development is that it will encourage competition and keep the market concentration low. To test the argument, we measure the market using concentration index as suggested by (Church and Ware, 2000). First we need to calculate the market share of coffee buyers/traders

$$\mathrm{MKTS_i} = \frac{\mathrm{V_i}}{\mathrm{TC}}$$

Where, $MKTS_i$= market share of coffee $Trader_i$, V_i=amount of coffee handled by $Trader_i$ and TC=the total coffee traded/sold in the area.

Concentration Ratio of **m** coffee buyers: combined market share of the m largest coffee buyers in the area is calculated as:

$$\mathrm{CRm} = \sum_{i=1}^{m} \mathrm{MKTS_i}$$

One critique of the concentration ratio is that it does not take into account the distribution of market share across all firms in an industry(Boetel and Liu, 2010; Church and Ware, 2000). Concentration index that does not share this weakness is the Herfindahl-Hirschman Index (HHI). The Herfindahl index is the sum of the squares for each market shares from major coffee traders in the sector. This index provides an indicator range from 0 to 1, with higher numbers generally indicating a decrease in competition and an increase in market share for the largest traders in the market.

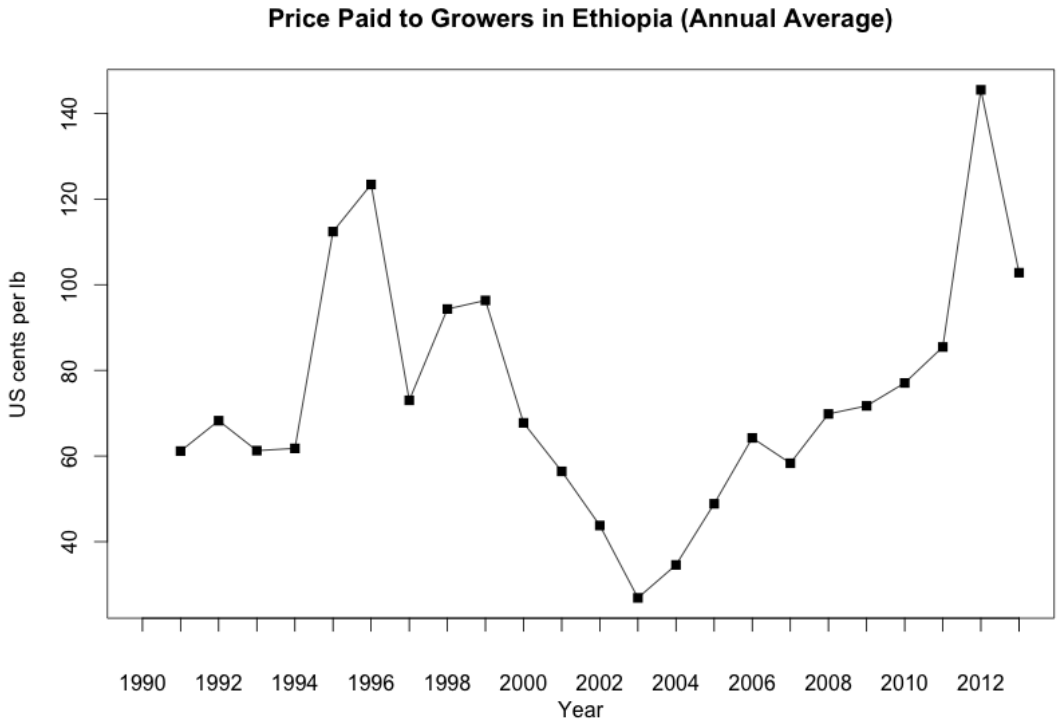
$$\mathrm{HHI} = \sum_{i=1}^{m} (\mathrm{MKTS_i})^2$$

Finally, to evaluate whether ECX will succeed in the future without future contract that will help the exchange provide the core functions of price risk management and serving as an investment venue. To do so, we conduct an in-depth interview with former CEO and co-founder of ECX, CEO of Zemen Bank and founder of Access Capital with 14 years of experience in Wall Street *and*, Chief Operation Officer who is responsible for the day to day functioning of the exchange. Besides the interview, we also use the feasibility thesis report about establishing commodity exchange in Ethiopia. In the next section, findings obtained from the mentioned data sources are discussed using the impact assessment framework we propose in section two (see figure 2.2).

2.4. Results
Impacts

2.4.1 Price discovery

In order to disseminate data on opening price, highest price, lowest price, last traded or current price, and volume of trade, ECX uses electronic price display boards located in public sites in Addis Ababa and other major market centres around the country for every commodity grade traded on the trading floor. The information is provided free of charge. In addition, market data feeds are transmitted daily to radio, print media, television, and innovative uses of SMS and Inter-active Voice Recognition (IVR) using mobile telephone to rural areas (www.ecx.com.et). From in person observation, we learn that the electronic tickers in the trading floor displays price information of previous trading closing price, the price band limit, New York coffee price, and prices of currently transacted coffees with price deference with previous closing price in brackets. The average of all prices traded during the closing period i.e. the one minute period prior to the closing of the trading session is the closing price of the day (Rogstadius, 2009). Though the prices on the trading floor are discovered using an open-outcry, they are regulated to fluctuate within certain price limits. Based on the previous trading session closing prices, coffee prices are allowed to fluctuate a 5% range unless the exchange sets a new range.



Source: Authors' computation from ICO data.

However, from figure 4.1, it is noted that producers are getting improved prices from intermediary traders as a result of an available price reference since the establishment of ECX in 2007/8 coffee season. The return for farmers would have been even better had the price setting mechanism in the producers market is not determined by the compassion of buyers (local suppliers). Farmers usually end up with low price for their coffee from local suppliers as they have low bargaining power to influence due to their limited capital, low production level and limited access to market information.

This problem is further aggravated as the exchange continues to sticks on the traditional approach of providing spot prices and don't place an emphasis on assisting farmers to use prices for guiding their selling and cropping patterns. Coffee marketing expert interviewed in Yirgacheffee stated that, "in rural areas where many of the farmers don't read, live far from the info screen boards posted by ECX, and when most farmers do believe in their experience and social interaction than the info screens, it is possible to say that almost no coffee farmers use the price information, if any, to make cropping and selling decisions".

2.4.2 Facilitation of physical commodity trade

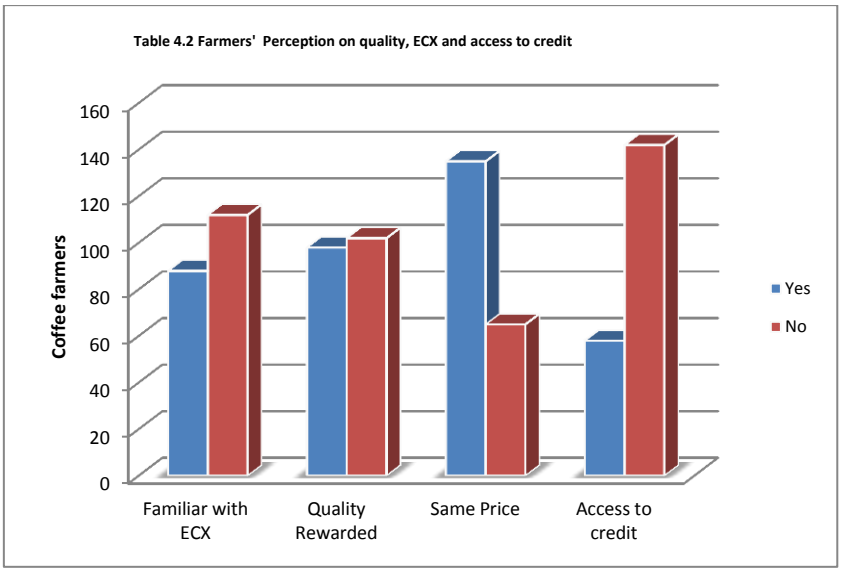
ECX attempts to reduce contract risk to market participants (producers, buyers and intermediaries) and facilitates the physical commodity trade by creating a *warehouse receipt system* that improves the efficiency of delivery and collateral management processes in the coffee chain. According to the officials interviewed (CEO and Chief Operation Officer of the exchange), the exchange claims its warehouse use "state-of-the art grading and weighing equipment to sample, grade and weight commodities that it receives". The warehouse then issues an Electronic Good Received Note and the notes become negotiable, transferable or represent legal entitlement of the deposited commodity only when the central depository issues the bearer an electronic warehouse receipt(Gabre-Madhin, 2007).

The trading manual circulated by the ECX stated that warehouse receipt issued to members of the exchange to trade in the floor expires in 30 days[2]. After that the exchange penalizes the customer 3.5% of the current value of the stored good per day. The buyer will also be penalized 1% of the transaction value on daily bases if he/she fails to collect the commodity within the 10 days of the transaction. Four justifications were raised during the focus group discussion with ECX officials and traders on the floor; (a) it encourages more trading on the exchange and discourages hoarding. (b) With the obvious scarcity of storage infrastructure in the country, such a limit may vitalize an effective use of resource. (c) It can reduce costs arising from lengthy or mishandled delivery procedures, and (d) reduce wastage resulting from the deterioration of products stored in unsatisfactory conditions.'

Along with the warehouse receipt system, quality grading scheme is also introduced by the exchange. According to the CEO of the exchange, "When ECX standardizes the specifications of commodities eligible for delivery at its facilities in line with industry needs; it drives the evolution of a transparent set of quality standards. As a result, farmers' awareness of quality requirements and their ability to adhere to them is expected to increase".

Results extracted from the survey prove however otherwise. Table 2.2 below indicates that most of the farmers interviewed don't have awareness about the function of ECX (56%) and for those who do the system doesn't put in place a strong incentive for farmers to upgrade production quality and better meet the requirements of evolving commodity-supply chains by rewarding them.

[2] While writing this, ECX announce its plan to reduce the warehouse receipt expiration date



As we can see 51% of the farmers don't believe that quality has been rewarded. Further evidence is obtained from the same table that 66% of the farmers see the same pricing scheme for different coffee types as a major problem and also discourages the intention to engage in quality upgrading. From the focus group discussion, we learn that raise lack of integration and transparency are also major bottlenecks in the process.

2.4.3 Facilitation of Financing

In two round interview with the former CEO of ECX and the chief operation officer, and World Bank's 2012 report on Agribusiness indicators Ethiopia, we learn that the Ethiopian government implemented a law governing warehouse receipt financing (WRF) as proclamation 372/2003. The law was followed by the establishment of a WRF system in 2011 by the Ethiopian Commodity Exchange (ECX). The ECX has an agreement with four commercial banks to allow farmers to use warehouse receipts as collateral to access loans. All ECX commodities except for coffee can be used to obtain WRF loans. According the agreement, movable properties may be used as collateral; however, only "standardized agricultural machinery and equipment" are acceptable to the banks. This policy, according to the chief executive officer "effectively excludes most smallholder producers". The bank offers financing up to 60 percent of the commodity's value as a short-term loan at an interest rate of 9.5 percent, which will be processed within three to five days of application. The repayment period depends on the type of commodity, for example one month for sesame, two months for white pea beans, three months for maize, and four months for wheat. So far, the banks have only disbursed 10 Million Birr in WRF loans, which, according to the former CEO of the exchange was "well below the ECX's expectation".

From the focus group discussion we learn that ECX doesn't perform the function of facilitating financing for coffee market actors at all as coffee is excluded in the warehouse receipt financing scheme. This implies that coffee farmers typically are paying high rates of interest for borrowing, through both formal and informal channels. This fact is further justified in farmers' survey, *see table 4.2,* as majority of them do not have access to credit (71%). Even when there is an access, the interest rates are very high.

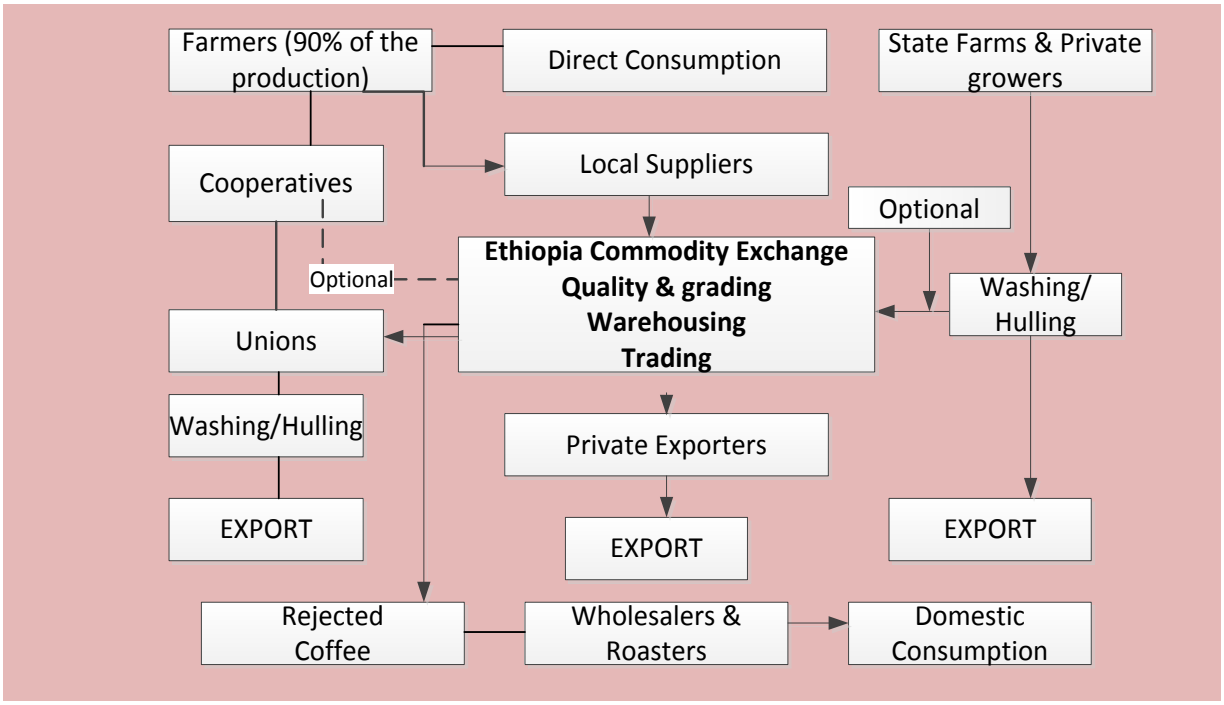
2.4.4 Market development

This section deals with assessing the major impacts of Ethiopia Commodity Exchange on the supply chain structure and will test whether these changes result in a low market concentration using concentration ratio index.

2.4.4.1 Coffee Supply Chain Structure

In the pre- commodity exchange era, an actor in the coffee sector is expected to interact with many other actors in order to sell what he/she produces or buy what he/she wants. The smallholders, who account for 90% of the coffee production faced a higher transaction cost that attributes to search cost, contract enforcement cost etc.(Gabre-Madhin, 2009). Following the establishment of ECX, the government decided to abolish the national auction in 2008 aimed to establish a more cost effective coffee quality control, marketing system to efficiently supply to the international market, and enable coffee producers to increase their income (Zewdu, 2010). According to (Gabre-Madhin, 2007; Mheen-Sluijer, 2010; Rogstadius, 2009), this new regulation introduces important changes in the coffee sector and figure 2.3 below shows the new supply chain after ECX.

Figure 2.3 Coffee market Supply chain in the era of ECX



Source: Authors' computation from ICO data.

The market chain after the exchange neatly shows the formation of a smooth and orderly coffee market on which ECX serves as a "middle man". Exporters and processors are expected to benefit from the possible uninterrupted quality and quantity supply that creates a comfortable working environment.

The benefit also extended to the government revenue authority as the proposed transparency the exchange creates help to reduce tax non-compliance that widely exists in non-organized market (Alemu and Meijerink, 2010; Zewdu, 2010). Evidence supplied by both ECX officers and policy makers during the focus group discussion suggests that the most profound impact from the introduction of the exchange has been the transformation of the respective supply chains, as intermediaries are squeezed out.

The story from the farmers' side goes otherwise as majority of them perceives there are more middle men in the coffee chain than before ECX.

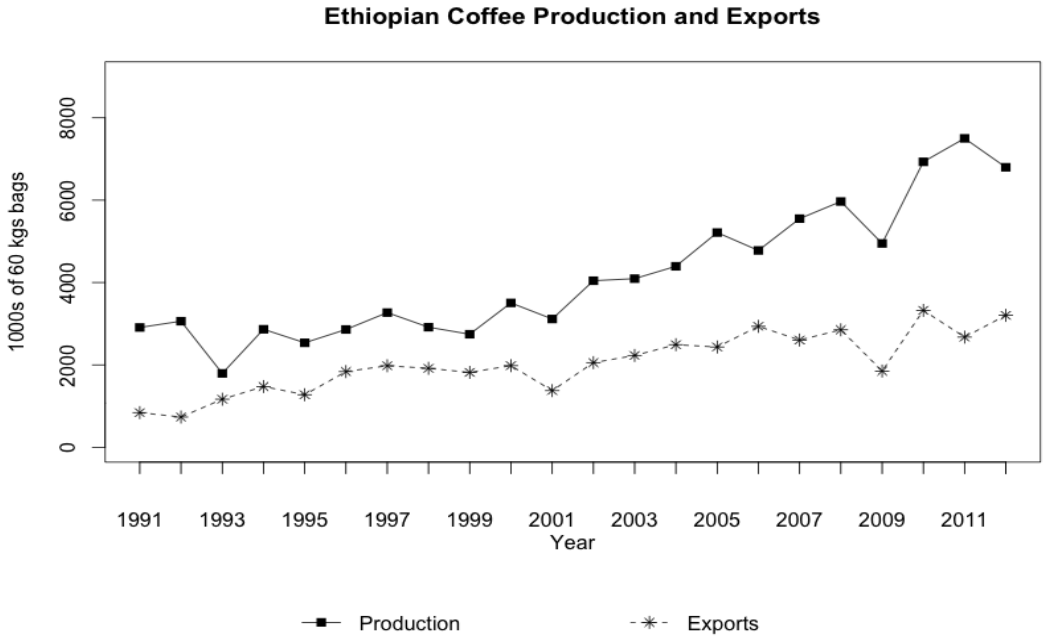
As far as the structure is concerned, we learn from the new supply chain that the post ECX supply chain has three major differences with the old auction system: *First,* producers can only sell coffee at rural primary transaction centres. Many of these primary markets already existed, but they were designated by the new proclamation as official transaction centres where recognised suppliers can buy red cherries or dried coffee directly from producers. The transaction centres make tracking markets easier and create a more competitive environment. Interviewees from all segments of the chain acknowledged the wider access to information regarding coffee prices has improved the bargaining power of producers. *Second*, due to the introduction of the warehousing and clearance system, coffee is no longer physically moved to the trading floor. *Third,* as trade is taking takes place in one central location, the transportation costs moves from producers to exporters.

Whereas, we found that certain regulations remain unchanged after the establishment of ECX to mention few: the need to obtain a quality certification prior to export and the prohibition to sell export-quality coffee in the domestic market (Alemu, 2009), coffee exporters, wholesalers for domestic consumption and coffee roasters still require licenses to operate (Rogstadius, 2009; Zewdu, 2010) and above all, government still extends its hand in the sector as a regulator (Seifu, 2010). From the focus group discussion, we also learn that the recent government's involvement as a '*ghost traders'* creates tension and sense of uncertainty among market participants with the fear of market manipulation which however require a further investigation and is beyond the scope of this thesis.

With the new supply chain structure, the coffee sector is expected to perform better with the help of the exchange in encouraging production and facilitating international trade. However, figure 4.4 shows fluctuation in the production and export of coffee after ECX, though the trend is increasing. The break in 2009 is witnessed due to the introduction of the new regulation by the government that urges every coffee bean to pass through the exchange followed by hoarding and boycott by major exporters.

Moreover, the supply chain structure changes followed by the establishment of the ECX, farmers are facing with major challenges. we put the result from the survey in table 4.2 Similar farm gate price for all coffee types is found to be the major challenge as 67.5% of survey farmers reported. It is not surprising given the trends that show farmers are price takers than setters unlike the classical demand and supply theory. 132 (66.1%) respondents also reported that in the era commodity exchange, more formal and informal middle men are introduced in the chain which ultimately makes the price transmission difficult and put farmers at disadvantage.

Figure 2.4 Coffee production and export



Source: Authors' computation from ICO data.

During the focus group discussion, the local coffee marketing experts revealed that "unnecessary chain in the market is widening the price gap between the farm gate and the central market price". Equally, poor market regulation is also mentioned by respondents (66%) as one of the major problems. By poor regulation, farmers mean a sever corruption from low to top level management, bribe, mischief during quality and standard measurements and most importantly price fixation during the coffee seasons. This can be a good explanation for the long chain in the market. Still in table 2.2, we can learn that transportation and late start to buy coffee by cooperatives remain the major challenges as 57.5% and 50.5% of the farmers interviewed agreed on respectively.

Table 2.2: Major Problems

Major_Problems along the supply chain			
		Responses	
	Major_Problems	**N**	**Percent**
[a]	Farmer get the same price for all coffee types	135	14.5%
	The number of intermediaries increase after ECX is established	132	14.1%
	Poor coffee market regulation that lacks transparency	132	14.1%
	Transportation problem	115	12.3%
	Cooperatives are late to start buy coffee from farmers	101	10.8%
	Farmers get lower price for their coffee	95	10.2%
	Coffee price fluctuation	89	9.5%
	Suppliers take unfair advantage on farmers	88	9.4%
	Uncertainty about coffee revenue for the future	33	3.5%
	Other problems like corruption	14	1.5%
	Total	**934**	**100.0%**
a. Dichotomy group tabulated at value 1.			

2.4.4.2 Market Concentration

One of the argumented impacts of the exchange on market development is that it will encourage competition and keep the market concentration low. To see the impacts, we measure the market using concentration index. Concentration ratio is expressed in terms of CR_x which stands for the percentage of the market sector controlled by the biggest X traders.

According (Church and Ware, 2000) the most common concentration ratios to evaluate the market structure is the CR_4 which ultimately means the four largest suppliers within the coffee sector. Low market concentration is seen as 0 to 50%, medium concentration with 50 to 80% and high market concentrations with 80 to 100%. The greater the degree of concentration, the higher will be the non-competitive behaviour and formation of collusion in the coffee market. Thus, CR_4 and HHI of Yirgacheffee, the largest and most renowned coffee supplying region in Ethiopia, is calculated

Table 2.3 Market Concentration Measures

Coffee Season	2008-2009	2009-2010	2010-2011	2011-2012
CR4	39.82%	35.06%	40.70%	42.53%
HHI	0.08	0.06	0.07	0.09

From the result, both CR_4 and HHI results indicate that in the last four years, as we argumented, the coffee markets has been in the range of low market concentration and lesser threat of Oligopoly. However, probability for the prevalence of oligopoly is tend to be continuing high especially after ECX is decided to be the only market outlet choice by the government in 2009.

2.4.5 The future of ECX without futures contracts; Mission Impossible?

The ECX only offer spot trading, which ultimately means the exchange could not fulfil a central function of addressing market risk. This becomes a motivation to ask the question whether ECX will succeed without future commodity markets.

To find an answer, we reviewed ECX´s establishment road map and conduct interviews with Co- founder and former CEO of ECX (Dr. Elleni Gabre-Madhin) , and CEO of Zemen Bank and founder of Access Capital with 14 years of experience in wall street (Mr. Ermias Amelga), and Chief Operation Officer of the ECX (Mr. Ahadu Wubeshet).

For the question we raised why ECX only focuses on spot trading, the former CEO replied that “With the advent of the Ethiopia Commodity Exchange, there is a new opportunity to level the playing field through the introduction of standardized futures contracts listed by the Exchange, to provide liquidity with reduced default risk. However, because of the riskiness of these risk management instruments themselves, careful and progressive capacity building is required as these derivatives are introduced”.

From the interview, we also learn that the Ethiopia Commodity Exchange without the possibility to enable market risk management through offering futures contracts has limited chances for success due to the following three reasons.

First, the fundamental value that the ECX would offer which is price risk management have been compromised as spot markets help discover price not to manage price volatility. Second, since the Exchange is offering only spot contracts, its value added to the market would only be in addressing contract risks and not market risks. However, in a country where trust among actors play a major role than formal rules, it will be very difficult for the Exchange to attract market participation on a voluntary basis for only spot trading as there might be many alternative options to trade and manage contract risk that are currently available at little cost. If there is a future trading, on the other hand, the great benefits of both hedging for those in the physical trade and of investment gains for others will clearly attract market participation. This suggests that the scope for attracting market participants only on the basis of reduced contract risk will be relatively limited as participation in ECX also incurs costs in the form of membership fees and transaction fees where there is an alternative at lower costs. Finally, even if ECX desires to offer some form of forward contract in which the possibility of offsetting positions is not possible (see box 4 for an explanations), then the simple forward contract mechanism would be unsustainable because of the extreme pressure to default as there will be no choices but to deliver. Moreover, there would be much less liquidity in terms of interested buyers or sellers willing to take the risk off the hedger.

Box 4: Hedging with Futures Market example (Leuthold et al., 1989)

Suppose that at time **T (May),** Seller **A** wants to sell Quantity **A** of commodity at time **T+1 (July)** for a pre-specified price of **100**, which is the futures price for **July** delivery in **May**. At that time (in May), the spot price of that commodity is 80.
With a futures market, in order to lock in the July price of 100, Seller A will **sell** his commodity for July delivery on the Exchange at the futures price of 100. In July, let us suppose that the spot price is actually 90, and not the 100 that Seller A wanted.

In July, the July futures price converges to the spot price, so it is also 90. In July, Seller A will sell his commodity on the spot market for 90. However, he will simultaneously **buy** the same quantity of his commodity on the future market at the price of 90. Since he had previously sold his commodity in May for July delivery at the futures market price of 100, he will have made a profit of 10 on the future market. Thus, Seller A offsets his futures market net position against his spot market position, in order to effectively lock in the price of 100 for his commodity in July, as he wanted.

2.5. Conclusions and Implications

2.5.1 Conclusions and discussion

The Ethiopia commodity exchange brings a system of price discovery which results in a better price paid to farmers from intermediaries. Through facilitating a physical trade, the exchange is able to reduce contract risk for market participants and facilitate international trade. As a result, coffee export of Ethiopia has an increasing trend. It is also argued that the quality, production and export of coffee would have been way improved had the ECX facilities access to finance from major actors in the chain who have less predictable access and pay a very high interest rate as financers consider agriculture more riskier and less profitable investment. The introduction of warehouse receipt system found to a major impact on overall supply chain structure that results quality inspection in local transactions centres and make tracking at least to the village level possible.

Following these structural changes, the coffee market have been in the range of low market concentration though the probability for the prevalence of oligopoly is tend to be continuing high especially after the government pass a regulation that require every coffee bean to pass through the exchange in 2009. The functioning of the ECX is not without problems. Similar farm gate pricing system found to be the most prominent one followed by more middlemen in the chain and poor regulations. The loopholes in the regulation lead to a sever corruption from low to top level management, bribe, mischief during quality and standard measurements and most importantly price fixation during the coffee harvesting season which also explains why farmers mentioned unfair advantage by suppliers as one of the problems. Besides transportation and other infrastructural challenges, uncertainty about the future of coffee is found to be the major source of farmers' frustration evidenced by the increasing trend toward farmers replacing coffee with other cash crops. Since cooperatives also lack working capital, they start late to buy coffee from framers which will make the latter vulnerable for broker and collectors exploitation especially when the farmer needs cash badly. Besides these bottlenecks, the future of ECX without future contracts has been called in to question seeing that the existing spot trading without the possibility to enable market risk management through offering futures contracts has limited chances of sustainability and development impacts.

The contribution of this thesis to scientific literature would be insights for a better understanding of the functioning and potential development impacts of commodity exchange in emerging countries and then a framework for analysing a broad range of development impacts that may arise from commodity exchanges. This thesis has limitation in a way that it doesn't emphasised on one of the argumented grassroots level impacts of the exchange that stated as by facilitating the physical trade, the ECX will make possible moment from informal market to the formal one. This function and the expected development impact need detail investigation to suggest better ways to help farmers to access markets and get hold the benefits of participation

2.5.2 Policy and future research Implications

Our findings suggest that in order get the full benefit from market participation; the ECX shall focus on educating key stakeholders about exchange functions, operations, services and benefits including farmers, government, the media, academia and civil society. Particularly, the exchange should emphasis on assisting farmers to use price information for guiding their selling and cropping patterns. This can be done by partnering with for example, farmer cooperatives farmer associations, government agencies, district agricultural research institutes, extension agencies, financial and microfinance institutions, and civil society organizations. These institutions would play a great role by monitoring and reporting on the impacts of commodity exchanges on rural communities, filling some of the data gaps that currently exist. This would be done with a view to informing the ECX about how it can best improve the relevance and impact of its services to farmers.

For the ECX and policy makers, our findings suggest further debate and research on the practicality of introducing future commodity market because the existing spot trading is not offering the basic service of an exchange, price risk management.

ECX shall be involving also in appraising the feasibility of establishing a future commodity exchange (or commodity exchanges, if there is a need to separate exchanges) and determining which futures instrument to provide. To supplement the decisions, we also urge for Sharing experiences and best practices with other commodity exchanges in the developing World. The issue deserves much attention as there would be limited probability of attracting market participants to the exchange on a voluntary basis for only spot trading as there might be many alternative options that can offer the same but at little cost.

To facilitate access to finance for farmers and other actors in the coffee sector, this thesis suggests that ECX shall include coffee in the warehouse receipt financing (WRF) system. The most straightforward mode is inventory financing, using warehouse receipts from the ECX as collateral. We suggest this to Ethiopia because, according to the trading manual by ECX, the warehouse receipt is a negotiable and transferable instrument. The challenges would be however, the willingness of financial institutions to participate and commodity future market is still a missing element in the country. The first challenge can be minimised if the government shows signals of support for the coffee sectors, thereby provide confidence for financers.

For policy makers, this thesis has corroborated that unjustified similar pricing scheme, unfair advantage by suppliers; market manipulation and the increasing trend toward farmers replacing coffee with khat (Catha edulis) plants as a result of frustration about the future are the major concerns in the sector that need to be addressed momentarily. As a result, we suggest the ECX and policy makers to work on ensuring an overarching regulatory framework that upholds the transparency and integrity the coffee market, protects market participants from corrupted practices, and effectively manages the risks that arise from market operations. Besides, it would help reduce those bottlenecks and ease access to markets for the farmers living in remote rural areas much emphasis is given to develop physical infrastructure that support commodity exchange and market development including roads, information and communications technology, electricity, storage and logistics

Finally, our thesis has implications for future research. This thesis has focused one commodity, coffee. The external validity of the current findings may be tested in other commodities for example on Sesame, Haricot beans, Wheat, and Maize that will then be leading to articulate theoretically the borderline conditions in which commodity exchange in emerging countries will work. Likewise, one of the most important impacts commodity exchanges are expected to bring in developing countries is to encourage market participants to move from the informal and less formal to organised formal market channels. Future studies may also examine whether this impact holds on the coffee sector and then identify the major determinants of market outlet choice decisions by producers.

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Coffee Farmers at the crossroads; Determinants of Market outlet choice decisions in an Era of Commodity Exchange

Abstract

The opportunity for developing countries smallholder farmers to escape from poverty heavily depends on the ability to participate successfully in markets. Helping farmers participate in markets requires countries to have flexible marketing institutions and sound marketing approach. As such, the government established Ethiopia commodity exchange (ECX) in 2008. Besides ease market access, the ECX is expected to help farmers make sound decision in choosing market outlets through generating market information. Market channel choices are among the most complex and challenging decisions facing farmers as it thoroughly affects all other marketing decisions. Ethiopia coffee farmers have the option to sell all, partial or none of their coffee beans to cooperatives, local suppliers or both. Each channel system creates a different level of revenues and costs, and reaches a different segment of target customers. As such, this thesis aims to identify the factors that affect the coffee farmers' market outlet choice decisions in Ethiopia. To do so, data were collected using survey from 200 coffee farmers selected at random. Data purification through factor analysis, reliability and validity of the constructs was done on the multi item scales before the data analysis. We run multinomial logistic regression model to explore the factors that affect farmers marketing channel selection decisions of coffee farmers. In order to have the most complete picture, we make use of transaction cost, resources based view theories, and market orientation theories as analytical framework. Results indicate that institutional factors (access to cooperative and market information) found to be the fundamental determinants of farmer's channel choice decisions. From the social capital factors, only farmers' tie in the society is significant in determining their preference to markets and, market orientation moderates the influences of cooperatives membership as well as farmer's network on channel choice.

Keywords: *Developing countries, Ethiopia, smallholder farmers, Market outlet, Ethiopia Commodity Exchange*

3.1 Introduction

In many literatures, less arguably, we learn Ethiopia as the origin of coffee Arabica. The country grows a wide variety, highly differentiated, most of which are shade-grown by small farmers (Dempsey, 2006). Coffee has accounted for an average of 60% of the total export earnings for the past five decades (Shumeta et al., 2012). Besides, the sector affects the livelihoods of approximately one-quarter of the population by providing jobs for farmers, local traders, processors, transporters, bankers and exporters (Worako et al., 2008). The number of coffee growers has been estimated in about one million smallholder farmers and grow nearly 90% the coffee output (Petit, 2007).

Coffee is the most important commodity of the Ethiopian economy. According to Worako et al. (2008) the coffee sectors affects the livelihoods of approximately one-quarter of the population by providing jobs to farmers, local traders, processors, transporters, bankers and exporters. Furthermore, coffee has accounted for an average of 60% of the total Ethiopian export earnings for the past five decades (Shumeta et al., 2012). The country grows a wide variety, highly differentiated coffee, most of which are shade-grown by small farmers (Dempsey, 2006).[3] The opportunity for smallholder farmers to escape from poverty heavily depends on the ability to participate successfully in markets. Helping farmers to participate in markets require countries to have flexible marketing institutions and sound marketing approach (Milligan et al., 2011).

Looking to promote market participation of farmers, lower transaction costs, and increased market information, the Government of Ethiopia established the Ethiopian Commodity Exchange (ECX) in 2008.

Market participation decisions have previously been described as a two-step that include participation in the market (sell or don't sale), and volume(how much to sell) (Barrett, 2008; Gebre-ab, 2006; Holloway et al., 2004; Pender and Alemu, 2007; Verhaegen and Van Huylenbroeck, 2001). However, less is known about aspects of market participation such as factors that affect farmer channel choices. Marketing channel decisions are among the most complex and challenging decisions facing farmers as it thoroughly affects all other marketing decisions. Each channel system creates a different level of revenues and costs, and reaches a different segment of target customers (Pieterson, 2009). Several channels through which agricultural products can be sold have been identified in the literature. Crawford (1997) argues that the use of intermediaries in the market chain increase efficiency while Schmit and Gomez (2011) suggest that selling at farmers market can help increase profits as a famer can set their price.

studies on market participation of farmers in Ethiopia were relating to grain (Barrett, 2008; Dadi et al., 1992), milk (Holden and Layne Coppock, 1992), and sesame marketing (Aysheshm, 2007; Pender and Alemu, 2007).

[3] The number of coffee growers has been estimated in about one million smallholder farmers that grow nearly 90% the coffee output (Petit, 2007).

Despite the importance of these studies in highlighting factor influencing market participation and choice of marketing channel, coffee is different for Ethiopia in importance compared to those commodities. Other studies in Ethiopia for example by Gabre-Madhin (1999) and Lirenso (1993) evaluated transaction costs as a factor influencing channel choice decision. In the same line, Francesconi and Heerink (2011) analyzed institutional factors that affect channel choice decision. However, other factors such as market orientation behavior of farmers and social capital element affect farmers' choice of marketing channel have not been less explored in the literature.

The key contribution of this thesis looks to provide better insights on the factors affecting market channel decisions and way forwards on how the bottlenecks associated with these factors can be alleviated so that the livelihood of smallholder farmers will be improved. Further, it will contribute to identifying which factors encourage or discourage farmers from using cooperatives and suppliers as market outlets, which would be crucial for the ECX, donors, and policy makers.

This thesis aimed (a) to identify marketing channels available for coffee farmers following the establishment of ECX in which that policy makers aim to foster economic development and improve the livelihoods of farmers; and (b) to examine the determinants of farmers' market outlet choice decisions in an era of commodity exchange. The findings will assist the ECX, government of Ethiopia (policy makers), and donors to design appropriate intervention that will help increase the returns among farmers and reduce poverty. To do so, we collect primary and secondary data. The primary data was collected in a nine-week field visit from March 11 to May 22, 2013. Using two-stage stratified sampling, farmers were interviewed from Sidama and Yirgacheffee districts. Besides the survey, we also conducted a focus group discussion with key informants in the coffee sector and secondary data were collected to supplement arguments. We run Multinomial Logistic (MNL)regression model to explore the factors that affect farmers marketing channel selection decisions of coffee farmers.

Results show market orientation, network, access to cell phone, gender of the head of the household, distance from the market, cooperatives membership, the interaction term between access to cooperatives and market orientation found to influence farmers' market channel choice. Besides, total coffee supply by farmers to the market, farmer's trust on buyers, and the interaction term between access to training and market orientation are found significant determinants. These variables explain farmer's market choices, but have different impact depending on the market of choice

The remaining of the paper is structured as follow. In the next section, we discuss the analytical framework focusing on linking market orientation theory with market outlet choices and the theory of transaction cost. The thesis method we have adopted is subsequently presented, followed by results and discussions. In the final section, we conclude the thesis and formulate implications for the ECX, donors and policy makers.

3.2 Analytical framework

This section deals with the analytical framework focusing on theory of transaction cost, resource based view and linking market orientation theory with market outlet choices as a moderator.

3.2.1 Transaction cost theory

Transaction costs, occasionally referred to as hidden costs, are the observable and non-observable costs associated with exchange of goods and services (Ouma et al., 2010). These costs arise due to the frictions involved in the exchange process as it entails transfer and enforcement of property rights. Past studies such as Key et al. (2000) have categorized these costs into fixed and variable transaction costs. Fixed transaction costs are invariant to the volume of output traded and affect market participation decisions of smallholder farmers. They include the costs of searching for a trading partner with whom to exchange or searching for a market; second, negotiation and bargaining in the presence of imperfect price; and finally, screening, enforcement of contracts, and supervision particularly when credit sales are involved as the sellers have to screen the buyers for reliability and lower the likelihood of defaults (Winter-Nelson and Temu, 2002). Variable transaction costs on the other hand are per unit costs of accessing markets that vary with the volumes traded. Both costs also may affect the decision of market participation as well as quantity traded.

Accordingly, we have approached the channel choice problem from transaction cost perspective as it may have a direct application to market outlet choice of farmers. Market search, for instance is costly for farmers, both in terms of labour costs for search activities and in terms of the time cost of holding coffee inventory during the search(Gabre-Madhin, 2001). For every transaction, each farmer incurs the cost of labour time invested in search. This cost is represented by the opportunity cost of the labour employed in search, which depends on the farmer's ability to hire additional labour, use the service of brokers or to engage the help of family members in the search effort. Currently, one of the cheapest and fastest ways to access to information from ECX and market actors is through the use of mobile phones. Informational advantage is among the most valuable comparative advantages because it is less vulnerable to substitutes and is more difficult to imitate, duplicate, or purchase (Barney, 1991; Hunt and Morgan, 1996). Similarly; information is the raw material for knowledge development and as such, is considered an organization's most valuable resource (O'Dell and Grayson Jr, 1998). Besides access to information, institutional factors in the forms of access to training, cooperative membership and access to information help farmers reduce transaction cost. Besides the cost, they can help farmers make better marketing decisions and increase their profits. Thus, it is important to explore the influence of institutional factors on market channel choices of farmers.

3.2.2 Resource Based View (RBV)

The fundamental imperative of resource-based strategy is that to achieve competitive advantage and superior financial performance, firms should seek resources that are valuable, rare, imperfectly mobile, inimitable, and non-substitutable (Hunt and Morgan, 1996). Resource based view theory highlights that a valuable, rare resource is one that enables a firm to compete by being, relative to competitors, more efficient and/or more effective.

Accordingly, resources generate comparative advantages when they enable a firm to produce a market offering that, relative to extant offerings by competitors: (a) is perceived by customers to offer superior value and or (b) can be produced at lower costs (Hunt and Morgan, 1995). ‘‘Superior’’ implies that the firm’s resource advantage surpasses competitors in terms of relative costs (i.e., an efficiency advantage), relative value (i.e., an effectiveness advantage), or both (i.e., an efficiency-effectiveness advantage). The theory builds on the key assumption that resources are heterogeneously distributed across firms and imperfectly mobile (Wade and Hulland, 2004). The most valuable resources are those that are difficult to replicate (i.e., they are relatively immobile) and, therefore, may be a source of sustainable competitive advantage(Teng, 2007).

In line with the theory, we consider that social capital as resource factors that influence farmers’ market choice. Social capita is the institutions, the relationships, the attitudes and values that govern interactions among people and contribute to economic and social development (World Bank, 1988).

3.2.3 Market orientation and channel choice decisions

The concept of market orientation has been used widely in the manufacturing sector to refer to the extent to which a producer uses knowledge about the market (particularly about customers, competitors, and prices), as a basis to make decisions on the three basic economic questions of what to produce, how to produce and how to market (Kohli and Jaworski, 1990). The same authors defined market orientation as the organization-wide generation, dissemination of and responsiveness to current and potential customers and competitors and factors affecting them.

Farmers that pursue a customer-oriented approach are assumed to focus entirely on identifying opportunities for satisfying both overt and latent customer needs . Based on the market information they obtain, such farmers generate new ideas aimed at satisfying customer needs independent of competitors' activities (Frambach et al., 2003). Such farmers also often work closely with agricultural offices, coffee experts, and local research centres to discuss about new varieties, and the possibility of upgrading the coffee quality that fit customer needs. Consistent with these observations, we expect farmers with high social capital and better access to information, to coordinate their inter-functional activities to be more customers oriented and prefer to choose multiple market outlets farmers find suitable to their specific needs. This will also help them reduce transaction costs.

A relative emphasis on competitor orientation can also influence farmer’s market outlet decision in a way that those farmers who adopt a me-too strategy constantly benchmark their coffee quality relative to their

competitors. Alternatively, me-too farmers might try to copy whatever their neighbours are doing without paying much attention to the needs of customers. In contrast to me-too, farmers that follow a second-but-better approach first await and see the result of their neighbours' market outlet choices, evaluate the opportunities or threats, and then respond by choosing outlets that fit them to get the best possible buyers in the market. Thus, a farmer's relative emphasis on competitor orientation has influence on their market outlet choices and their customer orientation behaviour become complementarity regardless of their approach. Base on the arguments made in previous two paragraphs, we propose the following hypotheses.

From the three theoretical perceptive, we identified factors that influence the market outlet choice decision of farmers and propose a conceptual framework here below.

Figure 3.1 reports the conceptual framework we use in this thesis.

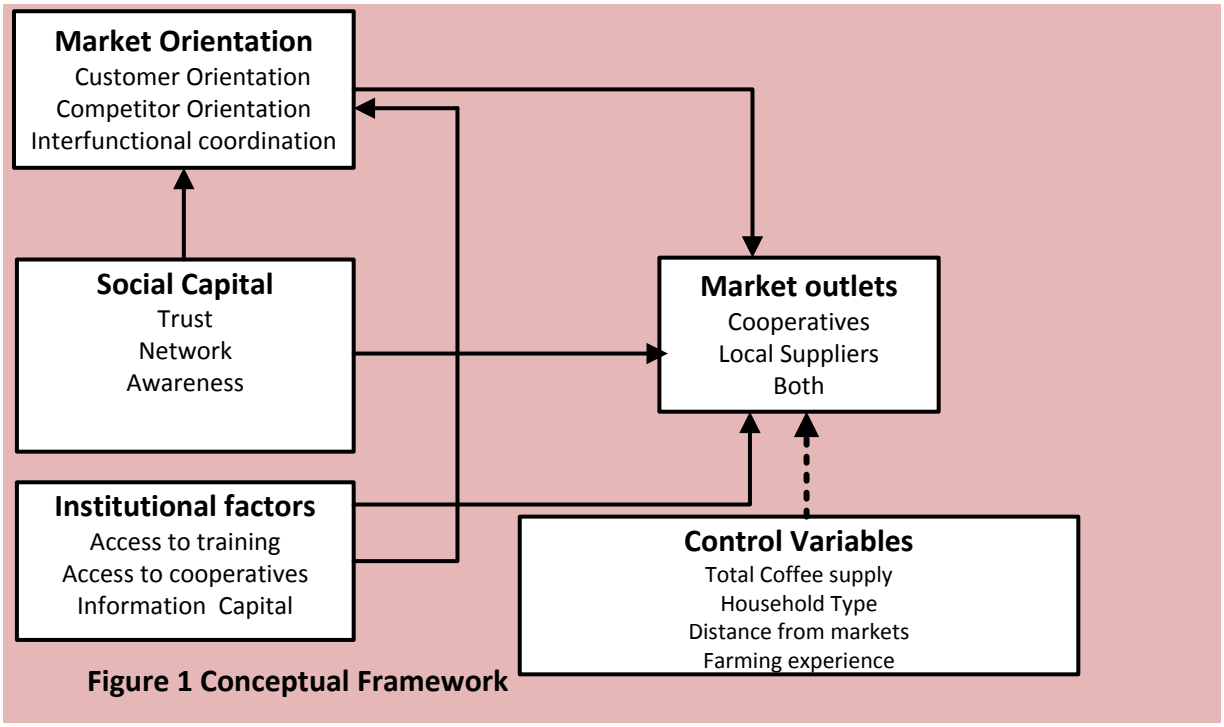


Figure 1 Conceptual Framework

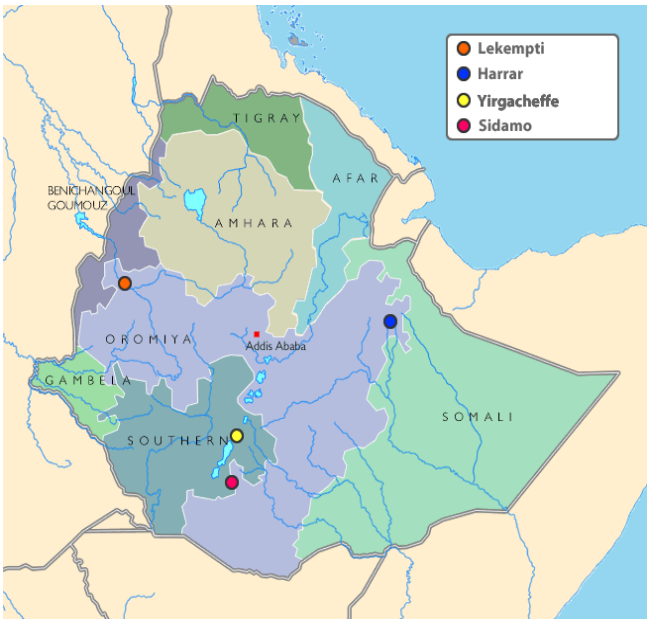
3.3 Materials and Methods

This chapter outlines the methods and procedures used to achieve the stated objectives. It presents the types and sources of data, and the analytical methods used. The first section describes the thesis area, data sources, and methods of data collection along with the data purifications process undertaken. Thereafter the empirical model briefly discusses the model used in the analysis of the factors that influence coffee producers' choice of marketing channels.

3.3.1 Study area

The thesis is conducted in Sidama and Yirgacheffee districts of Southern Nations, Nationalities and People (SNNP) of Ethiopia. The districts have three kinds of ecological zone "Dega" (cool and humid with altitude of 2300-3200 meters), "Woynadega" (cool and sub-humid with altitude of 1500-2300 meters) and "kola" (warm semi-arid with altitude of 500-1500 meters). Among the many fine coffees grown in southern Ethiopia and one of the world's most renowned coffee growing regions, Sidama and Yirgacheffee are perhaps the most distinguished of all as they produce wide variety of coffee flavours. Many different grades of both washed and unwashed coffees are produced, and there can be striking differences from town to town. According to Central Statistical Agency (CSA), both districts produce at an average 70% of the SNNPR's output and 35% of Ethiopia's total output every year.

Figure 3. 2: Coffee producing regions in Ethiopia



Source: Atlas Ethiopia

3.3.2 Sources and Methods of Data Collection

The data for this thesis is obtained from both primary and secondary sources. The primary data is collected in a nine-week field visit to Ethiopia that took take place from March 11 to May 22, 2013. 200 farm households were sampled and interviewed from Dale and Aleta Chuko districts of Sidama Zone and Yirgacheffee woreda of the Gedio zone.

These districts are selected because the area is well known by producing quality coffee, have diverse agro ecology, much volume production and coffee are the major crop and source of livelihoods. Besides, the accessibility of the areas to travel is taken into consideration. We use a two-stage stratified sampling technique to select sample farmers. First, 3 Kebeles[4] from the selected three districts through purposive sampling are randomly selected and in the second stage, using the population list of coffee farmers from sample Kebeles (the sample frame is obtained from the respective Kebele offices), the predetermined size of the sample farmers from each Kebele are randomly selected using systematic random sampling. Besides the survey, we also conducted a focus group discussion with key informants in the coffee sector and secondary data were collected to supplement arguments from the Ethiopia commodity exchange, World Bank, International coffee organization, Central Statistics Agency, prior researches and other data providers.

Table 1 summarizes key characteristics of respondents. The majority of coffee farmers interviewed are males (77.5%) and they are equally distributed in the two zones. 75.5% of the respondents went to formal school while only, 16.5% of them completed high school. The majority (57%) of coffee farmers in the thesis area have less than 1.5 hectares, whereas 85 farmers own more than 1.5-hectare land, of which only (4%) own plots larger than 3 hectares.

Table 3.1: Demographic characteristic of respondents

Household characteristics	**Frequency**	**Percentage**
Gender		
Male	155	77.5
Female	45	22.5
Kebele/Districts		
Wara/Sideman	50	25
Dengora/Sidama	50	25
Wote/Yirgacheffee	100	50
Level of education		
Cannot read and write	35	17.5
Read and write	45	22.5
Primary Education	49	24.5
Junior	38	19.0
High school and above	33	16.5
Land holding size		
Land size less than 1.5 ha	115	43
Land size above 1.5	85	57

3.3.2.1 Questionnaire development and Pilot-test

The questionnaire is prepared first in English language then translated in to the local language, Amharic, finally back translated to English to ensure the consistency of items. Three college graduates who are native to the thesis areas and know the language are hired as numerators. Before the fieldwork, they were trained for two days on the content of the questionnaire and interviewing procedures. The questions are constructed using the conventional likert five-point measure.

[4] The smallest administrative unit in Woreda/district

In order to avoid situations in which interviewees misunderstand the meaning of the questions due to ambiguous sentence phrasing, the questionnaire is reviewed in interviews with two experts in the field of agricultural marketing. The questionnaire draft is then commented and approved by the thesis supervisors before tested by 15 coffee farmers from different demographic characteristics. Based on the feedback from the pilot test, adjustments have been made.

Since most farmers are low-literate, written scale items in a questionnaire may be confusing. Therefore, following (Ingenbleek et al., 2012), we replaced a traditional five-point likert- scale with five sticks of increasing size. Farmers responded to the multi-item questions by picking sticks i.e. they picked stick 1 when they 'strongly disagree', and stick 5 when they 'strongly agree'. To ensure that respondents understood the procedure, they practiced before the start of the interviews. The interview took an average 45 minute to an hour and took place in one central location in the village municipality office.

3.3.3 Operationalisation and measurement

Before proceeding to the analysis, we first discuss details of the data purification process we employed to validate the multi item scales.

First, we run exploratory factor analysis (EFA). Since factor analysis is not appropriate for all data (Field, 2005), we use the Kaiser-Meyer-Olkin (KMO) statistic as the measure of sampling adequacy and Bartlett's test of sphericity as the measure of the necessity to perform a factor analysis. Results show that the probability associated with Bartlett's test of sphericity is less than .00, indicating the correlations in the inter correlation matrix are significantly different from zero. The data analyzed for these scales also confirm that the KMO and Bartlett tests (KMO: .928; $X^{2:}$ 8579,573, P=.000) are both suitable for factor analysis.

After determining whether EFA is appropriate, principal component analysis with Varimax rotation is used. The analysis yielded six factors with eigenvalues greater than 1, accounting for 77.2 % of the variance which implies that the six factors together could explain more than 3/4 of the total variability. The first factor contains customer orientation items; while the second, third, fourth, fifth, and six factors contain item about inter functional coordination, awareness, network, trust, and competitor orientation respectively. Those items with very low factor loading (below 0.3) and load on more than one factor are dropped from the analysis **(see appendix 2 and 3).**

Second, in order to assess if the retained items were significantly contributing to constructs being measured, we allocated all the six constructs into a confirmatory factor analysis model using **LISREL 8.8** student edition (Joreskog and Sorbom, 2006).

Based on logic and theory, six plausible alternative rival models were tested using confirmatory factor analysis: (1) *Two first-order Correlated factors*: This model reflects two first–order correlated factors, namely Market Orientation and Social capital, which underlies the observed variables and that the co variations among observed variables could be adequately explained by the two constructs. (2) *Two first-order uncorrelated factors:* It is the same as before except that the two first-order factors are uncorrelated. (3) ***Six first-order correlated factor*** (Customer Orientation, Competitor orientation, Inter functional Coordination, Trust, Network, and Awareness). (4) *Six first-order uncorrelated factor:* (Customer Orientation, Competitor orientation, Inter functional Coordination, Trust, Network, and Awareness): It is the same as model 3 but in this model it is hypothesized that each construct is separate and independent of each other. (5) *Six first-order factor and Two second order correlated factors:* This model assumes that the first six order factors would be explained fully by their regression on the two second-order factors of Market Orientation and Social Capital which are assumed to be correlated for this model. (6) *Six first-order factor and two second order uncorrelated factors*: It is the same as model 5 except that the two second-order factors are uncorrelated. CFA is run for the six models and the result is presented in the following table

Table 3.2: Reported Value

Fit Indices	**Accepted Range**	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
$\mathbf{x}^2$ (df)		7030.29 (739)	7051.82 (740)	1827.09 (804)	1872.32 (819)	1843.76 (812)	1852.57 (814)
P-Value	>0.05	0.000	0.000	**0.000**	0.000	0.000	0.000
Normed X^2 **($\mathbf{x}^2$** /(df))	<3	9.51	9.53	**2.27**	2.29	2.28	2.28
GFI	>0.90	0.36	0.36	**0.7**	0.69	0.69	0.69
AGFI	>0.90	0.29	0.29	**0.66**	0.65	0.66	0.66
RMR	0 Perfect	0.24	0.45	**0.093**	0.48	0.097	0.32
SRMR	≤0.8	0.18	0.22	**0.061**	0.24	0.064	0.17
RMSEA	< 0.06 to 0.08	0.19	0.18	**0.068**	0.069	0.068	0.068
NFI	>0.90	0.78	0.78	**0.95**	0.95	0.95	0.95
IFI	0 to 1	0.8	0.8	**0.98**	0.97	0.97	0.97
CFI	>0.90	0.8	0.8	**0.97**	0.97	0.97	0.97
RFI	>0.90	0.77	0.77	**0.95**	0.94	0.95	0.94
PNFI	>0.90	0.74	0.74	**0.89**	**0.9**	0.89	0.9
AIC	Smaller better	7192.29	7211.82	**2025**	2040.32	2025	2030

There is no single fit criterion in CFA. Instead, several indices exist which assesses the fit of the model from different perspectives. In fact, the structural equation modelling approach suggests the use of multiple indices to decide about the global fit of a proposed model (Sörbom et al., 2001). Thus, the following four observations can be made from the above table.

First, χ^2-statistic of Model 3 (1827.09, df = 804) is lower than the other four models, though it was significant. Given that non-significance is rarely achieved and sensitivity to sample size, this value must be read with caution. The normed χ^2 values of Model 5 and 6 are all within the threshold limit of 3. *Second,* When judged from GFI and AGFI, again Model 3, 4,5, and 6 yield a better fit than other rival models, in which model 3 fits a little bit better than other in IFI and RFI. *Third,* RMESA of Model 3, 5, and 6 both yield a value of 0.068, which is well in the suggested range, indicating a satisfactory fit the model.

Next looking at the GFI.AGFI, RMR and SRMR, model 3 provides a far better fit than the others did. *Finally*, after analysing the results so far we chose Model 3.

Third; once we are assured that the retained items are significantly contributing to constructs being measured, in order to determine the items reliability, we again run confirmatory factor analysis for the chosen model 3. Based on estimated parameters and error terms, composite reliability and average variance extracted are also calculated.

Composite reliability should be above **.70** (Mun and Davis, 2003), although those that are slightly below are also acceptable (Hair et al., 1998). For our data, composite reliability for each construct ranges from 0.91 (Trust) to 0.96 (Inter functional coordination). The AVE for all latent variables should be greater than **.50** to ensure a good fit between constructs and underlying items (Fornell and Larcker, 1981). If the AVE is less than .50, variance due to measurement error is larger than the variance captured by the construct, and the validity of the individual indicators, as well as the construct, is questionable. In the table **(*Appendix 1*),** we observe that the AVE score for all the six constructs is above .50, ranging from 0.60(Network) to 0.79 (Trust). It is thus safe to conclude that the multi scale items have high internal consistency and show adequate convergent validity.

Finally, in order to assess the discriminant validity of the six constructs, we conduct a chi-square difference test[5]. The discriminant validity is achieved when the unconstrained model has a significantly lower Chi-square value, indicating that the traits are not perfectly correlated (Anderson and Narus, 1984; Sörbom et al., 2001). The result from the test indicates that the resulting changes in the chi-square values are all significant at alpha value $p<0.05$ level which demonstrate adequate discriminant validity for the scales.

3. 3.4 The Empirical Model

We assume coffee farmer to respond sequentially to the market outlet problem. They first decide whether to sell their coffee to the market. If so, they will decide whether to sell to cooperatives, suppliers or to both.

In order to analyze the probability of farmers choosing coffee market outlets, we use multinomial logit model, as the number of categories is not too large and there is sufficient variation in each category.

We estimate the following model

Consider:

- ϒ =1 If the farmer decides to sell the coffee to Cooperatives only *(Coops_ Only)*;
- ϒ =2 If the farmer decides to sell the coffee to suppliers only *(Supp _only)*
- ϒ =3 If the farmer decides to sell to both suppliers and cooperatives *(Multi-_channel)*

[2] The chi-square difference test is done following three steps as recommended by Braham and Chakraborty, (2009); first, we estimate the standard measurement model where all factors are allowed to co-vary. Then, we run the model again constraining the covariance between the two constructs and the variances to 1. Finally, we compute the chi-square difference between the two models.

The general model related to the farmer *j* to choose market outlet *j* can be written as follow:

$$\Upsilon^{*}_{ji} = Z'_{i}\,\beta_{j} + \varepsilon_{ji}\,, \quad \text{..... (1)}$$

Where,

Υ^{*}_{ji} = the value of market outlet j (latent or unobserved) for farmer i

Z'_{i} = is a vector of explanatory variables for farmer i

β_{j} = is a vector of parameter coefficients for market outlet j

ε_{ji} = is a vector of $error\ terms\ for\ market\ outlet\ choice\ j\ and\ farmer\ i$

Where the error terms are independently distributed, the observable dependent variable Υji is linked with its latent counterpart Υ* via:

$$\Upsilon * = \begin{cases} 0\ if\ \Upsilon^{*}_{ji} \leq 0 \\ 1\ if\ \Upsilon^{*}_{ji} > 0 \end{cases} \quad \text{..... (2)}$$

Then the respective probabilities can be written as

$$\begin{cases} p_1 = f(\beta_1 Z_1) \\ p_2 = f(\beta_1 Z_1)\, f(\beta_2 Z_2) \\ p_3 = f(\beta_1 Z_1)\, f(\beta_2 Z_2)\, f(\beta_3 Z_3) \end{cases} . \quad \text{..... (3)}$$

Where;

β1, β2, and β3 are vectors of parameters and

Z1, Z2, and Z3 are vectors of explanatory variables.

Under the assumption of the probability of choice at each stage being independent of the choice at the previous stage, the vectors of parameters β1, β2, and β3 can be obtained by estimating separately the probability of occurrence of each possible realization of the variable Υ. For this purpose, the probability of Υ = 1 will be analyzed first, then the probability of Υ = 2, and finally the probability of Υ = 3

Our aim is to model probabilities for the N different outcomes of the dependent variable Υ_i in such a way that they sum up to unity:

$$p(\Upsilon_{i=}1) + p(\Upsilon_{i=}2) + p(\Upsilon_{i=}3) + \ldots\ldots\ldots\ldots p(\Upsilon_{i=}N) = 1 \quad \text{..... (4)}$$

Implies that the probability for farmers choosing market outlet **j** is given by

$$\text{Prob}\left(\Upsilon = j \middle| Z^{i}\right) = \frac{exp^{Z^{i}\delta_j}}{\sum_{K=3}^{3} exp^{Z^{i}\delta_j}} \quad \text{..... (5)}$$

$j \in \{Coop - Only\ (1), Supp - Only\ (2), Both(3),$

Where,

- **Prob (Υ =j)** is the probability of farmers choosing alternative coffee market outlets j and
- $\mathbf{Z}^{i}$ is a vector of characteristics of farmer i.

3.3.5 Model Specification

The multinomial logit model was used to analyse the factors influencing coffee farmers' decision to sell to cooperatives, suppliers or both. As such, the dependent variable is a discrete dummy variable (sell to cooperative = 1, 0 otherwise) in first model and (sell to suppliers = 1, 0 otherwise) in the second model and finally (sell to both = 1, 0 otherwise) in the third model. β is the set of parameters to be estimated, which reflect the impact of changes in x on the probability of channel choice decision and ε is the independently distributed error term assumed to be normal with zero mean and constant variance.

Based on the theoretical framework on market orientation and on past empirical work, a number of relevant and appropriate independent variables likely to the choice of marketing channel were identified and used in the multinomial logit analysis. These explanatory variables are customer orientation, competitor orientation, inter-functional coordination, trust, awareness, network, volume of coffee supply, farming experience, household type, access to mobile, distance to the market, access to training, access to cooperatives and the interaction terms of = social capital and institutional factors with market orientation. In summary, the model was specified as follows;

$$Y_{ji}^{*} = X_1 + X_2 MKTOR + X_3 trust + X_4 awarness + X_5 network + +X_6 coffsupp + X_7 farmexpe + X_8 HHtype + X_9 mobileacc + X_{10} distmkt + X_{11} train + X_{12} coops + +X_{13} Accessmob * MKTOR + X_{14} trust| * MKTOR + X_{15} Network * MKTOR + X_{16} train * MKTOR + X_{17} Awarness * MKTOR + X_{18} Coops * MKTOR + \varepsilon j$$

Where,

Y_{ij}^{*} = probability of market outlet choice

MKTOR= market orientation

Trust=farmer's trust on the coffee buyer

Awareness= farmer's awareness about the ECX

Network= the number of trusted contacts that a farmer has in the community

Coffsupp= Total coffee supplied to the market by coffee farmers in one year

Farmexp= Farmer's farming experience

HHtype= Gender of the e head of the household

Mobileacc=Access to mobile as a source of market information

Distmkt= the distance from the farm to the nearest market

Train=Access to training

Coops= Membership to cooperatives.

Coops*MKTOR= the interaction term of access to cooperatives with market orientation

Train*MKTOR= the interaction term of access to mobile with market orientation

Acess_mobile*MKTOR= the interaction term of access to mobile with market orientation

Network*MKTOR= the interaction term of network with market orientation

Trust*MKTOR = the interaction term of trust with market orientation

Awarness*MKTOR= the interaction term of awareness with market orientation

3.4. Results

3.4.1 Determinants of Market Outlet Choices

From the survey, three main marketing outlets are identified. Farmers might sell either to coffee marketing cooperatives in the same location, private traders with (out) license, or to both. Farmers can choose to use a single or a combination of outlets.

The descriptive analysis presented in table 3.3 reveals that from the existing market channels along the thesis area, selling to local suppliers is the most choose market outlet (37%). Cooperatives are farmers second alternative followed by the option to sell for both outlets.

Table 3.3 Market Outlet Choices

Market Outlet choices of farmers					
District	**Zone**	**Cooperatives**	**Suppliers**	**Both**	Total
Wara	Sidama	17	14	19	50
Dengora	Sidama	19	12	19	50
Wote	Yirgacheffe	32	48	20	100
	Total	**68**	**74**	**58**	**200**

The question however remain what factors determines the market outlet choices of framers. To answer that, Multinomial Logistic (MNL) model was used to explain farmers' market choice among 3 options: Suppliers, Cooperatives and both. The independent variables included in the MNL cover household, social capital, market orientation, and institutional characteristics. In the case of household characteristics only two variables were considered, gender of the household head and farming experience. The other household variables of interest (gender and literacy), were not significant. The production variable included in the model was quantity of coffee supplied to the market in one season. Variables used to describe institution characteristics were access to cooperatives, access to training, cell phone ownership, and distance from the market. The time each farmer needs to go to the nearby markets is used as a measure of transportation cost as these costs can affect market selection. Social capital variables include trust, network and awareness level. Whereas we used market orientation, variable as an indicator and moderator to market outlet decision of farmers.

Finally, 6 interaction terms were used: market orientation with access to information, access to training, access to cooperatives, trust, network and awareness. Our response variable is categorical and it includes 3 options with no natural ordering. Because there are multiple categories, we choose the suppliers only as a base category, which is used as the comparison group. Suppliers channel was chosen because (a) it is the channel where most farmers go (37%) and (b) choice of base category is arbitrary in MNL estimation. Results are presented in Table 4. Results in Table 3.4, are interpreted as the probability of selecting one of the market outlets over the reference category.

Multicollinearity in the multinomial logistic regression solution is detected by examining the standard errors for the β coefficients. A standard error larger than 2.0 indicate numerical problems, such as Multicollinearity among the independent variables and analyses that indicate numerical problems should not be interpreted. As we observe from table 3.4 , none of the independent variables in this analysis had a standard error larger than 2.0. We are not interested in the standard errors associated with the intercept.

The Likelihood Ratio (LR) Chi-Square tests that for both models that at least one of the predictors' regression coefficients is not equal to zero. The number in the parentheses indicates the degrees of freedom of the Chi-Square distribution used to test the LR Chi-Square statistic and is defined by the number of models estimated (2) times the number of predictors in the model (23). Thus from the table, the likelihood ratio chi-square of 169.31 (46) and a p-value < 0.0001 tells us that our model as a whole fits significantly better than an empty model i.e., a model with no predictors

Observe that the log-likelihood (-134.0.7551) and the pseudo R2 (0.3870) are the same for all models. The only thing that varies is the significance and the sign of the coefficient when the market outlets are crossed.

Table 3.4: Multinomial Logit Model 'Suppliers only' as a reference

Multinomial logistic							Number of obs =	200
regression							LR chi2(34) =	169.31
							Prob > chi2 =	0.0000
Log likelihood = -134.07551							Pseudo R2 =	0.3870
	Sell_to_Cooperatives_Only				**Sell_to_Multichannels**			
	Coef.	Std. Err.	P>|z|		Coef.	Std. Err.	P>|z|	
Market Orientation	4,518,859	2,030,557	0.026		1,203,783	1,569,787	0.443	
Network	-.6400588	.5797664	0.270		-1,296,887	.5719827	0.023	
Trust	-.0480815	.3169882	0.879		-.5332305	.3132134	0.089	
Awarness	.2466996	.3160393	0.435		.3004192	.322414	0.351	
HH_type	-2,003,725	.8489824	0.018		123,352	.7830475	0.115	
Farm_exper	.0397895	.0292236	0.173		.0420375	.0259075	0.105	
Coffee_supply	.0006729	.0003834	0.079		.0006168	.0004136	0.136	
Accestotrain	.5929545	.6518742	0.363		.7736246	.5734168	0.177	
COOPAcces	3,075,958	.9206795	0.001		.2539878	.6526891	0.697	
Acess_mobile	2,225,948	.754383	0.003		-1,392,393	.7273852	0.056	
Distance_market	-.6308375	.3217755	0.050		-.7035385	.3600452	0.051	
Accestotrain*MKTOR	-1,432,337	.9923302	0.149		-131,796	.7122266	0.064	
COOPAcces*MKTOR	-4,748,392	1,400,482	0.001		-.9850293	.9381967	0.294	
Acess_mobile*MKTOR	-.3801407	1,087,798	0.727		.2790234	1,091,134	0.798	
Network*MKTOR	.1393085	.6200767	0.822		-.0306645	.515138	0.953	
Trust*MKTOR	-.0100043	.4808264	0.983		.4677602	.4567061	0.306	
Awarness*MKTOR	-.1096411	.5041069	0.828		.4614176	.4755829	0.332	
_cons	-2,654,438	1,430,322	0.063		.072887	1,307,795	0.956	

The Pseudo R-Square (McFadden R^2) is treated as a measure of effect size, similar to how R^2 is treated in standard multiple regression. However, these types of metrics do not represent the amount of variance in the outcome variable accounted for by the predictor variables; and higher values usually assumed would indicate better fit.

The parameter estimates in table 3.4, shows the logistic coefficient (β) for each predictor variable for each alternative category of the outcome variable. Since these parameter estimates are relative to the referent group, the standard interpretation of the multinomial Logit is that for a unit change in the predictor variable, the Logit of outcome m relative to the referent group is expected to change by its respective parameter estimate (which is in log-odds units) given the variables in the model are held constant. Thus, βi can be viewed as parameters of a binary logit model between alternative J and alternative 1. Therefore, a positive coefficient from mlogit means that as the regressor increases, we are more likely to choose alternative j than alternative 1. The constants in multinomial logit can be interpreted as for instance, an estimate for cooperatives only in relative to suppliers when the predictor variables in the model are evaluated at zero. When a farmer has access to mobile phone, with zero scores in all other independent variables, the logit for preferring cooperatives only as market outlets than suppliers decreases in 2.654(see table 3.4).

For a given alpha level, P>|z| determines whether the null argument that a particular predictor's regression coefficient is zero, given that the rest of the predictors are in the model, can be rejected. Interpretation of significant parameters is with caution as in multinomial logistic regression; significance is limited to the model in which the parameter estimate was calculated (Bruin, 2006). The interpretations of results from table 3.4 are all in relative log odds. In order to see how does the probability of choosing one of the outcomes change when one of the predictor changes, we re-run the model for marginal effect using the (mfx) command in STATA and the result is presented in table 3.5. These results will help us to see the change in the predicted probability when one (or more) independent variables vary.

In the MNL model the variables that are statistically significant for all outcomes (market choices) at the 5% level are Market orientation, Network, access to cell phone, gender of the head of the household, distance from the market, cooperatives membership, and the interaction term between access to cooperatives and market orientation. Whereas at 10% alpha level, coffee supply, trust, and the interaction term between access to training and market orientation are significant. These variables explain farmer's market choices, but have different impact depending on the market of choice.

We argue that Institutional factors intended to help reduce transaction costs and ease access to market will influence farmer's market channel decision. These institutional factors include access to training, access to market information and membership to cooperatives. Our argument is partially confirmed, because in the Multinomial Logit model, only access to cell phones and cooperative membership affects market channel choices (table 3.4).

In table 3.4, there is evidence that farmers who have cell phones are more likely than farmers who do not, to prefer cooperatives as market outlets. The marginal effect of having a cell phone has a positive impact on choice of selling to cooperatives, i.e. the predicted probability of going to cooperatives increases by 33.4%% all else constant (table 5). Cell phones increase access to price information. Thus, farmers with cell phones go to farther markets where cooperatives have a center to buy coffee from farmers, where prices are expected to be higher than local markets dominated by suppliers. This result is confirmed also by the qualitative analysis from the focus group discussion with cooperative managers, which found that cell phones have become important marketing tools for farmers. Before having cell phone access, many farmers preferred staying at closer markets rather than taking the risk to travel to farther markets. Basically, "they did not know if incurring in higher transportation cost was worth it".

Another significant variable affecting market choice from instructional factors is access to cooperatives. Though not surprising, farmers who are members of cooperatives prefer cooperatives. This variable is significant at 1% alpha level. The marginal effect (table 3.5) shows that the probability of farmers who are members of cooperatives to choose cooperative increases by 26.8%. One institutional factor that does not affect these decisions is access to training; this can be explained by the fact that most farmers in this area have had no access to training in their lifetime and there is little variation in observed training effect.

An interesting finding is that the interaction term of access to cooperatives with market orientation has a negative sign but statistically significant at 1%. That means cooperative members who are also market oriented prefers suppliers channel**.** There is no evidence, however found whether the market orientation behavior of farmers with access to mobile phones and access to training significantly influence their decision

The Level of social capital (the number of trusted contacts that he or she has, networks he or she has created and awareness level) also found to influence each farmer's market outlet choice. This argument is again partially supported as only Network is statically significant at 5% alpha level in influencing market cannel choice of farmers (table 4). However, awareness level and farmer's trust on coffee buyers were not important in the MNL model, which means that they do not influence the specific market farmers choose

Table 3.5: Marginal Effects

Marginal effects after mlogit					Marginal effects after mlogit		
y = Pr(Sell_to_Suppliers_Only)					**y = Pr(Sell_to_coopeartives_Only**		
= .51051488					.13848445		
variable |	**dy/dx**	**Std. Err.**	**P>|z|**		**dy/dx**	**Std. Err.**	**P>|z|**
Market Orientation	-0.7151374	0.4219	0.09		0.594552	0.20719	0.004
Network	0.2650885	0.13875	0.056		0.0009897	0.05576	0.986
Trust	0.0875316	0.07514	0.244		0.0206765	0.03487	0.553
Awarness	-0.065111	0.07698	0.398		0.018737	0.03556	0.598
HH_type	0.2488741	0.15757	0.114		-0.521112	0.16986	0.002
Farm_exper	-0.01436	0.00646	0.026		0.0038655	0.00357	0.279
Coffee_supply	-0.0004776	0.00015	0.001		0.000163	0.00008	0.043
Accestotrain	-0.2391419	0.13642	0.08		0.0747176	0.08045	0.353
COOPAcces	-0.2678549	0.14991	0.074		0.2685443	0.068	0.000
Acess_mobile	0.0451941	0.1621	0.78		0.3346776	0.11906	0.005
Distance_market	0.2168023	0.08341	0.009		-0.054908	0.04177	0.189
Accestotrain*MKTOR	0.4924225	0.20648	0.017		-0.190771	0.14074	0.175
COOPAcces#*MKTOR	0.5273723	0.2286	0.021		-0.530027	0.12323	0.000
Acess_mobile*MKTOR	-0.0798614	0.25113	0.75		-0.007189	0.12348	0.954
Network*MKTOR	-0.0792971	0.1059	0.454		0.0923468	0.05524	0.095
Trust*MKTOR	-0.1082699	0.10683	0.311		-0.013996	0.0473	0.767
Awarness*MKTOR	-0.090188	0.12006	0.453		-0.032093	0.05043	0.524
(*) dy/dx is for discrete change of dummy variable from 0 to 1							

Additionally, when we explore the joint significant of network and market orientation; they are significant at 10%. The marginal effect (table 3.5) shows that the probability of farmers who have a strong network and are also market oriented to choose cooperatives than other channels increases by 9.2%. Furthermore, when we consider the interaction between trust and awareness with market orientation, we found a positive but not significant influence for supplies channel and negative but again non-significant results for cooperative channel, which means market orientation, do not influence social capital influence on the specific market farmers choose.

Based from the theoretical framework we expect that market orientation behavior of farmers influences their market outlet choice decisions. Market orientation variable an average and mean centered score that includes customer orientation, competitor orientation and inter-functional coordination. The argument is fully supported as the result from table 4 shows that the variable is statistically significant at 5% alpha level. The marginal effect (table 3.5) shows that the probability of farmers who are market oriented to choose cooperatives than other channels increases by 20.7 %. On the other hand, their probability to choose suppliers decrease by 71.5% and is statistically significant at 10%. This result is supported also during the focus group discussion. Farmers who works with local agricultural experts, brokers and coffee experts, got access to information about the market, customer needs, and new coffee quality varieties. These benefits usually are available when farmers prefer more organized channels like cooperatives than suppliers who use local brokers.

From the control variables we use in the model, one of significant variables affecting market choice is the time to reach the nearest market from the farm. If this time increases by one hour, all else constant, farmers are less willing to sell to cooperatives (see table 4 that fro both cooperatives and multichannel, the coefficient is negative and statistically significant) and from the marginal effect result (table 3.5) their probability of going to supplies increases by 21.6%. Moreover, the total quantity of coffee supplied by the household is also important in explaining market choice. This variable is statistically significant at 10% level (table 3.4).

Gender was also significant and found to have an influence on farmer's decisions about which coffee market to choose; because gender is an important marketing strategy that for farmers uses to maximize their benefits. Our result in table 4 indicates that a male-headed household prefers suppliers than other market channels. The marginal effect (table 5) shows that the probability of male headed households to choose cooperative decrease by 52%. Our result may be constrained by the fact that type of variable we used to reflect the gender of the head of the household. Our survey does not have information on which makes marketing decisions, commonsense from the culture point view however, provided us useful insights into gender relations. Overall, the gender of the head of the household does matter at the markets because they have better negotiation skill and can obtain higher prices than women can. We need more data about it to determine the magnitude of these gender effects in the market place

3.5 Conclusions and Implications

3.5.1 Conclusions and Discussion

The goal of this thesis was to examine the determinants of farmers' market outlet choice decisions in an era of commodity exchange within the coffee market chain in Ethiopia. We use qualitative and quantitative data to achieve this goal. The main source of quantitative data comes from a survey of 200 farm households in 3 districts. This data was used to estimate econometric model, Multinomial logistic (MNL) that examine the effects of households characteristics, market orientation, social capital, and institutional characteristics on market choice.

These institutional factors included in the analysis were access to training, access to market information and membership to cooperatives. Only access to cell phones and cooperative membership however found to affect market channel choices. As expected, based on the econometric models, access to cooperatives has an effect on specific markets farmers choose. Farmers who are members of cooperatives prefer cooperatives. Interestingly, when these farmers are market oriented, they found to prefer suppliers.

In this thesis, we also found that access to information as one of the basic determinants of market choice decisions for farmers. Thus, to make farmers more competitive in the coffee market, access to information still needs to be improved. One method of achieving this goal could be through wider use of cell phones. Better access to information improves negotiation power, lead to higher returns, and reduce transaction costs. However, these benefits can only be achieved by improving and facilitating information transmission through the marketing chain. Therefore is important to understand and examine how farmers use this new technology, what factors determine cell phone ownership and what the benefits in farmers' marketing activities are. Even though effects of using cell phones on market choice seem possible to identify, the interpretation of them should be made with caution, so the relation cause-effect that this technology has on improved market information is clear.

Market orientation also found as one of the basic determinants. Market oriented farmers usually prefers to sale their coffee to cooperatives than suppliers. This may be because farmers who works with local agricultural experts, brokers and coffee experts, got access to information about the market, customer needs, and new coffee quality varieties. Besides, unlike suppliers cooperatives reward quality by paying dividends if the coffee gets a premium price in the international market, which would be a motivation for customer-oriented farmers to address customer quality needs and get rewarded for that. These benefits usually are available when farmers prefer more organized channels like cooperatives than suppliers who use local brokers. This interpretation however is with caution because there are many exogenous variables that could explain farmer's selection of cooperative as outlets that should be properly explored. Wealth (asset holding) of the farmers is one example, as cooperative usually do not pay in cash, farmers who prefer cooperatives are expected to have at least the financial backup from other sources. Thus the interaction of farmer's wealth with market orientation in determining cooperatives as market channel choice by farmers deserves an in depth inquiry.

This thesis has limitation that the data set is not longitudinal, we had no opportunity to show concrete grass root level impacts of market outlet choices on the farmers livelihoods and include lagged variables in the multinomial logit model, which will improve the prospects of valid causal inference.

3.5.2 Policy and future research implications

The choice of marketing channel is an important task that is influenced by many factors. Based on the empirical results, theoretical contribution can be drawn and policy recommendations can be suggested. This section gives a series of options that can be considered, in an effort to help coffee farmers to get the full benefit of market participation. The theoretical implications obtained from this thesis would be giving better insights that market orientation behavior of farmers not only determines farmers' market cannel choice but also moderates the influence of social capital elements and institutional factors, access to cooperatives for instance.

Results show that market channel decisions are highly influenced by transaction costs associated with transportation (distance from market) and market information. . The ECX and policy makers should work on decreasing the costs of information and transportation that stem from improvements in road infrastructure and telecommunications services would improve the incentives of market participation and enable the smallholder coffee producers to reap the benefits associated with coffee marketing.

Results from the focus group discussion corroborated that unjustified similar pricing scheme, unfair advantage by suppliers; market manipulation and the increasing trend toward farmers replacing coffee with other cash crops are the major concerns in the sector that need to be addressed shortly. As a result, we suggest the ECX and policy makers to work on ensuring an overarching regulatory framework that upholds the transparency and integrity the coffee market, protects market participants from corrupted practices, and effectively manages the risks that arise from market operations. Besides, it would help reduce those bottlenecks and ease access to markets for the farmers living in remote rural areas if much emphasis is given to develop physical infrastructure that support commodity exchange and market development including information and communications technology, electricity, storage and logistics.

Cooperative memberships also found to be a determinant factor. As such, the ECX and donors should work closely with cooperatives to strengthen their capacity. If cooperatives are supported by providing working capital and training for staffs and their members, coffee farmers continue to prefer them as their main outlet choices so that the latter would not be exposed to the unfair exploitation by local suppliers..

The result on disaggregation of market channel choice decision by gender of the head of the household reveal an influence. Households headed by women are likely to choose suppliers relative to their male-headed counterparts, which ultimately end up receiving low price for their coffee. This suggests that increased targeting of women for market participation may increase the impact of policy interventions that aim at improved market access.

Finally, this thesis has implications for future research. First, to use cell phones as a measure access to information, future researches should include who controls and uses this technology, strategies to solve signal problems, consumption costs, uses and benefits. Further, to whom farmers call to gather market information, who makes the calls and why, importance of cell phones in marketing activities and suggestions for potential uses and services should be examined. . The relationship between access to and use of cell phones, and other potential interactions also deserve attention from researchers. Second, further research is also needed to explore the impacts of market channel choices on farmer's income. It will be also interesting for researcher to see at market-level and farm-level the basic constraints to increase incomes from coffee production, such as limited access to infrastructure, inputs, human and financial capital, poor marker regulation, corruption along the chain and unfair advantage by suppliers.

4. General Conclusion and Implications

The Ethiopia commodity exchange brings a system of price discovery which results in a better price paid to farmers from intermediaries. Through facilitating a physical trade, the exchange is able to reduce contract risk for market participants and facilitate international trade. As a result, coffee export of Ethiopia has an increasing trend. The functioning of the ECX is not without problems. Similar farm gate pricing system found to be the most prominent one followed by more middlemen in the chain, no option for traders to manage risk, lack of access to finance, and poor regulations. To solve the challenges, we suggest the ECX and policy makers to work on ensuring an overarching regulatory framework that upholds the transparency and integrity the coffee market, protects market participants from corrupted practices, and effectively manages the risks that arise from market operations. Besides, it would help reduce those bottlenecks and ease access to markets for the farmers living in remote rural areas much emphasis is given to develop physical infrastructure that support commodity exchange and market development including roads, information and communications technology, electricity, storage and logistics. To help market participants able to manage market risks, the findings suggest that the ECX and policy makers should introduce future commodity market because the existing spot trading is not offering the basic service of an exchange, price risk management. ECX shall be involving also in appraising the feasibility of establishing a future commodity exchange (or commodity exchanges, if there is a need to separate exchanges) and determining which futures instrument to provide. To supplement the decisions, we also urge for Sharing experiences and best practices with other commodity exchanges in the developing World.

Regarding market outlet choice decisions of farmers, market orientation found to be the basic determinants. Market oriented farmers usually prefers to sale their coffee to cooperatives than suppliers. This may be because farmers who works with local agricultural experts, brokers and coffee experts, got access to information about the market, customer needs, and new coffee quality varieties. Besides, unlike suppliers cooperatives reward quality by paying dividends if the coffee gets a premium price in the international market, which would be a motivation for customer-oriented farmers to address customer quality needs and get rewarded for that. These benefits usually are available when farmers prefer more organized channels like cooperatives than suppliers who use local brokers. This gives a signal to the ECX that the new supply chain of the coffee sector introduced undue middlemen in the suppliers market. To help farmers' access markets and customers, this thesis suggests that the ECX should work by partnering with for example, farmer cooperatives farmer associations, government agencies, district agricultural research institutes, extension agencies, financial and microfinance institutions, and civil society organizations. These institutions would play a great role by monitoring and reporting on the impacts of commodity exchanges on rural communities, filling some of the data gaps that currently exist. This would be done with a view to informing the ECX about how it can best improve the relevance and impact of its services to farmers.

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6. Appendix

Appendix 1: Construct items, loadings, Composite Reliability and Average Variance Extracted

Constructs	Items	λ Standardized Loading	(Standardized Loading)2	Measurement Error	Composite Reliability	AVE
Customer Orientation	My household usually follows mass media to have better information about customers needs	0.81	0.66	0.34		
	My household always puts coffee buyers interest in mind while growing the coffee	0.87	0.76	0.24		
	My household grows coffee that the market wants	0.88	0.77	0.23		
	My household does nothing to increase the quality of our coffee that we want to sell. (R)	0.73	0.53	0.47		
	My household always searches for better coffee varieties to satisfy coffee buyers.	0.83	0.69	0.31		
	My household usually asks coffee buyers level of satisfaction	0.76	0.58	0.42		
	In my household the opinion of coffee buyers matters a lot	0.8	0.64	0.36		
	My household increases the quality of the coffee that we are planning to sell in the market.	0.8	0.64	0.36	**0.94**	**0.65**
	My household always prefers to keep the best coffee for ourselves. (R)	0.74	0.55	0.45		
Competitor Orientation	My household always checks what other coffee growers are doing on the market.	0.82	0.67	0.33		
	My household is not interested in what other coffee growers are doing in the market.	**Dropped**				
	My household has better information access about other coffee growers pricing strategy, coffee quality and quantity	0.9	0.81	0.19		
	In my household, knowing the coffee type/quality that others coffee growers are supplying to the market is important to us.	0.89	0.79	0.21		
	My household always decreases or increases our market price following other coffee growers.	0.7	0.49	0.51		
	My household sell the coffee only when we could not get income from other sources (R)	**Dropped**				
	My household regularly discuss other coffee framers' strengths and weaknesses.	0.82	0.67	0.33	**0.92**	**0.69**
Inter-	My household intensively collaborates with many others to improve our coffee business	0.82	0.67	0.33		
	Every household member knows his competences and responsibilities.	0.88	0.77	0.23		

functional Coordination	At household level, we regularly hold family meetings where we discuss about major challenges, solutions and new opportunities in the coffee market	0.91	0.83	0.17		
	My household usually talks to agricultural experts on how to improve the quality of our coffee.	0.91	0.83	0.17		
	My household collaborates very closely with brokers	**Dropped**				
	My household talks to community members on how to improve the quality of the coffee.	0.88	0.77	0.23		
	My household works closer with agricultural research centres to conduct research on coffee	0.88	0.77	0.23	**0.96**	**0.75**
	My household works closer with Farmers training centres to have access new coffee growing technologies	0.87	0.76	0.24		
	My household continuously exchange information with others to learn more about the coffee business/quality	0.79	0.62	0.38		
Network	In associations where I am a member in, I usually participate actively	0.9	0.81	0.19		
	I often participate in community development activates	0.86	0.74	0.26		
	Apart from weddings and funerals, I usually attend religious services	0.79	0.62	0.38		
	I often do participate in meetings organized by Kebele officials	0.82	0.67	0.33	**0.91**	**0.60**
	I often do lend money and other personal possessions to my village fellows	0.68	0.46	0.54		
	I could rely on most people in my village to get help when I am in need	0.68	0.46	0.54		
	I can count on family and friends in time of financial problems	0.68	0.46	0.54		
Trust	The buyer is very sincere	0.89	0.79	0.21	**0.94**	**0.79**
	The buyer has a good reputation	0.8	0.64	0.36		
	The buyer always fulfils his promises	0.91	0.83	0.17		
	My relationship with this buyer is satisfactory.	0.94	0.88	0.12		
Awareness	I heard what ECX is	0.8	0.64	0.36		
	I am familiar with the activities of ECX	0.91	0.83	0.17		
	I know what benefits I will get from ECX	0.88	0.77	0.23		
	I am familiar with the trading procedure for coffee at ECX	0.91	0.83	0.17	**0.95**	**0.72**
	I usually follow the mass media about the day to day operation of ECX	0.89	0.79	0.21		
	I am familiar with the mission/vision of ECX	0.86	0.74	0.26		
	I never heard of what ECX is (R)	0.67	0.45	0.55		

Appendix 2: Correlation Matrix

Correlations																	
	Network	Trust	Awarness	HH_type	Farm_exper	Coffee_supply	Acce_train	COOPAcces	Acess_mobile	Distance_market	MKTR_centered	network_mktor	trust_mktor	aware_mktor	coopsacc_mktor	mobileac_mktor	tran_mktor
Network	1	.301**	.439**	.126	.014	.208**	.285**	.440**	.272**	-.039	.690**	.264**	.616**	.549**	.509**	.295**	.456**
Trust	.301**	1	.286**	.137	.153*	.253**	.136	.278**	.291**	.024	.278**	.263**	.282**	.334**	.238**	.317**	.280**
Awarness	.439**	.286**	1	.209**	-.056	.213**	.365**	.329**	.498**	.088	.551**	.415**	.545**	.602**	.445**	.424**	.438**
HH_type	.126	.137	.209**	1	.063	.011	.146*	.168*	.251**	-.061	.193**	.157*	.152*	.148*	.104	.083	.002
Farm_exper	.014	.153*	-.056	.063	1	.265**	-.093	.005	.080	.065	-.010	-.051	.022	-.020	.120	.040	.080
Coffee_supply	.208**	.253**	.213**	.011	.265**	1	.101	.284**	.258**	-.060	.375**	.342**	.419**	.371**	.357**	.348**	.252**
Acce_train	.285**	.136	.365**	.146*	-.093	.101	1	.295**	.330**	-.057	.211**	.163*	.243**	.238**	.110	.303**	.150*
COOPAcces	.440**	.278**	.329**	.168*	.005	.284**	.295**	1	.193**	-.063	.418**	.266**	.362**	.336**	.180*	.258**	.206**
Acess_mobile	.272**	.291**	.498**	.251**	.080	.258**	.330**	.193**	1	.124	.366**	.123	.376**	.321**	.268**	.307**	.371**
Distance_market	-.039	.024	.088	-.061	.065	-.060	-.057	-.063	.124	1	-.038	-.144*	.004	.049	.067	-.028	.090
MKTR_centered	.690**	.278**	.551**	.193**	-.010	.375**	.211**	.418**	.366**	-.038	1	.644**	.878**	.805**	.761**	.631**	.694**
network_mktor	.264**	.263**	.415**	.157*	-.051	.342**	.163*	.266**	.123	-.144*	.644**	1	.623**	.709**	.553**	.658**	.438**
trust_mktor	.616**	.282**	.545**	.152*	.022	.419**	.243**	.362**	.376**	.004	.878**	.623**	1	.772**	.781**	.603**	.601**
aware_mktor	.549**	.334**	.602**	.148*	-.020	.371**	.238**	.336**	.321**	.049	.805**	.709**	.772**	1	.681**	.753**	.637**
coopsacc_mktor	.509**	.238**	.445**	.104	.120	.357**	.110	.180*	.268**	.067	.761**	.553**	.781**	.681**	1	.575**	.695**
mobileacc_mktor	.295**	.317**	.424**	.083	.040	.348**	.303**	.258**	.307**	-.028	.631**	.658**	.603**	.753**	.575**	1	.653**
tran_mktor	.456**	.280**	.438**	.002	.080	.252**	.150*	.206**	.371**	.090	.694**	.438**	.601**	.637**	.695**	.653**	1

**. Correlation is significant at the 0.01 level (2-tailed).*. Correlation is significant at the 0.05 level (2-tailed).

Appendix 3: Path Diagram of Model 3: Six first-order correlated factor