Review on Determinants and Impacts of Smallholder Agricultural Commercialization in Ethiopia

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Abstract: 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 and Ethiopia currently followed the practice of commercialization clusters for identified crops. As a result, this paper reviews the literature on Determinants and Impacts of Smallholder Agricultural Commercialization in Ethiopia to explore an overview of recent evidence on what factors affect smallholder farmers’ commercialization and it’s impacts 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.

Keywords: Commercialization, Determinants, Smallholder Agriculture and Market Orientation.

1. Introduction

Ethiopia is one of the Sub-Saharan Africa countries that liberalized its economy and developed poverty reduction strategies that underpin market-led strategies for broad based agricultural development and economic growth (Aman et al., 2013). The economy of the country is heavily dependent on agriculture, with over 80% of the rural population deriving their livelihoods directly from agriculture.
According to MoFED (2013), in Ethiopia the agricultural sector contributes about 44% of the Gross Domestic Product (GDP), 80% of employment and 90% of the export earnings. In Ethiopia land is fragmented and majority of the farmers are smallholder that have small size of land holding. The average holding sizes per household was 1.14 hectares (CSA, 2015).

Leykun and Jema, (2014) studied on analysis of factors affecting market participation of smallholder farming in central Ethiopia. The main objective the study was to identify and examine the demographic and socioeconomic factors determining market participation of smallholder farmers. The findings from the multinomial logistic regression analysis revealed what factors influence the probability of being commercial farmers and argued that agriculture forms the basis for every economic activity for a developing country. It plays an active role in determining the economic, social, and political system of a society of a developing world by supplying food for domestic consumption and marketable items.

Commercialization of agriculture involves a transition from subsistence-oriented to increasingly market-oriented patterns of production and input use. It may be defined as the proportion of agricultural production that is marketed and can be measured along a continuum from zero (total subsistence-oriented production) to unity (100% of production is sold) (Pingali, 1997). Commercialization is the outcome of a simultaneous decision-making behavior of farm house-holds in production and marketing (von Braun et al., 1994). Commercialization of agriculture involves a transition from subsistence-oriented to increasingly market-oriented patterns of production and input use. The underlying premise is that markets allow households to increase their incomes by producing that which provides the highest returns to land and labor, and then use the cash to buy household consumption items, rather than be constrained to produce all the various goods that the household needs to consume.

Commercialization in agriculture refers to the progressive shift from household production for auto consumption to production for sale in the market. This shift entails that production and input decisions are based on profit maximization, reinforcing vertical linkages between input and output markets (Olawande et al., 2015). Processes in smallholder commercialization smallholder commercialization is part of an agricultural transformation process in which individual farms shift from a highly subsistence-oriented production towards more specialized production targeting markets both for their input procurement and output supply (Abdu et al., 2016).

The transformation of subsistence agricultural production into a commercially oriented system requires two essential dynamics: 1) efficient market services for timely delivery of quality inputs to farmers at competitive prices, and 2) transparent output markets that provide signals to the farmers, allowing them to make informed decisions on what to produce and at what quality standards, as well as where and when to sell their outputs to be promoted and which markets to focus on (ATA, 2017).

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 (Afework and Endrias, 2016).

Objective of the review, “To review determinants and impact of smallholder agricultural commercialization in Ethiopia”.

2.1 Determinants of smallholder agricultural commercialization

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 smallholders 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 forces (Von Braun et al., 2013).
On the other hand, factors like smallholder resource endowments including land and other natural capital, labor, physical capital, human capital and so on are household specific and considered to be internal determinants (Moti et al., 2009).

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 market related risks are other external factors that could affect the commercialization process (Pender et al., 2006). The degree of commercialization is influenced by a combination of range of demographic, social, economic, logistic and climate change factors, which indicates the need for a comprehensive approach to commercialization (Guta, 2017).

Aman et al. (2013) studied on household level determinants of the output side commercialization decision and level of commercialization in horticultural crops in Gemechis district, west Hararghe zone, Oromia National Regional State of Ethiopia. The study used cross-sectional data obtained from a sample of 160 smallholder horticultural farmers selected randomly from four peasant associations in the district. A double hurdle model was applied to analyze the determinants of the commercialization decision and level of commercialization. In first hurdle, the result of Probit Regression Model revealed that, gender, distance to the nearest market, and cultivated land played a significant role in smallholder commercialization decision. In the second hurdle, the result of Truncated Regression Model revealed that, household education, household size, access to irrigation, cultivated land, livestock, and distance to the nearest market were the key determinants of the level of commercialization. Synthesis of double hurdle model result showed that farm size and distance to the nearest market were cross-cutting determinants of smallholder horticultural crops commercialization.

Factors related to household characteristics, household resource endowment, market and transportation factors, extension service, and the village factors of rainfall and altitude are important in explaining variations in household market orientation. Access to and ability to process information, productivity factors (household labor supply, land quality, and rainfall), and transportation cost advantage due to ownership of equines or nearness to all-weather road, and technical efficiency advantage due to involvement in extension programs all increase market orientation of households (Berhanu and Moti, 2010).

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 determinant. 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 (Ibid).

### 2.1 Population growth and demographic change

Population growth and demographic change are considered as demand-side driving forces for smallholder commercialization resulting from the urbanization effect of economic growth (von Braun et al., 1994). Urbanization and higher income from economic growth increases demand for marketed agricultural products which will tend to increase commodity prices and stimulate agricultural production for the market. The effects of population density and tenure insecurity are intertwined, because areas with higher rural population density may have better market access, but having better market access may create more tenure insecurity as the land becomes more valuable to others (Anna et al., 2014).

### 2.1.2 Technologies

The importance of resource-saving and yield-enhancing technological innovations and their adoption by the ultimate users are unquestionable in the smallholder commercialization process (von Braun et al., 1994). Adopting a temporal perspective, von Braun et al. (1994) argued that, in the short-run,
increased commercialization could occur without change in agricultural technologies, but the inverse would be less likely due to the indispensable demand-side pull for technological innovation.

Cognizant of the importance of agricultural technologies for improving productivity, in the second phase of the Agricultural Growth Program (AGP-II), attention is given to the need for supporting applied agricultural research activities and considered it as one of the components of the program with the objective of adapting, generating and promoting technologies that enhance productivity and commercialization of the sector. Agricultural technology adaptation, generation and pre-extension demonstration activities are envisaged to be implemented by taking into consideration principles of crosscutting issues such as nutrition, gender and climate smart agricultural (AGP, 2015).

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 (Solomon et al., 2010).

The extent of household commercialization is significantly influenced by the observed socio-economic characteristics, access to market information and improved agricultural technology. Important policy implication here is that improving market infrastructure for high value crops and strengthening agricultural technology delivering system could enhance the commercial transformation of small holder agriculture in the study area (Abdu et al., 2016).

2.1.3 Institutions

According to Glover (1994), the distributional benefits of agricultural commercialization, access to commercialization opportunities, and sharing of commercialization risks are functions of institutional arrangements. Samuel et al. (2016) studied on trends and determinants of coffee commercialization among smallholder farmers in southwest Ethiopia: Jimma zone coffee potential districts. Tobit model was used to determine factors determining level of coffee commercialization and the result of Tobit model also shows distance to main market and cooperatives, transport cost and land allocated for other crops affects level of coffee commercialization negatively and significantly. However, total land holding of the household head, coffee price and volume of coffee produced affects level of commercialization positively and significantly. Based on finding suggested that support towards developing institutional sectors like marketing cooperatives and improving physical access to market places could yield positive results towards coffee commercialization by smallholder coffee producers.

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 (Afework and Indrias, 2016).

A rebuilding and strengthening of the capacity of the public sector is needed in order to act efficiently in the area of smallholder development. This includes the capacity to supervise the social, economic and political process to elaborate the National Smallholder Investment Strategy for smallholder agriculture. Because smallholders can rarely succeed alone as they lack economies of scale and market power, social capital under the form of organizations and effective social networks is also an essential part of increased access to assets in support of investment in smallholder agriculture (HLPE, 2013).

Increasing the productivity of horticultural crops per unit area of land through promoting and delivering technology packages to smallholders that would increase productivity of smallholders and enables them to link up with crops output market would be a better alternative for smallholder commercialization (Aman et al., 2013).
2.1.4 Risks

According to von Braun et al. (1994), the degree of change in household consumption due to shocks depends on the share of risky crops in total consumption, the income elasticity of demand for risky crops, risk preferences of the household and the covariance between consumption prices of risky crops and the revenue they generate. The higher the share of risky crops in the household’s total consumption, the more is household consumption influenced by market shocks. Under such circumstances, households tend to allocate fewer resources to commercial commodities in favour of more resources towards food production for home consumption.

Risk perceptions and management strategies are strongly associated with levels of agricultural commercialization. Key strategies for commercial farmers included monitoring market prices, diversifying sales channels and applying large quantities of pesticides, while crop diversification and debt avoidance were more important for subsistence-oriented farmers (Suthathip et al., 2016). Commercialized farmers face increased risks associated with yield fluctuation due to climate variability. When production becomes more specialized there is a loss of advantages associated with diversification as risk minimization strategy. Given the risky economic environment under which smallholder farmers operate, maintenance of own food supplies can therefore be economically first best strategy (Guta, 2017).

2.1.5 Markets and their integration

Barrett (2008) argued that well-integrated markets transmit excess supply to distant locations, and because of this, the returns to increased output due to technology adoption diminish less quickly in well-integrated markets than in segmented or poorly integrated markets. According to author, the potential for adverse welfare effects on non-adopters due to a fall in output prices is also lower in well-integrated markets.

Developing these market linkages also requires investment in small- and medium-size food processors, and small-scale traders at the retail and wholesale levels. Market failures and price volatility are major disincentives for smallholder investment. Government intervention is important to reduce transaction costs on markets and to stabilize prices and smallholders’ incomes (HLPE, 2013).

2.1.6 Transaction costs

Participation in market exchange is a core element in smallholder commercialization. However, transactions in markets are not frictionless and without cost. There are physical marketing costs like transport and storage costs and, also importantly, transaction costs related to searching and processing information, negotiating contracts, monitoring agents, and enforcing contracts (Jabbar et al., 2008). Markets and their integration play a crucial role in sending signals for households to allocate resources to their best use. However, the prevalence of high transaction costs make markets either completely non-existent or imperfect. Such phenomena usually impede smallholder participation in factor and/or product markets or at least limit their level of participation so that the potential gain from commercialization tends to be minimal (Moti et al., 2009).

2.1.7 Asset holdings

Household asset holdings, both in terms of capital and as a buffer to mitigate any production and market related shocks, are relevant in a smallholder commercialization process. The principal argument for household asset holding as a determining factor in smallholder commercialization assumes a consumption-side perspective by highlighting its role in mitigating unexpected shocks in the commercialization process. Total land holding of the household head, coffee price and volume of coffee produced affects level of commercialization positively and significantly (Samuel et al., 2016).

The non farm income of the households surveyed has a negative and significant impact on market participation decision of farm household. This could explain getting more non farm income represents additional wealth which constrain farm household to transact due to cash desperate and might
enable them to consume whatever they produce by supplying the cash required for other purposes (Gabriel, 2014). On the other hand the income generated could improve the liquidity condition of the farm and such farms might choose specialized commercial orientation. These could be due to the fact that households with extra income from off and non-farm activities use this income as a safety net and go for concentrated farms (Habtamu, 2014).

Livestock possession is also an important determinant of the sales value of horticultural crops which calls for enhancing the livestock assets of the household as it provides manures for the farm, means of transportation of their products to the market, and provide financial liquidity for the farmers (Aman et al., 2013).

2.1.8 Policy aspects

Pingali (2006) generalized that governments ought to help in creating 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 the rural economy. Furthermore, interlocked transaction institutional arrangement model is recommended. This is an institutional arrangement which is designed to reduce transaction costs through tying agricultural credit and input supply to the delivery of product at harvest (Agwu et al., 2012).

Governments should give priority to linking smallholder farmers to domestic, national and regional markets, as well as to new markets that create direct links between producers and consumers, and to schemes that rely on smallholders for the procurement of food for school and institutional feeding programmes (HLPE, 2013). Amount of credit taken increases the probability of Household’s market participation. This might be due to higher amount of credit eases liquidity constraints of households that contributes to market orientation. In addition, it means higher capital to invest in livestock, in higher yielding crops, in seasonal inputs that boost yields, in purchase of fertilizer and improved seeds and invest in improved technologies (Gabriel, 2014).

2.2 Impacts of smallholder agricultural commercialization

2.2.1 Positive impacts of smallholder agricultural commercialization

A study conducted by Moti et al. (2009) explained impacts of commercialization by categorizing as first, second and third orders. The first-order is mainly income and employment effects that are directly reflected in household welfare. The second-order effects include health and nutrition aspects usually contingent on the level of income attained through the existing level of commercialization. The third-order (or usually known as higher order) effects are the macro-economic and environmental effects that go beyond household level.

Promoting commercialization of agricultural production is a cornerstone of the rural development and poverty reduction strategies of Ethiopia, as well as numerous other developing countries. Policymakers in Ethiopia and elsewhere view agricultural commercialization as an essential part of the process of agricultural modernization, specialization, and structural transformation of the economy toward more rapid and sustainable growth. Past empirical research on smallholder commercialization in developing countries generally supports this view, although the impacts of commercialization are dependent on the local context and policy environment (von Braun and Kennedy, 1994).

Smallholder commercialization is part of an agricultural transformation process in which individual farms shift from a highly subsistence-oriented production towards more specialized production targeting markets both for their input procurement and output supply. In a broader sense, one could also see smallholder commercialization as a pathway to the overall economy’s structural transformation in which larger proportions of economic output and employment are generated by the non-agricultural sectors. To attain this essential goal of structural transformation through a smooth process of smallholder agricultural commercialization, policy and strategy interventions to improve the functioning of input and output marketing, improvements in service provision, and the development of infrastructure stand out prominent.
Policymakers may also need to target the types of agricultural commodities to be promoted and which markets to focus on (Moti et al., 2009)

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 (Afework and Indrias, 2016).

Commercialization is supposed to bring a large impact on increasing farmer’s income level which can be used as a source of fund for food purchase with better quality and quantity. However, other exogenous factors including price changes may reduce the consumption bundle of framers in a situation of price shock. This requires further econometric modeling that considers the net effect of commercialization on food consumption expenditure with respect to variation in market price and household income level (Wondmagegn, 2013).

Afework and Indrias (2016) argued that 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.

2.2.2 Negative impacts of smallholder agricultural commercialization

Negative effects could arise due to the fact that these commodities usually demand higher use of external inputs such as pesticides and herbicides that could have an adverse effect on the environment. Increased use of agricultural chemicals, in turn, could lead to higher environmental and human health risks (Pingali 2001). On the other hand, favourable macro and micro-level economic policy reforms that potentially dissolve input subsidies and output support programs could result in sustainable management of the agricultural resource base by allowing the actual opportunity costs of resources to be better reflected in market prices. However, Pingali was cautious in judging the net effect of agricultural commercialization on the environment due to the fact that the effect could vary depending on the specific circumstances under which the commercialization process takes place (Pingali 2001).

If the commercialization process is linked to irrigation schemes, improper use of water resources may have serious consequence both on surface and subsurface water bodies. Water-logging and salinity are some of the major problems related to irrigation development. Moreover, the problem of downstream degradation of water quality by salts and toxic agrochemicals is a serious environmental problem. Government policies that establish secured property rights to land and water resources and regulate chemical use can be important in addressing these problems (Pingali and Rosegrant 1995).

3. Conclusion

Agriculture is main economic pillars of the Ethiopian economy and the overall economic growth of the country is highly dependent on the success of the agriculture sector. Since the population and urbanization in Ethiopia growth at an alarming rate, the demand of agricultural production increasing from time to time. This driven force to introduce agricultural commercialization strategy in the country.

This review reveals that population growth and demographic change, technologies, institutions, risks, markets and their integration, transaction costs, asset holdings of the households and policy aspects are major determinants of smallholder agricultural commercialization in Ethiopia. Agricultural commercialization also impact on the small holder farmers by increase farming incomes, enhance
purchasing power, reduce vulnerability among smallholders and increase household food security, reduce rural poverty, and contribute to agricultural development and economy wide growth. There are also negative effects of commercialization due to the fact that the commodities that usually demand higher use of external inputs such as pesticides and herbicides that could have an adverse affect on the environmental and human health risks.

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