



Review on the Determinants of Smallholder farmers' Commercialization in Ethiopia and Limitations in Commercialization Methodology.

Ayele Tesfahun*

*EIAR, Fogera National Rice Research and Training Centre, P.O.Box, X, Amhara, Ethiopia
E-mail: ayeletesfahu@gmail.com

Abstract

This review has focused on the determinants of smallholder farmers' commercialization in Ethiopia and limitations in commercialization methodology. The phrase smallholder implies the existence of small farm size, low level of income and low level of market participation. Agricultural commercialization is an indication of selling the produce to the market by smallholder farmers though the level of selling is different from farmer to farmer. The objectives of the review were to review on the determinants of smallholder farmers' commercialization in Ethiopia and the Limitations of commercialization methodology. To achieve these objectives the published journal articles and reports have been reviewed. Moreover, there was a sort of discussion with my classmates to be clearer on some ambiguous issues on the concept of smallholder farmers' commercialization. Based on the review, there are both internal and external factors that determine smallholder farmers' commercialization in Ethiopia. Internal factors include land and other natural capital, labor, physical capital, human capital. On the other hand, the external factors include population growth and demographic change, technological change, infrastructural development, development of non-farm sector, property rights and land tenure system. The methodology agricultural commercialization has limitations which include biasedness to crop, absence of comprehensive definition of commercialization thereby the level of commercialization may lead to wrong conclusion.

Keywords: smallholder farmers, commercialization, internal and external factors.

Introduction

Agriculture plays an important role for economic, social and political development in Ethiopia. This largest economic activity comprise of crop and livestock production. It is contributing 34% to Growth Domestic Product and 71% of employment. From this contribution crop and livestock production shares 70% and 20% respectively. The rest is contributing by other areas. From cereals wheat, maize, tef, Sorghum and millet takes the lion's share of contribution. Ethiopia has also the largest livestock population in Africa with an estimated of 60 million cattle, 61 million sheep and goats, 57 million poultry and 12 million donkeys,

horses, mules and camels. Moreover, Ethiopia is the biggest honey producer in Africa and the 10th largest producer in the world. Hence, agriculture is the largest contributor to export earning which is 75% of the total export earnings. To mention, agriculture generated 2.18 billion USD in 2018 farming season(ATA, 2018).

Despite this potential, agriculture is characterized by low productivity and high man to land ratio. It is dominantly undertaken by smallholder farmers who are characterized by low productivity, low income, low degree of specialization and subsistence farming. In Ethiopia, an estimate of 20% of the smallholder farmers' agricultural output goes to market (Pingali,

2007). Moreover, the domestic production of major crops is becoming unable to meet the increasing demand and consumption. The largest share of domestic consumption of some crops is being met by importing. To mention, around 561,000 metric tons of wheat was sold by smallholders, state and private Commercial farms in 2008. However, during the same year 545,325 metric tons was commercially imported by the government to stabilize the market. The same burden is wrapping that Wheat is being imported in large volumes with an estimated amount of 1.8 million MT per year (World Bank, 2018). Therefore, subsistence agriculture has continued to be a means of self-sustenance for the smallholder farmers of Ethiopia.

Cognizant of this fact sustainable food security and welfare cannot be achieved through small holder subsistence agriculture. The current reality shows that commercialization of smallholder farming is not yet high enough to enable farmers benefit from increased income and the farmers are not yet out of the subsistence-oriented agriculture (Gebremedhin & Jaleta, 2010). The context of commercialization is different from country to country. Considering this context, there are four complementary pathways in Ethiopia. These are farmers under subsistent oriented smallholder farms, market oriented smallholder farms, Small investor-farmers and Large-scale agri-business (Gebreselassie & Sharp, 2007). This difference is due to the existence of internal and external factors. Internal factors are household specific which includes land and other natural capital, labor, physical capital, human capital. However, the external factors includes population growth and demographic change, technological change, infrastructural development, development of non-farm sector, property rights and land tenure system (Braun, et al., 1991; Pingali & Rosegrant, 1995). Additionally, 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). This review, therefore, is focused on reviewing determinants of smallholder farmers' commercialization in Ethiopia and limitations of commercialization methodology.

Methodology

Types and Sources of data

The types and sources of data used were secondary. The types of data include determinants of smallholder farmers' commercialization and the limitations of commercialization methodology. The Sources of the data were internet, journal articles, books on the concept of commercialization and video.

Models of Agricultural Production

Based on the finding of Leavy and Poulton (2007), there are three different but related models of agricultural production. These are:-

- **Small-scale farmers:** - These can be further grouped into two. The first one is Type A which refers to non-commercial farmers. These farmers are subsistence oriented but may also sell some of their production in the output market but agriculture is not the only means of their living. The second category, which is Type B, is small-scale commercialization farmers. These farmers are better integrated with the market than the first group. Hence, they produce crops both for own consumption and the market.
- **Small-investor farmers/emerging commercial farmers:** - These are exclusively engaged in market-oriented agriculture despite their modest scale production. Based on the study by Samuel and Sharp (2007) these people are often educated and urban based.
- **Large-scale business farmers:** - Based on the study by Gebreselassie and Sharp (2007), these farmers are capital incentive enterprises that are either private or state-owned agriculture is the business of these farmers provided that profit maximization is their objective.

Measuring Agricultural Commercialization

Since commercialization can be possible through the use of inputs, agricultural commercialization can be measured from input and output sides. According to Govere *et al.* (1999), commercialization can be ranges from zero (total subsistence-oriented production) to one (100% production is sold). Strasberg and others (1999) suggested a measurement technique called household Crop Commercialization Index (CCI) which is the ratio of gross value of all crop sales over gross value of all crop production. However, this index had the following limitations.

- Farmer producing two quintal of any crop and sales that all and another farmer producing 20 quintals of the same crop and sales only 10 quintals. The CCI telling that the first farmer is fully commercialized (100%) while the second is semi-commercialized (50%). Despite the limitation of CCI, there is still the possibility to use it in practice especially in the context of developing countries. Because it is less likely to get smallholder farmers selling all of their output and very large farms selling none of their farm output.
- The CCI does not consider the livestock sector provided that the farming system is mixed in most developing countries. This is because crop and livestock production practices are interrelated to each other. Accordingly, the household level of commercialization, from output and input side, can be calculated in the following form.

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

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

Determinants of Small holder Farmers' Commercialization in Ethiopia.

There are a number of determinants influencing smallholder agriculture commercialization in Ethiopia. These determinants are broadly categorized as external and internal factors. The external factors are beyond the control of small holder farmers. To mention, population growth, demographic change, technological change, infrastructural development, market institutions, development of the non-farm sector, the increase in labor opportunity costs, macro-

economic conditions, trade and sectoral policies affecting prices (Braun *et al.*, 1991; Pingali and Rosegrant 1995). Additionally, development of input and output markets, institutions like property rights and land tenure, cultural and social factors, agro-climatic conditions, and production and market related risks are other external factors that could affect the commercialization process (Pender *et al.*, 2006). However, internal factors are mainly household specific which could be smallholder resource endowments including land and other natural capital, labor, physical capital, human capital and the like. Some of these factors are discussed below.

Population growth and demographic change

Population growth and demographic change can be linked with the increase in demand. The increase in demand can be due to the expansion of urbanization. And the expansion of urbanization can result in higher income (Braun *et al.* 1994). The study by Berhanu and Dirk (2008) found that population density is positively associated with proportion of Teff, chickpea and Niger seed produce sold provided that there is the decision to grow the indicated crops. It implies that both urban and rural population growth has positive impact for food and cash crops. This is because the increase in income resulted from urbanization leads to economic growth which demands agricultural products. The increase in demand will tend increasing commodity prices and stimulate agricultural production for the market. On the contrary, population growth could create pressure on farmland which can retard the commercialization process. It might be due to the prioritization of food self-sufficiency by the smallholder farmers. Moreover, population pressures may result in land degradation and lower productivity. Therefore, the direction of the influence of population growth on commercialization can be positive or negative.

Technological change

It is very important that resource-saving and yield-enhancing technological innovations can facilitate smallholder commercialization process. This facilitation can be possible if these technologies are adopted by the ultimate users (Braun *et al.* 1994). Evidence from Ethiopia showed that there is an enhancement and a tendency to increase smallholders' market participation through adopting high yielding varieties. As cited by A fework and Lemma (2015) the study conducted of Gebremedhin and Hoekstra

(2007) indicated that 72% of the households are producers of rice and about 50% of the farmers sell rice in the Fogera woreda. This is due to the existence of technological change including releasing of high yielding new rice varieties. However, Braun *et al.* (1994) argued that increased commercialization could occur without change in agricultural technologies in the short run. Moreover, technological innovations should focus on both food and cash crops. Jayne (1994) argued that, under loosely integrated food markets, focusing on technologies targeted at cash crops may not increase commercialization as poor households are still using significant share of their resources for food crops. Thus, in addition to the improvements in cash crop technologies, there has to be resource-saving innovations in food crops that could guarantee higher food production using fewer resources. Agricultural commercialization includes not only crop but livestock subsector as well. Moreover, for mixed farming system, commercialization of livestock sector is also paramount importance. To mention, the study by Anteneh and others (2009) indicated that livestock production cannot continue as business as usual but there is a need towards a more coordination along the supply chain in Ethiopia so that to serve the commercialization of smallholder livestock producer.

Institutions

Institutions determine the level of smallholder commercialization in smallholder commercialization. If the institutional environments and institutional arrangements are suitable, the smallholder's commercialization can be facilitated. Institutional environments refer to the fundamental political, social, and legal ground rules that establish the basis for production, exchange, and distribution. For example, rules governing property rights and the right to contract are parts of institutional environment. On the other hand, institutional arrangements refer to relations between economic units that defined legal ground rules can cooperate and complete (Williamson, 2000). A good example for market arrangements can be contractual agreements, auctions, exchanges, cooperatives established (Omamo, 2006).

Formal Institutions: Formal institutions like laws, constitutions, rules, regulations, contracts, property rights, and legal frameworks facilitate the playing ground for economic actors (North 1991; Kharellah and Kristen 2001). Directly or indirectly, these institutions contribute to the overall smallholder

commercialization process. To mention, different governmental and non-governmental institutions participates in developmental activities with respect to delivering inputs like seed, fertilizer, credit, training and other related services (Afework & Endrias, 2016). Additionally, Asfaw and others (2010) summarized that farmer nearest to agricultural extension and research Institutes adopted improved technologies. This implies that access to research institutes, agricultural bureaus and farmer's cooperatives will enable farmers to get advice and knowledge about the newly released varieties. This is because these farmers can be involved in participatory research processes like farmers research group, advisory council meetings and participatory variety selection so that market orientation and participation can be increase. On the contrary, Gabremadhin (2001) found that experiences from grain markets in Ethiopia showed that the scope of spatial and temporal linkage in grain marketing is limited due to a weak legal system for contract enforcement. Such poor institutional arrangements result in higher transaction costs of trade that must be paid by producers and consumers. This condition results in high deviation between farm gate and retailer prices.

Informal institutions: These institutions are as important as the formal ones in facilitating or hindering a smallholder commercialization process. Values, norms, sanctions, taboos, cultures, traditions etc. have strong influence on smallholder production and marketing decisions, including those related to input use. Socio-cultural and religious factors determine consumption preferences of households, which can be motivate or demotivate household commercialization (Pender *et al.*, 2006). In addition, Pender and others (2006) argued that the prevalence of religious fasting periods in Ethiopia, during which individuals do not consume meat or dairy products, greatly limits the prospects for commercial livestock production for the domestic market. Informal institutions is associated with traditional, informal organizations at the community level include funeral groups (idir), labor-sharing groups (jigie), oxen or land sharing groups (mekenajo), and rotating savings and credit associations like equb and others.

Risks

Risk has a direct impact on farm household decision-making behavior. These decision making behaviors could be related with production and marketing. Major risks for production and commercialization are arisen

from market and policy failures. Accordingly, production risks are assumed to be the same both for subsistence and marketed goods. The production risk can lead to the less in the amount of product produced there by the importance of consumption might be crucial than marketing (Braun *et al.*, 1994).

Markets and their integration

The driving factors for commercialization are interrelated to one another. The diffusion and adoption level of agricultural technologies have a link with marketing of crops. To mention, Empirical results by As faw and others (2010) show that adoption of improved chickpea varieties has a positive and robust effect on marketed surplus in Ethiopia. This implies that household's production technology choices affect the level of market integration. Since the farming system in Ethiopia is mixed, increasing the level of livestock commercialization can increase small holder farmer's integration into the market. For example, the study by Gebremedhin & Jaleta (2010) indicated that 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. This is strong evidence that both crop and livestock production practices are interdependence to each other. The promotion of both livestock and crop subsectors will lead to smallholder commercialization. Moreover, livestock can be increased the link with formal institutions as it can be used as collateral to get credits. In conclusion, the existence of low-cost and well integrated rural markets can increase efficiency which is a key element in agricultural commercialization.

Transaction Costs

Transaction costs, which can be fixed and proportional, are household specific. Hence, transaction costs can limit the market participation level of smallholder farmers. Apart from its limit on market participation, the prevalence of higher market transaction costs also limits household involvement in cash crop production. This in turn discourages participation in food markets and prompting farmers to give priority to subsistence food production (Key *et al.*, 2000). Therefore, it is essential to focus on a variety of integrated arrangements that fit into the existing realities on the ground. These could be contract

farming and development of smallholder organizations aimed at reducing marketing costs (Glover, 1994; Govereh *et al.*, 1999; Alene *et al.*, 2008). Additional research findings showed that cooperatives are effective at providing marketing services to their members through creating better market opportunities and higher bargaining power. Additionally, the model of livestock market participation by pastoral households in 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. Hence, transaction costs in output markets influence crop choice and marketed supply response is also indicated by many authors (Jayne, 1994; Omamo, 1998).

Asset Holding

Household asset holdings are relevant in a smallholder commercialization process. The assets like land, oxen, farm implements, and human capital are essential for marketable surplus production at a smallholder level. Additionally, the availability of larger family labor for agriculture affects the likelihood of being a net seller (buyer) in crop markets positively or negatively. This might be due to the inefficiency of labor market where households with more family labor could produce more outputs (Sadoulet & Janvry, 1995). The results by Gebremedhin & Jaleta (2012) 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 farming 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.

Limitations in Commercialization Methodology

Concept of Smallholder Commercialization

Analyzing the determinants of commercialization can be possible through measuring the level of commercialization. There are a number of methods developed to measure the degree of household commercialization. To mention, some authors use econometric models to evaluate resource allocation decisions for producing commodities consumed at home (food crops) versus crop market supply. Other authors use simple indexes to look at the proportions of resources or income derived from the market. Majorly, these indexes are focusing on either input or output side of commercialization. However, there is no well accepted and comprehensive definition that could give a multidimensional view to the smallholder commercialization concept on the extent of a given farm household's is commercialization and consumption decisions (Gebremedhin & Jaleta, 2012).

Methodologies in examining the degree of Agricultural commercialization

One method of evaluating household commercialization is econometric analysis. Braun and others (1994) stated that allocation decisions could be estimated econometrically by using reduced form equations with an extended list of exogenous explanatory variables that affect many structural relations. But, the most common approach used in measuring the degree of commercialization at a household level is through the proportion of sales from the total value of agricultural production (Braun 1994). This is the marketing decision of a household for commodities that are potentially used for sale and home consumption (Randolph, 1992). However, some households may sell commodities that are not intentionally produced for markets. In this case, considering the proportion of sale as an indicator for the degree of commercialization may lead to a wrong conclusion. Therefore, in addition to the revealed marketing decisions, future studies on commercialization should also try to incorporate indicators of Smallholder commercialization that can capture household's production decisions whether a given commodity is mainly produced for home consumption or sale. Despite the existence of a number of studies on the impacts of physical marketing costs, particularly transport costs in limiting smallholder market participation efforts are limited on testing the role of both formal and informal

institutions and institutional arrangements in reducing transaction costs so that to contribute more to the enhancement of smallholders commercialization (Renkow *et al.*, 2004). Moreover, most studies examining the determinants and impacts of commercialization have used cross sectional data. For example, in analyzing the impacts of smallholder commercialization on the nutritional status of preschool children in used a 24-hour recall method to collect data on household consumption patterns. Analysis of cross-sectional data obtained through such a method is highly time and context specific and may not sufficiently reflect the situation over time. Thus, conducting more studies using panel data on household production, marketing and consumption patterns over a longer period are essential to get a more realistic picture of the determinants of commercialization (Renkow *et al.*, 2004).

Biasedness to crop production

Much of the research on smallholder commercialization has focused on crop production and largely ignored livestock activities. However, livestock and livestock products account for a major proportion of household cash income both in mixed crop-livestock and in pastoral and agro-pastoral systems. Due to this fact, analysis of smallholder commercialization should also pay attention to the livestock subsector as well (Gebremedhin & Jaleta, 2009).

Human Capital

Human capital sets which include education, experience, skills, capabilities and talents of a household member are essential in commercializing smallholder agriculture. Though a household members that facilitates smallholder commercialization, all household members may not commercialize their production system to the same level. There are some individuals who inherently have better skills and capabilities to do the implicit cost-benefit analyses required and apply their talents to quickly adapt to and exploit new opportunities while others are either adapting slowly or not at all. The contributions of human factors in the overall commercialization process have generally been given little attention. Despite the difficulties to quantify some of these human capital elements, commercialization studies in the future should try to account for the effects of these elements on the degree of smallholder commercialization (Jaleta *et al.*, 2009).

Conclusions and Recommendations

This review provides information on the recent evidence on the determinants of smallholder farmers' commercialization in Ethiopia and the limitations on commercialization methodology. It has reviewed that the determinants of agricultural commercialization can be internal and external. The internal determinants includes land and other natural resources, labor, physical capital, human capital and others related to the characteristics of the farmers. On the other hand, the external factors include population growth, risk, institutions, technological progress and others. Moreover, there are limitations of the methodology of agricultural commercialization. These are biasedness to the crop sector; the degree of commercialization may lead to wrong conclusions. Having this summary of the review, the following could be the possible recommendations on the determinants of smallholder farmers' commercialization in Ethiopia and limitations on the methodology of agricultural commercialization.

- Improving the availability of improved agricultural inputs and farming techniques
- Diversification of high yielding food crops
- Specialization in more tradable crops
- Improving the methodology of training provision through incorporating more practical components
- Accelerating technology generation process, enhancing promotion and pre-extension demonstration of recently released technologies.
- Establishing and strengthening the farmer's organizations like cooperatives.
- Take care of model farmers to be selected for technology promotion. This is because currently the farmers that are being selected as a model are not really models in practicing best agricultural practices.
- Giving focus on livestock commercialization is paramount importance.

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