

Review

# Review on small holders agriculture commercialization in Ethiopia: What are the driving factors to focused on?

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The current Ethiopian economy is based on agriculture and transition from subsistence to commercial agriculture, often referred to as the commercialization of agriculture. Commercialization of agriculture is therefore, the strategy Ethiopia is following to bring dynamic change to transform the traditional agriculture of smallholder farmers. As a result, this paper reviews the literature on smallholder commercialization to explore the conceptual developments in smallholder commercialization, measurements in the degree of commercialization, and the major determinants of smallholder commercialization. This review provides an overview of recent evidence on what factors affect smallholder farmers' commercialization in Ethiopia and what factors contribute to the improvement of rural livelihoods. According to the empirical reviews, the major determinants of smallholder farmers' commercialization in general are classified in to eight. These includes, population growth and demographic change, technologies, institutions, risks, markets and their integration, transaction costs, asset holdings of the households and policy aspects. Generally, the paper also investigates policy recommendations made by different authors aimed at facilitating the smooth process of smallholder agriculture from subsistence to the market oriented system. Based on the review, the paper draws general conclusions and directions for future research.

**Key words:** Smallholder agriculture, commercialization, determinants, market participation, market orientation.

## INTRODUCTION

Ethiopia is a country of an agrarian economy characterized by high population growth, huge dependence on erratic rainfall, low agricultural productivity, structural bottlenecks and land-locked-ness as described at the Plan for Accelerated Sustainable Development to End Poverty (PASDEP) (MoFED, 2002; 2005). Agriculture; value added (% of gross domestic

product, GDP) in Ethiopia was last reported at 41.87 in 2011 (World Bank, 2012). The sector is characterized by low productivity partly due to low investment level in the sector (particularly in smallholder farmers) backward farming technologies, low farm level capacity, land degradation and recurrent drought (EEA/EEPRI, 2005), though in the last few years the performance of the sector

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has notably improved.

Like in other African countries, Ethiopia's potential with respect to commercial agriculture is largely untapped, and the current status of agriculture is a source of major concern as the sector is dominated by poor smallholders, often solely engaged in subsistence agriculture, while the agribusiness sector is in its infancy (Bonaglia et al., 2007).

Subsistence agriculture is not a viable activity to ensure sustainable household food security and welfare in the long run (Pingali, 1997). Therefore, Ethiopia needs to achieve accelerated agricultural development along a sustainable commercialization path to alleviate poverty and ensure overall national development.

However, the transformation process, besides designing different strategies, requires the government and development agencies of ensuring that commercial farming and smallholders are well integrated into the market system and benefiting from or contributing to the process of commercialization.

Understanding of the marketing behavior, market channels used and the determinants of market participation of each party is required at all levels of the exchange system to aid in designing and implementing appropriate technological, policy and institutional strategies to ensure that all are well with the process of commercialization. In spite of the policy decision of the government of Ethiopia (GoE) to commercialize subsistence agriculture and also promote commercial farming, there is a dearth of information on the commercialization process and marketing behavior of participating parties in Ethiopia.

This review has based primarily on the role of agricultural commercialization in general and identifying determinants of smallholder commercialization in particular by reviewing different researches done on the past. Therefore the paper tried to address which factors do affect the prosperity of smallholders' commercialization? What are the critical success factors of smallholder commercialization? What is the role of different actors like government, non-governmental organization (NGOs), institutions in commercialization process? How does government must be involved in commercialization process to transform subsistence farming?

Accordingly, the review has focused specifically on identifying the driving factors influencing smallholder commercialization by affecting the conditions of household level and commodity specific supply and demand, output and input price, and transaction costs and risks faced by farmers in the production and marketing system. Therefore, the variables are categorized according to their characteristics like household characteristics, technology promotion and participation, environmental and other factors.

Accordingly, to promote and enhance smallholder farmers what shall government, smallholder farmers,

research oriented, and industry do? This will base primarily on the role of agricultural commercialization in general and identifying determinants of smallholder commercialization in particular by reviewing different researches done on the past.

## CONCEPTUAL FRAMEWORKS

As Ethiopia's agriculture is characterized by largely subsistence agriculture, the major task lies in the creation of better access to rewarding markets that contribute to successful integration of the existing system into a commercial one. The factors influencing the transformation of the subsistence sector in to a commercial oriented one are diverse. To understand major factors responsible for conditioning the smallholder farm households' commercial behaviour, the literature review is organized to elicit the theoretical and empirical considerations as related to address the stated objectives.

### Meaning of small farms/smallholders and agricultural commercialization

#### *The meaning of small farms/smallholders*

The concept of small farms can be approached from a variety of angles. Small-scale agriculture is often, albeit not always appropriately, used interchangeably with smallholder, family, subsistence, resource-poor, low-input, or low technology farming (Heidhues and Bruntrup, 2003).

The following examples of definitions illustrate the diversity of conceptual approaches to the term. Lipton (2005) defines family farms as "operated units in which most labour and enterprise come from the farm family, which puts much of its working time into farm" by (Oksana, 2005). On the other side, the World Bank's Rural Strategy defines as those with a low asset base, operating less than two hectares of cropland (World Bank, 2003). Further, FAO study defines smallholder as "farmers with limited resource endowments, relative to other farmers in the sector" (Dixon et al., 2003).

There is no clear out definition of small farms and smallholder farmers. The simplest and conventional meaning of a smallholder is the case when the land available for a farmer is very limited (Chamberlin, 2008; Hazell et al., 2007). However, the meaning goes beyond this conventional definition and consists of some general characteristics that the so called small farms or smallholders generally exhibit. Chamberlin has identified four themes on the basis of which smallholders can be differentiated from others. These themes include land holding size, wealth, market orientation, and level of vulnerability to risk. Accordingly, the smallholder is the one with limited land availability, poor-resource

endowments, subsistence-oriented and highly vulnerable to risk. Nevertheless, the smallholder may or may not exhibit all these dimensions of smallness simultaneously. It is also common to set numeric value as the way to defining small-farms. Hazell et al. (2007), note that some literature define small farms as those less than two hectares of crop land while others define smallholders as those endowed with 'limited resource,' such as land, capital skills and labour<sup>1</sup>. Similarly, there are also those authors who often describe small farms in terms the low technology they mostly use, their heavy dependence on household labour and their subsistence orientation.

There is no clearly stated definition as to what constitute a small farm in Ethiopia as it is the case in many developing countries as well. However, it is well known that small farmers in Ethiopia account for most of the Ethiopian population and the food grain production (Betre, 2006). In Ethiopia smallholder farmers cultivate about 95 % of the total cropped land and produce more than 90 % of the total agricultural output. The average land holding size of 1.18 hectares per farm household (CSA, 2008) in Ethiopia meets the conventional meaning of small farms (less than two hectares per household). Even far beyond that the smallholders in Ethiopia are known for their resource constraints such as capital, inputs and technology; their heavy dependence on household labour; their subsistence orientation; and their exposure to risk such as reduced yields, crop failure and low prices (Betre, 2006; Mahelet, 2007).

### ***Meaning of agricultural commercialization***

Govere et al. (1999) define agricultural commercialization as "the proportion of agricultural production that is marketed". According to these researchers, agricultural commercialization aims to bring about a shift from production solely for domestic consumption to production dominantly market-oriented. In line with the aforementioned definitions, Sokoni (2008) defined commercialization of smallholder production as "a process involving the transformation from production for subsistence to production for the market". Hazell et al. (2007) found out that most definitions refer to agricultural commercialization as "the degree of participation in the output markets with the focus very much on cash incomes". However, there are some writers who attach profit motive as an integral part of agricultural commercialization. Among others, Pingali and Rosegrant (1995) noted that agricultural commercialization goes beyond just selling in the output market.

They claim the household's marketing decisions, both in the output and input choices should be based on profit

<sup>1</sup>For example, The World Bank's Rural Strategy smallholders as those with a low asset base, operating less than 2 hectares of cropland (World Bank 2003) and FAO study defines smallholders as farmers with "limited resource endowments, relative to other farmers in the sector" (Dixon et al., 2003)

maximization. Thus, commercialization does not only occur by reorienting of agriculture to high valued cash crops but it could also occur by reorienting it to primary food crops. According to Von Braun et al. (1994), commercialization of subsistence agriculture takes many forms. They state that commercialization can occur on the output side with increased marketed surplus, but it can be occur on the input side with the increased purchased inputs<sup>2</sup>. Accordingly, commercialization refers both to marketing of high value cash crops (such as pulse, oil and horticultural crops) as well as primary food crops (such as teff, wheat and barley).

## **Measures of agricultural commercialization**

### ***Models of agricultural production***

Leavy and Poulton (2007) found that three different models of agricultural production exist side by side and interact with each other. These are:

Small-scale farmers: further classified in to two groups. The first one refers to non-commercial farmers" (Type A)-these farmers are subsistence oriented but may also sell some of their production in the output market; but they cannot wholly dependent on agriculture for living. And the second one is small-scale commercialization farmers (Type B)-which are better integrated with the market than the first group. In fact, they produce crops both for own consumption as well as for the market. They even exert effort to specialization on high value cash crops.

Small-investor farmers-these are exclusively engaged in market-oriented agriculture even though their size dictates their modest scale production. Samuel and Sharp (2007) refer to this people as being often educated and urban based. They are known also as "emerging commercial farmers".

Large-scale business farming refers to capital incentive enterprises that are either private or state-owned (Samuel and Sharp, 2007).

These three categories indicate the different scenarios the government can possibly adhere to in the course of assessing smallholder farmers to increase their income and mainly to come out of poverty.

### ***Process of smallholder commercialization***

There are three levels of market orientation as far as food production systems are concerned, according to Pingali

<sup>2</sup> According to Von Braun et al. (1994), commercialization is not restricted to just cash crops: the so-called traditional food crops are frequently marketed to a considerable extent, and so-called cash crops are retained, to a substantial extent on the farm for home consumption. Also, increased commercialization is not necessarily identical with the expansion of the cash economy where there exist considerable inland transactions and payments with food commodities for land use or laborers. Finally, commercialization of agriculture is not identical with the commercialization of the rural economy.

et al. (1995). These three levels are termed as subsistence systems, semi-commercial systems and commercial systems based on the farm households' objective for producing a certain crop, their source of inputs, their product mix and their income source.

The process by which smallholders' commercialization takes place and follows unique path ways. The usual path of commercialization of smallholder agriculture starts with growth in the marketable surplus of agricultural commodities in both agro-ecologies. To be more specific in highland areas this could be achieved by producing marketable surplus of staples and continues until it becomes the dominant portion of the total output of the household. Furthermore, diversification of the marketed portion into staples and other food crops is another alternative for smallholders' commercialization and or market oriented production system and cash and high value crops production is another path of smallholders' commercialization.

The market orientation path ways of farm households may not be applicable in many developing countries as simplistic as it is. However, it is much resemblance to the food production systems of smallholder dominated countries of Africa and South-East Asia. This category is quite appropriate to Ethiopia, as a predominantly agrarian country and smallholder dominated nation.

### **Measuring agricultural commercialization**

According to Govereh et al. (1999), "commercialization can be measured along a continuum from zero (total subsistence-oriented production) to unity (100% production is sold)". Strasberg et al. (1999), suggested a measurement index called household Crop Commercialization Index (CCI) which is computed as the ratio of gross value of all crop sales over gross value of all crop production multiplied by hundred. The advantage of using this approach is that it "avoids the use of crude distinctions as commercialized and non-commercialized farms" (Govereh et al., 1999). However, this index had its limitations. For instance, consider the case when a farmer producing one quintal of any cereal crop and sales that all and another farmer producing ten quintals of the same cereal crop and sales only two quintals. The CCI will tell us that the first farmer is fully commercialized (100%) while the second is semi-commercialized (20%). This interpretation does not make sense in such circumstances. Even though this limitation of using CCI is wrong nothing, there is still some room to use it in practice especially in the context of developing countries where it is less likely to get smallholders selling all of their output and very large farms selling none of their farm output.

As can be understood from the preceding discussion, the degree of participation in the output market is the conventional way to measure commercialization. However, Von Braun et al., (1994), provide other

dimensions to the measurement of commercialization. Commercialization is calculated as percentage of the total produce sold from a household or as a percentage of cash crops as compared to all crops cultivated by household (Von Braun et al., 1994). Von Braun et al. (1994), have specified the forms of commercialization and integration into the cash economy from at least three different angles and measured the extent of their prevalence at the household level with the following ratios according to Gebremedhin et al. (2009):

$$(1a) \text{ Commercialization of agriculture (Output side)} \\ = \frac{\text{Value of Agricultural sales in markets}}{\text{agricultural Production value}}$$

$$(1b) \text{ Commercialization of agriculture (input side)} \\ = \frac{\text{Value of inputs acquired from market}}{\text{Agricultural Production value}}$$

$$2) \text{ Commercialization of Rural Economy} = \frac{\text{Value of goods and services acquired through market transactions}}{\text{Total Income}}$$

$$3) \text{ Degree of integration into the cash Economy} = \frac{\text{Value of goods and services acquired by cash transactions}}{\text{Total Income}}$$

### **Empirical review on determinants of commercializing subsistence agriculture in Ethiopia**

There are a number of determinants in the commercializing smallholder agriculture. These determinants are broadly categorized as external and internal factors. The external ones are factors beyond the smallholder's control like population growth and demographic change, technological change and introduction of new commodities, development of new infrastructure and market institutions, development of the non-farm sector and the broader economy, rising labor opportunity costs, macroeconomic, trade and sectorial policies affecting prices and other driving factors (Von Braun et al., 1991; Pingali and Resogrant, 1995). In addition, development of input and output markets, institutions like property rights and land tenure, market regulations, cultural and social factors affecting consumption preferences, production and market opportunities and constraints, agro-climatic conditions, and production and marketing related risks and are other external factors that could affect the commercialization process (Pender et al., 2006).

On the other hand, factors like smallholder resource endowments including land and other natural capital, labor, physical capital, human capital, etc., are household specific and considered to be internal determinants. Some of these factors that affect smallholder commercialization in Ethiopia are briefly discussed in the next subsections.

### **Population growth and demographic changes**

Population growth and demographic changes are considered as demand-side driving forces for smallholder commercialization resulting from the urbanization effect of economic growth (Von Braun et al., 1994). Moreover, Berhanu and Dirk (2008) in their study of the determinants of market participation using household level regression model found that population density is positively associated with proportion of Teff, chickpea and Niger seed produce sold indicates that given the decision to grow Teff, chickpea and Niger seed, households in high population density areas offer higher amount of their produce to market. Thus, it implies that both urban and rural population growth has positive impact for food and cash crops. However, it must be noted that population growth may have negative impact on land access for crop cultivation bearing in mind that urbanization and agricultural transformation would equilibrate the demand for agricultural land at the long run.

Urbanization and higher income from economic growth increases demand for marketed agricultural products which will tend to increase commodity prices and stimulate agricultural production to the market at least in the short run and long run (if there is lack of market competition. Tanguy et al. (2010) on their studies on cooperatives for staple crop marketing indicated that, the impact of cooperatives on output prices is intended to capture whether cooperatives effectively enable their members to obtain a higher price for their output. This indicator is fundamental, because policies promoting cooperatives often highlight, as a rationale, the possibility that such organizations can help smallholders obtain higher prices and increased bargaining power vis-à-vis traders, or the ability to reach more attractive markets. Consequently, the price indicator that the researchers use is an acreage share weighted sum, over all types of cereal sold, of the difference between the price received by the member household and the corresponding average price in the sample.

Agricultural commercialization includes not only crop but livestock subsector as well. As a result, Anteneh et al. (2009) on their studies on towards pluralistic livestock service delivery system for the commercialization of smallholder livestock agriculture in Ethiopia revealed that, the livestock production cannot continue as business as usual but there is a need towards a more coordination along the supply chain so as to serve the commercialization of smallholder livestock producer. Thus, it clearly shows that with urbanization and improvement in standard of living the demand for livestock and livestock products will be increased and market linkage should be created between the smallholder farmers and consumers provided that the quality and quantity of the livestock product is putted under consideration.

### **Technologies**

The importance of source-saving and yield-enhancing technological innovation and adoption by the ultimate users are unquestionable in the smallholder commercialization process. Evidence from Ethiopia showed that there is an enhancement and a tendency to increase smallholders' market participation in the case of adopters of high yielding varieties than the old fashioned agricultural commodities. According to Asfaw et al. (2010), on their research entitled does technology adoption promote commercialization conducted at Debrezeit, by using double-Hurdle model they found that farmers who knew more number of varieties during preceding year probably have better information about the advantages of the varieties and are likely to adopt and allocate more land for the commodity during the year. Furthermore, Shiferaw et al. (2008), Kristjanson et al. (2005), and Kaliba et al. (2000) found the same result on their studies for pigeon pea varieties, for cowpea varieties and for maize varieties respectively that to farmers technology awareness have a positive effect on adoption of these high yielding varieties. Moreover, the authors found that the level of adoption of improved chickpea varieties were strongly related to a range of household wealth indicator variables. Thus, adoption of high yielding varieties will lead to high allocation of land for that commodity and marketing surplus. Here, knowledge of improved varieties lies as an advantage to increase production and productivity.

Workneh and Michael (2002), in their study of intensification and crop commercialization in Northeastern Ethiopia, found that farm size, age and use of technology (fertilizer) significantly influence the agricultural activity under the study. Moreover, knowledge and perception about the improved varieties were also found to be the limiting factors for adoption despite positive demand for new cultivar. The implication is that there is a need to strengthen and leverage government extension service and rural institutions to promote awareness creation of the existing improved technologies.

Smallholder market participation depends on various factors including farm productivity. According to Moti and Berhanu (2012), except for some households found to be autarkic in live animal markets, most smallholders in a mixed crop-livestock systems participate both in crop and livestock markets. For those who participate in both markets, there is a strong linkage among the net market positions these households had taken in these two markets. However, the strength of linkage among these net market positions is not the same. The effect of net market positions in crop markets on market positions in live animal markets are stronger than the effect of net market positions in live animal markets on market positions in crop markets. This result is consistent with the descriptive data that showed that most households do

not tend to sell live animals, particularly cattle, unless the cash demand could not be met by other income sources including crop sale. The earlier evidences show that, to enhance smallholder commercialization agricultural technology adoption by smallholder farmers is a mandatory.

### **Institutions**

To better understand the role of institution in smallholder commercialization, it is important to disentangle and briefly discuss institutional environments and institutional arrangements. Institutional environment refer to the fundamental political, social, and legal ground rules that establish the basis for production, exchange, and distribution. For instance rules governing and right to contract are under this category. On the other hand, institutional arrangements refer to relations between economic units that define how those units can cooperate or compete (Williamson, 2000). A good example is market arranged such as contracts, auctions, exchanges, cooperatives, etc. (Omamo, 2006).

**Formal institutions:** It is obvious that different governmental and non-governmental institutions participates in developmental activities to enhance smallholder commercialization by delivering inputs like fertilizer, seeds, plant protection chemicals, and other related services. Consequently, access to such institutions improves smallholders' commercialization process. Research findings show result in line with this statement, Asfaw et al. (2010) concluded that farmers nearest to agricultural extension and research Institutes adopted improved technologies. As a result, access to Research Institutes and Agricultural Bureaus will enable farmers to get expertise advice and knowledge about the newly released varieties by taking part in participatory research like farmers research group, advisory council meetings and participatory variety selection. This further, implies that agricultural research institutions should expand their pre-extension and popularization trials to the relatively remote districts as well. The office of agriculture should also make concerted effort to address all the villages through community-based extension services and improved seed distribution scheme. As a result, the authors showed that participant farmers in chick pea technology adopters are more market oriented than non-adopters in the chick pea market participation.

To enhance commercialization, research institution should focus on demand driven and client oriented commodities. According to EIAR (2006), research and development are also targeted on commodities of significant private investment in Ethiopia. As a result, recent investments in improving value chains for pulses, oilseeds, wheat, potatoes, and small ruminants have drawn smallholders into new value chain relationships

with research institutes, extension agents, input suppliers, food industry concerns, and export firms. The process has been highlighted by a series of partnership-based pilot projects to promote proven agricultural technologies, accompanied by plans to expand from a few thousand farmers to larger numbers across multiple districts.

**Informal institutions:** More or less, informal institutions is associated with traditional, informal organizations at the community level include funeral groups (idiir), work- or labor-sharing groups (jigie), oxen or land-sharing groups (mekenajo), and rotating savings and credit associations (iquob). More formal groups focused explicitly on development activities-community-based organizations (CBOs) supported by or partnered with local and international NGOs exist side-by-side with these institutions (David, 2008).

According to Ellis (1998), decision making behaviour of individuals is influenced by personal capacity and by social and family factors. Degenet (2005) also puts forth that experience, information and differences in capacities to process and interpret information lead to differences in decision making behaviour of smallholder farmers. This implies that informal institutions play a vital role in promoting smallholder commercialization in a sustainable way in the case where intervention made by any of formal institutions is not yet continued.

### **Risks**

In spite of the occurrence of and the exposure to the risk factors, smallholder agricultural producers have a variety of inherited options to help them manage risks. Ideally, risk management would involve utilizing tools or approaches that avoid or limit potential risks, mitigate the effects of unavoidable risks, and enable recovery from the effects of risk events to ensure the continued sustainability of the farming operation (Anderson, 1974; Anderson, 2001; World Bank, 2005). Risk management generally involves first, anticipating that an unfavourable event may occur and acting to reduce the probability of its occurrence and second taking actions which will reduce the adverse consequences should the unfavourable event occur. However, the choice of options to manage risk is the joint expressions of risk bearing and risk combating capacities of the smallholder farmers. Decision making in a risky environment involves attitudes toward risk, risk perception, ability to bear risk, and formation of expectations about the future. The decision making process is complex, and farmers differ both in how they make decisions and in the types of decisions they make. Research findings by Moti and Berhanu (2012) showed that livestock ownership also helps farmers spread some of the risks they face.

Moreover, Gebreselassie and Ludi (2010) showed that

likelihood to generate cash income improves consistently as the size of farm increases. Large farmers in general and especially those who cultivate above 5 ha of land generate substantially large cash income. Keeping the effect of other factors constant, the result implies the positive effect of operation at higher level in coping with the risk of higher variance of returns in cash crop production. A policy of enhancing better credit system and designing risk coping strategies may help farmers to build assets that enhance the level of adoption of the new technology and price risks.

### ***Market and their integration***

The driving factors in commercialization process are often related to one another. If we take for instance the relationship between agricultural technology and market integration is complex. Hence, the potential for increasing marketed surplus through the diffusion of modern farming technology is substantial. Empirical results by Asfaw et al. (2010) show that adoption of improved chickpea varieties has a positive and robust effect on marketed surplus. These results generally underscore that a household's production technology choices fundamentally affect its level of market integration primarily by affecting its productivity. Households operating rudimentary agricultural productivity technologies may participate in markets, but often only because they must use commodity markets as a way to resolve pent up demand for financial services to which they have no access. This indicates that promoting adoption of improved production technologies is essential to inducing broader-based market participation in a well-integrated markets that transmit excess supply to distant locations because the returns to increased output diminish less quickly there than they do in segmented or poorly integrated markets and the potential for adverse welfare effects on non-adopters is likewise lower.

Despite dearth of literature regarding analyses of effects of commercialization on output in Ethiopia, this review borrows largely the rationale considered in establishing theoretical relationships in the case of determinants of commercial orientation. Based on this, many studies recognized recursive relationships where market participation influences productivity (Strasberg et al., 1999; Heltberg and Trap, 2001; Bellemare and Barrett, 2006) and productivity influences market participation (Datt and Ravallion, 1998; De Janvry and Sadoulet, 2002), and non-recursive relationships where both influence one another (Von Braun et al., 1994; IFAD, 2003).

Integration of smallholders into markets is essential for sustainable development of the agricultural sector in agriculture-based economies (World Bank, 2008). Moti and Birhanu (2012), on their research on interdependence of smallholders' net market positions in

mixed crop-livestock systems of Ethiopian highlands confirmed the existence of interdependence between household's net positions in crop and live animals markets and relatively, the net position of households in the live animal market is more strongly affected by their net position in the crop market than vice versa. The interdependence between the two market positions showed that households stock live animal asset through selling of surplus crops produced and finance crop purchased through livestock sales. The authors found that, the degree of participation in crop market is negatively influenced by age of household head. Younger households are more likely to participate as sellers than are older households. The coefficient of livestock ownership is positive and significant, which suggest that farmers with more livestock tend to have higher market integration. The income from livestock production may help farmers to minimize their liquidity constraint to adopt new technologies that increases productivity and sales. Perhaps due to the availability of more manure, which can have positive impact on productivity and further livestock can be used as collateral to get credits. Marketed surplus was also positively affected by farm size, which might have facilitated in boosting production. Asfaw et al. (2010) confirmed that in line with their expectation, distance to main market variable is negatively correlated with marketed surplus because of the increased transaction costs associated with marketing of the farmers' agricultural produce. This is also related to better access to improved seeds and other key agricultural inputs. Investment policies aimed at building up more rural road networks and improving the quality of roads may increase the level of market integration.

Similarly, crop sales play important role in financing livestock purchase as seen by the strong relationship between household's net seller position in crop market and net buyer positions in live animal market. This could be due to the fact that livestock purchase as an input for farm operation or reproduction necessitates crop sale and income from crop sale is saved in a form of livestock asset (Gebremedhin et al., 2009). Thus, integrated/mixed farming leads to market integration. This implied that promotion of both livestock and crop subsectors will lead to smallholder commercialization. Intervention done to improve either livestock or crop eventually leads to improve the other enterprise as well.

### ***Transaction costs***

Research findings showed that cooperatives are effective at providing marketing services to their members: the positive and significant impact of membership on price reveals that cooperatives do serve their expected purpose on commercialization through better market opportunities, higher bargaining power or reduced

transaction costs (Tanguy et al., 2008). Consequently, access to input supply and services reduce transaction costs (Key et al., 2000; Alene et al., 2008), access to input supply and services (Gebremedhin et al., 2009), and access to output markets (De Janvry et al., 1991).

Bellemare and Barrett (2006) in their study of model of livestock market participation by pastoral households in northern Kenya and southern Ethiopia found out that prices matter to the extent of participation and that fixed transaction costs matter both in the participation and in the extent of participation decisions. The concept that transaction costs in output markets influence crop choice and marketed supply response is also indicated by many authors (Goetz, 1992; Jayne, 1994; Omamo, 1998). The argument is that inputs markets may be subject to costs that differ from those in product markets and thus transaction costs in those markets may present a separate constraint on intensification.

### **Asset holdings**

Household asset holdings, both in terms of capital and buffer to mitigate any production and market related shock are relevant in a smallholder commercialization process. These, assets like oxen, land, farm implements and human capital are essential for marketable surplus production at smallholder level. According an empirical studies (Moti and Berhanu, 2012), the probability of being a net buyer in live animal markets decreases with age of the household head. This could be due to the fact that elderly households have accumulated livestock assets over time. However, the likelihood of being a net buyer in crop market increases with the age of household head.

As mentioned earlier, hired or family labour is another determinant in smallholder commercialization. The availability of larger family labour for agriculture affects the likelihood of being a net seller (buyer) in crop markets positively (negatively). This might be due to the inefficiency of labor market where households with more family labour could produce more outputs (Sadoulet and De Janvry, 1995). According to Asfaw et al. (2010), households with more family labour force, livestock and land allocated more land for the improved chickpea varieties. Ownership of these assets eases the access of households to improved seed and credit.

Results also showed that, the effect of value of crop production and livestock endowment in determining the market position of households are apparently reflected in the estimation results. On the average, an additional crop production with a value of Birr 10,000 increases the likelihood of being a net seller in crop market by 11%. Households with larger livestock endowments are less likely to be net buyers in crop market. In a mixed crop-livestock system more livestock holding usually goes with more crop production due to the availability of draft power for crop production and the use of crop residue for

livestock production. Moreover, livestock endowment strongly determines the net position households assume in live animal market as households with larger animal holdings are more likely to be net sellers in live animal markets and the fewer the holding, the more likely there will be net buyers in the same market (Moti and Birhanu, 2012).

### **Policy aspect**

Smallholder commercialization cannot be left to the market alone (von Braun et al., 1994). Pingali (2006) generalized that governments ought to help in increasing enabling policy environments for smallholder commercialization through investing in rural infrastructure and undertaking institutional reforms that could encourage the private sector to participate in the development of rural economy. Over the past decade, Ethiopia has embarked on a major policy drive to promote smallholder marketing cooperatives as a way to increase the commercialization of smallholder agriculture and the improvement of smallholder livelihoods. Studies using analysis is based on propensity score matching, the use of which is justified by the fact that most Ethiopian cooperatives were created under a government policy target of establishing the impulse of an external partner and not by members themselves. Tanguy et al. (2010) has examined the extent to which cooperatives affect their members' commercialization behavior. Moreover, those authors revealed that innovative RPO models are being held up as the key to helping smallholders better manage the procurement and distribution of inputs, aggregate their surplus farm output, and bargain for better terms of trade in the marketplace.

In addition to the aforementioned, policy interventions in small-scale irrigation and commercial oriented projects have led to commercialization of smallholder commercialization. Empirical results showed that the percent of farm households operated at high degree of commercialization varies between 54 and 30% in favor of participant farmers in small-scale irrigation and commercial oriented policies than non-participant households (Gebreselassie and Ludi, 2010). In general, the result reflects the positive role of targeted public investment in creating an enabling environment for commercialization of small farmers, though the study didn't control the effect of other factors such as the distinctive features of the area. As a result, both cash cropped area or the number of cash crop growers increased after the intervention. Thus, about 14% of farm land allocated (by farmers operated at low level of commercialization) for production of food crops in pre-intervention period turned into cash crops production in post-intervention period. Similarly, the proportion of farmers allocated half or more of their land to cash crops increased by about 23% and reached 68% after they took



part in the commercialization scheme.

To transform smallholders, focus should be given to all sub-sectors within the agriculture. Anteneh et al. (2009) revealed that National policy has envisaged the transformation of subsistence livestock production systems to that of productive and market oriented systems. Despite a plethora of projects and expressed policy intent, the livestock sector has not yet really taken off. One of the major bottlenecks, as many studies revealed, is related to the limited coverage and problem associated with effectiveness, efficiency and coordination of livestock service delivery system and enabling policy and institutional environment.

## CONCLUSIONS AND THE WAY FORWARD

This review provides an overview of recent evidence on what factors affect smallholder farmers' commercialization in Ethiopia and what factors contribute to the improvement of rural livelihoods. Thus, the recommendations given here are meant to stimulate consideration and exploration of innovative policy options and solutions to improve rural livelihoods through promotion and strengthening of smallholder farmers.

The commercialization of crops grown by small-scale, resource-poor farmers has the potential to increase household food security, reduce rural poverty, and contribute to agricultural development and economy wide growth. By encouraging the application of improved agricultural inputs and farming techniques, diversification out of low-yielding subsistence crops, and specialization in more tradable crops, commercialization can increase farming incomes, enhance purchasing power, and reduce vulnerability among smallholders.

According to the empirical review, the major determinants of smallholder farmers' commercialization in general are classified in to eight. These includes, population growth and demographic change, technologies, institutions, risks, markets and their integration, transaction costs, asset holdings of the households and policy aspects. Therefore, the following lessons were drawn from the review results.

Cognizant the fact that the development of the Ethiopian economy heavily depends upon the speed with which agricultural growth is achieved and the rate of agricultural growth in turn depends on the speed with which the current subsistence oriented production system among the many institutional support services that need to support the transformation process, the agricultural extension service plays a critical role. Thus, it contributes to the development of the skill and knowledge of farmers to adopt new and improved technologies (seed varieties and animal breeds, implements, and practices), and the approaches and processes with which the skill development and access to information are very critical. Therefore, priority should be given for accelerated technology generation process, enhancing promotion and

pre-extension of released technologies, improving the delivery system of agricultural technologies and capacity development.

The government will need to take the lead in technology promotion and dissemination at the initial stages and in creating an enabling environment for effective participation of the private sectors for sustainable input delivery and supply.

Institutional factors, such as farmers' organizations, producers' associations, and rural cooperatives help in bargaining power of collective action and producers' organizations are expected to help smallholders gain a footing in competitive markets, help development partners in reaching the poor, and provide a voice to underrepresented communities and households in rural areas. As a result, like infrastructure, institutional factors should be given attention due to their role in commercializing smallholder agriculture.

Policies/ strategies enhancing smallholders' participation in agricultural commodities specifically to crop and livestock markets in mixed crop-livestock system should pay attention to the production and marketing of both commodities simultaneously so as to enhance smallholders' commercialization in Ethiopia. This can be achieved by designing policies and investments at the federal, regional and woreda levels targeted to encourage and promote smallholders commercialization.

In Ethiopia, generally agricultural commodities marketing takes place without adding values. Consequently, agribusiness and value addition by empowering the value chain actors of the agricultural commodities is very crucial both to create market access for smallholder farmers.

Future research and development should be done on client oriented commodities. Moreover, commodity specific research should be done so as to increase specialization in different agro ecologies and diversification across the country.

## Conflict of Interests

The authors have not declared any conflict of interests.

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## Appendix 1

Household Commercialization Index (HCI) (Govere et al., 1999; Strasberg et al., 1999)

$$HCI_i = \frac{\text{Gross value of crop sales}_{hhj/yearj}}{\text{Gross value of crop product}_{hhj/yearj}} * 100$$

Four aspects of commercialization (Gabre-Madhin et al., 2007)

$$1. \text{ Sales – to – Output Ratio} = \frac{\text{Gross value of all agricultural sales}_{HHi}}{\text{Gross value of all agricultural sales}_{HHi}} * 100$$

$$2. \text{ Total Sales – to – Income Ratio} = \frac{\text{Gross value of total sales}_{HHi}}{\text{Gross value of all crop production}_{HHi}} * 100$$

3. The net-market position:

$$\% \text{ of sale} = \frac{\text{Sales}}{\text{Agricultural Production value}}$$

$$\% \text{ of sale} = \frac{\text{Sales}}{V_{\text{Stored at the beginning}} + V_{\text{Stored during the season}}} * 100$$

$$\% \text{ of sale} = \frac{\text{Purchase}}{V_{\text{Stored at the beginning}} + V_{\text{Stored during the season}}} * 100$$

Where V refers to the volume of commodities

4. Specialization Index (SI)

$$SI_{HHi} = \frac{\text{Value of purchased agricultural products not produced by household}_{HHi}}{\text{Gross value of all crop production}_{HHi}} * 100$$

Livestock gross and net (market) off-take rates (Negassa and Jabbar, 2008)

$$5. \text{ Gross off – take rate} = \frac{\text{Outgoing – Incoming}}{0.5(\text{Opening balance} + \text{Ending balance})} * 100$$