



Measuring the Effects on Efficiency and Equity of Land Rental Arrangements in Ethiopia

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Executive Summary

The livelihoods of more than two-thirds of the African population and 70% of the poor depend primarily on agricultural activities. Moreover, rural and urban poverty are inter-linked as the former feeds on the latter through rural-urban migration (ECA, 2004). A common feature among small holder farmers of Sub-Saharan Africa is that the agricultural labor force is increasing faster than the area under crop cultivation. Most of the Sub-Saharan African countries are facing increasing rural population densities and person – to land ratios (Jayne et al., 2003). As a foundation for agricultural production and the livelihoods of people, land is at the center of the challenges of getting agriculture moving for the provision of food security and poverty reduction in Africa.

Consequently, issues of unequal control over land, access to land, land markets and land tenure have received considerable attention among researchers and policy makers. The issue is considered as a prime concern for designing policies and strategies aiming at improving agricultural productivity, reducing food insecurity and poverty. Developing countries, including Ethiopia, aspire to rapid economic transformation and structural change. However, those countries skeptically understand the importance of rental markets to labor movement out of agriculture and which can help in transferring land to more productive users. Ensuring the efficient functioning of such markets is, thus, of great importance. In Ethiopia, land markets and land policy in general continue to be critical issues in the country's development strategy.

Though there are lots of land rental arrangements, the common and majorly observable land arrangement, and which has been leading most agrarian land section transected are through owned land, share cropping, fixed rental, lending and gifting.

This study was designed to assess the effects on efficiency and equity of land rental arrangements. Based on the above-mentioned objective, the study was conducted in the selected woredas of the Tigray and Amhara regional states. In each region, one woreda was selected and the study was carried out in three selected kebeles of each woreda. The kebeles were selected on the basis of their agro ecology to represent the highland, low land and the midland. The study also involved focus Group discussion (FGD) or dialogue at community level to gather their view on the land rental arrangement and market operations. The research method used includes participatory rural Appraisal (PRA), household survey, field observation and relevant data collection techniques.

Findings of the study, "Measuring the Effects of Land Rental Arrangements on Efficiency and Equity" are summarized as follows:

- Sharecropping and fixed land rental markets appear to have a clear equity/ efficiency advantages.
- Land rental market provides with the opportunity to reduce land fragmentation by renting and improving agricultural production efficiency.
- The land rental market is not functioning well to benefit farm house holds from the land rental system.
- Effective implementation of land tenure certificates and development of the land rental markets by government agencies could help to improve land management by the farmers.

Extensive studies on the efficiency of these arrangements were conducted regardless of location, crop type, economic and the technical perspectives, in a county like Ethiopia where agriculture employs the vast majority of the population; it remains to be an important issue of research and policy concerns especially in the Northern parts of Ethiopia. The link between land rights, labor and crop Production efficiency among the marginal small-scale farmers is not well observed in the majority of the studies. In this regard, a review report commissioned by the Land Investment for Transformation (LIFT) on rural land Investment issues in Ethiopia has shown areas of further research that could improve land management issues in the country to promote its sustainable development.

This research, commissioned by LIFT, analyses relative effects of current land rental arrangements on the efficiency and equity of small land holding farmers and its implication on land policy debate in Ethiopia. The research findings focused on land rental arrangements would provide information that could stimulate discussion on how to deal with the effects of the current land rental arrangements and problems at a national level. The study also aims to provide advice to policy makers considerations to be made in planning and implementation of future actionable land related issues.

Introduction

As the main foundation of agricultural production and rural livelihoods, land is at the center of the challenge of getting agriculture moving for food security and poverty reduction in SSA (Zemen, 2013; Ghebru and Holden, 2016). Africa has been trying to change the major source of livelihood to industries, in which challenging the continuous population increase and trying to change population labor in to valuable energy. Land in most African countries is a scarce resource which still fulfills the country's GDP is clogged by Agriculture. In Ethiopia, the population number is increasing however changes haven't seen in keeping this resource prominent. The major concerning issue in creating a self-reliant population is proper and efficient use of resource, and equitable distribution of resources. However, human being can try to create a way to use resources efficiently and equitable distribution of resources. The major resource that has been subjected to resource use bias and inequality abuse is land. As a result of those abrupt the other concern while assessing different strategies in resolving those gaps are land rental arrangements. This activity might be taken as instinctive, no rules and proclamation have to be forwarded to manage nearly available resources by the hosting society. Most worlds' agrarian societies have been taken different local land rental arrangements as instinctive solution for land shortage, and for the benefit of those farmers who lack inputs and human power.

This project paper on measuring the Effects on Efficiency and Equity of Land Rental Arrangements in Ethiopia is organised as follows:

Chapter 2 draws on literature beyond the farmers of Ethiopia to set out the **importance of efficiency and equity effect of land rental arrangements**, examining their functions and exploring their strengths and limitations. It puts forward determinants and effects of land rental arrangement towards efficiency of land and resource distribution, and to assess and support their capacity to respond to both idiosyncratic and covariate shocks.

Chapter 3 presents the methodology and sampling design used to measure the efficiency and equity of land rental arrangement to evaluate the coherence with household characteristics of the sampled population. Attempts are made to evaluate the major participants in different land rental arrangements in different agro-ecologies of the selected woredas of Amhara and Tigray regions.

Chapter 4 presents and discusses the major findings emerging from recent studies of **measuring the effect on the efficiency and equity of land rental arrangement** in Amhara and Tigray regions of Ethiopia. These findings highlight in tabular detail some of the social complexities arising from this new form of assistance. The chapter focuses in particular on efficiency and equity related to household characteristics. Ambiguities arising from selective household targeting within a culture of broader community solidarity. and also, effect of differ land rental arrangements on vulnerable and women group in association with the promotion of farmers to the ground of self-reliance and try to make resource distribution equitable in different groups of the society.

Chapter 5 summarizes the **key findings of the analysis** and suggests that further reflection on 'Efficiency and equity' social protection in Ethiopia needs to be built into ongoing efforts to develop. Overall systems that can span the continuum from protection, prevention, promotion and transformation, converging thus within an increasingly important agenda around land productivity and equitable distribution of resources.

Agriculture Sector in Ethiopia

Rural livelihoods, in many countries of Sub Saharan Africa (SSA), depend heavily on subsistence agriculture where productivity is among the lowest in the world (AfDB, OECD, UNDP and UNECA, 2012). The sector employs more than half of the work force and most of SSA's poor population (AfDB, OECD, UNDP and UNECA, 2012). For Ethiopia, the estimate rises to virtually 80 percent. Four out of every five Ethiopians live in rural villages, with mixed agriculture, mostly in the highlands, and animal husbandry, mostly in lowlands, being their livelihood (FDRoE, 2011). The success or failure of agriculture therefore determines the economic growth of the country.

Notwithstanding efforts made to develop Ethiopian agriculture over the past 50 years, though recent improvements (attained via increasing sown area), the sector's growth remain insufficient to meet target food needs, provide other basic commodities and generate stable incomes. The agricultural sector faces numerous challenges and constraints, often linked to poor availability and quality of farm land (AfDB, OECD, UNDP and UNECA, 2012; Zemen, 2013), reflected in low productivity- the most critical challenge- and worsened by external factors such as increasing population pressure, and inadequate or limited interventions. Although the highland areas of the country include the most favorable agricultural production areas, they are also characterized by disappointingly high rates of food insecurity and poverty. Most of Ethiopia's population resides in the highlands, and much of the highland areas are not of high agricultural potential. One of the reasons for

high rates of food insecurity and poverty is the extreme population density. Population growth in Ethiopia and other parts of SSA is not expected to stabilize until about 2050, this increasing population will have to be supported on the same resource base, land. Further, in Ethiopia, human population density and distribution do not correspond to the land potential. For instance, low potential areas of the arid and semi-arid lands account for approximately 15% of the population and over 60% of the land area. Highlands, in contrast, are already overpopulated with people and livestock. An increasing population has also created severe environmental challenges by causing farmers to push into natural forests and rangelands and cultivate steep slopes without proper land use and management (FDRoE, 2011). Thus, the resource base in these areas is inadequate to support the growing populations at the level of existing technologies.

Besides the problem of land scarcity and degradation, smallholders operate in an environment characterized by labor shortage, limited access to inputs and affordable credit, information, and poorly functioning institutions. (DFID, 2006; Zemen, 2013). The dominant production systems are characterized by low input use, the use of traditional tools with high level of rainfall dependence. This explains the persistent low agricultural productivity growth, food insecurity, and poverty in agricultural communities of the country (DFID, 2006; Zemen, 2013). Consequently, the country is forced to remain reliant on food imports and food aid.

Efficiency and Equity of land rental arrangements

Agricultural productivity may be defined in general terms as the ratio of the value of total farm outputs to the value of total inputs used in farm production. The economic theory of production has provided the analytical framework for most empirical research on productivity. Foundation of the theory is the production function, which assumes a defined relationship between output and factor inputs. Crop yield (kg per ha), for example, represents the productivity of the production factor land; the area of the farm (resource) is more efficiently used when larger yields are obtained (Oni *et al.*, 2009). The input-output process of farm production is important in at least four major problem areas: 1) the distribution of income; 2) the allocation of resources; 3) the relation between stocks and flows; and 4) the measurement of efficiency or productivity Olayide and Heady (1982 as cited in Oni *et al.*, 2009).

Measuring **productivity** is conceptually better understood with Total Factor Productivity (TFP), where **efficiency** is estimated for different kinds of land contracts (Essa, 2011). A meaningful assessment of productivity depends upon a clear and precise definition of inputs and outputs in such a way that their movements over time are not equal. Determining which inputs and outputs are consistent with the particular concept of productivity in question is important. Sometimes one is faced with separate and distinct conditions when measuring labor, capital, or land productivity (Oni *et al.*, 2009).

The concept of “labor/ land productivity” or “yield”, in the proposed study, shall be defined as the ratio of total output of a particular crop to labor/ land inputs (i.e., average production concept). Using this definition as a bench-mark, a change in productivity over time/space, for different kinds of land contracts, will depend upon changes in the types and quantities of inputs.

The term **efficiency** encompasses a wide range of concepts concerning the relationship between the amounts of output per unit of input that can be obtained. For resources, such as light, water and nutrients in agricultural production systems, several definitions are available that discriminate between resource capture and conversion (Tittonell *et al.*, 2007). A body of literature defined “efficiency” in three related terms. The first, technical efficiency is defined as the ability of the farmer to obtain maximal output from a given set of inputs on a given plot of land, controlling for other factors that affect input use and productivity (Ahmed *et al.*, 2002). Second, “price efficiency” is defined as the measure of a firm’s success in choosing an optimal set of inputs. This is an indication of the gains that can be obtained by varying the input ratios on certain assumptions about the future price structure. On the other hand, **technical efficiency** and price efficiency are then combined to give **economic efficiency**, which is sometimes referred to as **overall efficiency** (Farell, 1957 as cited in Oni *et al.*, 2009).

It is necessary to understand the process of the status of land contracts and their effect under the context of geographic categorical variables of varying size such as regions, districts (smaller geographic variables and smallest administrative unit available (kebele in our case) as they might vary in agro ecology, resources endowment (land, labor, and livestock), **agricultural practices** (share of cash crops and food crops on the field) and **household income diversification** (non-agricultural income).

Conceptually, evaluating land tenure arrangement requires matching of the agro ecological and management requirements of the land use pattern and size with the land’s quality, while considering local economic and social conditions. Such an evaluation provides practical answers to a question as “what the potentials/

limitations of these land markets in terms of are contributing to the goals of efficiency and productivity, and equity and poverty alleviation in the rural economy?” The proposed analysis will focus on this question. Essentially it is the **equity** and **efficiency** aspects of land distribution that underlie concerns with policy on food security and agricultural development (ECA, 2004), which can be estimated by partly (or combining) social, economic and environmental parameters.

This is because the interactions of various factors have various degrees and directions of impact on the level of efficiency in smallholder farming systems. For instance, Essa (2011) and Place (2002) stated the range of socio-economic, environmental and institutional factors on which efficiency of production could be determined. Apart, the issues of efficiency and equity in relation to differing land arrangements, in Ethiopia and other parts of Africa have extensively been studied either from **technical** or **economic** efficiency perspectives.

The second issue to be explored, in the proposed study is whether and to what extent functioning land markets either sharecropping or fixed rental affect the perceived goal of equity in the rural economy. Land policies in most countries in Africa have shown a bias towards small farmers as a strategy for achieving efficiency, poverty reduction and equity (ECA, 2004). In Ethiopia for example, land reform has been at the centre of development policies. The country is doing well in areas of recognition of the rights of women. The country's land laws recognize equitable and socially just access to and ownership of land of both genders. There is a strong perception that land in rural Ethiopia is more equitably distributed than, say, other developing countries (Bereket, 2004; ECA, 2004).

As in many parts of Africa, in Ethiopia however, women are still under-represented in land ownership and in access to both customary and statutory rights. Moreover, the policy and law would seem to be weak on addressing the rights of those who do not own land and marginalize the poor (Ahmed *et al.*, 2002; Deininger *et al.*, 2003). Ethiopia has a long way to go in terms of improving equitable land and income distribution in smallholder farms.

Several studies indicate that there is considerable inequality in assets and incomes distribution within the small farm sectors in Africa (Ahmed *et al.*, 2002; Jayne *et al.*, 2003). Yet despite widespread acceptance, that “pro-poor” agricultural growth is strongly associated with equitable asset distribution, little attention has been devoted to quantifying how land rental markets determine land distribution in terms of operational farm size and hence income level is limited within Africa's small-scale farming sector (Jayne *et al.*, 2003).

As far as the approaches, studies concerned with the effects of land arrangements in Ethiopia, mainly employed the two common approaches for estimating efficiency (Ahmed *et al.*, 2002). The first one is based on non-parametric, non-stochastic, and linear programming (data envelopment analysis). The second approach uses econometrics to estimate a stochastic frontier function and estimate **the inefficiency component** of the error term. This approach will be used for this study because it permits the estimation of the determinants of inefficiency of the producing unit, which will be the focus of the proposed study. Thus, in the proposed study, identification and analysis of the underlying **factors of inefficiency** will be given priority.

Research Background: Development of Rental Market in Ethiopia

As one of the most populous countries in Africa and with some 80% of the population having smallholder agriculture as their main livelihood source, Ethiopia has long faced the challenge of establishing a land use system that would provide incentives for investment and rational land use to increase farm productivity and profitability while at the same time overcoming social disaggregated inequalities to access lands. While the agricultural activities and other livelihood options are affected by various factors (institutions, climatic conditions, infrastructure, physical conditions), access to agricultural land and tenure security believed to have an important effect on the well-beings of smallholder (DFID, 2006; ECA, 2004; Jayne *et al.*, 2003). A failure to address these challenges has been identified as one of the contributing factors to the persistent food insecurity and poverty in Ethiopia stimulating an increasing debate on land tenure and land reforms in the country (and most of Africa). Since the early 1990s, Ethiopia has pursued development initiatives for economic and social transformation while moving toward a market-oriented economy. Aiming at increasing the ability of the rural poor to raise their farm production, land use efficiency, and investment, this process is accompanied by the land policy reforms to address a history of land related societal division, end gender and/or status related discrimination in land access and provide a guideline that offers incentives for investment and rational land use to contribute to social and economic development.

Since the coming into effect of the 1995 federal constitution, considerable efforts have been made to clarify land rights and provide the basis for overcoming traditional biases. The constitution guarantees the rights of access to land for farmers and pastoralists (FDRoE-FC, 1995). Even though land ownership is exclusively held

by the state, the use of land and residual claim rights were also granted to farm households. However, the mechanisms that ensure these rights and other land issues are left to the regional states (Gebreegziabher *et al.* 2011). The constitution also allows farm households to rent land while prohibited from sales or exchange. In line with the national constitution, the regional states allowed, through their *Rural Land Proclamation*, farm households lease land for limited time as an attempt to facilitate land market development and contribute to more equitable operational holding and hence achieve the intended agricultural productivity growth and the economy. The country also launched a program of land certification as one of the most important interventions to bring the intended policy objectives effect.

It is widely believed that successful implementation of these policy reforms and programs will most certainly come from progress in efficient operation of land rental markets or land arrangements brought about by the introduction of land use proclamations that will increase land use efficiency and investment as the markets help transfer land to more productive users are likely to increase. Along with a series of reforms of rural land both by federal and regional states, for e.g., the certification program, the policy reforms significantly promoted agricultural output growth, and resulted in various forms of land contracts. A highly equitable land holding system is usually assumed to exist in rural Ethiopia due to the continual distribution and re-distributions of land after the reforms noted in the literature on the subject (Ayele and Mamo, 2004; Bereket, 2004). According to Ayele and Mamo (2004), the 1997 redistribution of land that has taken place in Amhara regional state has deepening the reform process as an equity measure between males and females.

The most important issue that has been subject to debate is whether, once an egalitarian ownership distribution has been attained; further intervention to maintain such equality will either be required or even beneficial. In fact, a number of arguments suggest that such intervention may be detrimental to growth and equity goals. This issue is of critical importance for Ethiopia where, a number of legal measures underwent to individualize land rights, at least the use right and allow land rental markets. Can land rental markets effectively redistribute land and improve productivity? Moreover, have rental markets been effective at redistributing access to land? These were some the issues in focus in this study.

Studies indicate that legalization of land rental has negligible impact on the development of the land rental market. In Ethiopia, land rental activities are reported to have increased and become quite active since the policy reforms in the early 1990s, especially in highland areas where the agricultural labor force is growing faster than the area available for cultivation (Ayele and Mamo, 2004, DFID, 2006). The rapidly growing population and declining productivity, however, land scarcity still appears to be there. Because where population pressure is high, land scarcity is becoming pervasive and the degree of landlessness is increasing, the prominent feature among the rural population of Ethiopia. In contrast, the increased land scarcity and population pressure failed to trigger policy or institutional reforms to encourage investment, more intensive land use and the perceived egalitarian land distribution. Some studies indicate that the inability of existing institutions to encourage efficient resource use arguing for potential reform in SSA (Ghebru and Holden, 2016).

Consequently, people switch to various forms of land acquiring mechanisms. Land renting, sharecropping, and inheritance of land are some of the common forms of land arrangement currently operating in Ethiopia and the study areas in particular. Wide ranges of literature investigate the development and effects of land rental market in this period. In this regard, limited availability of alternative employment opportunities, and access to land and functioning of land market is becoming an increasingly critical research and policy agenda (for e.g., Ahmed *et al.*, 2002; Ayele and Mamo, 2004). In areas where land sales and mortgages do not exist, the performance of land rental markets and the associated contractual features are pivotal for agricultural productivity (Abebe *et al.*, 2012). On the other hand, land potential varies substantially among the different regions and population densities differ widely, depending on historical circumstances, location, agro-ecological and local farming conditions.

Though extensive studies on the effects policy reforms and planned activities (Bereket, 2004, Zemen, 2013) so far, however, the question of whether land arrangements improve farm efficiency and equity, and, through this, affect households' livelihood while accounting for production constraints and the limits of food demand, remains controversial. Finding answers to this question depends on the specific economic and policy environments under which farm households operate (Ghebru and Holden, 2016). In addition, the impact of land tenure arrangements in general also depends on access, agro ecological zone and location, pre-existing production systems and production potential, decision criteria and procedures and the design of support institutions for the tenure systems (Lawry, 1990 as cited in Amede *et al.*, 2006). In Ethiopia, owned land, sharecropped, fixed rentals, lending and gifting dominate the current land rental arrangement and land market.

Despite extensive studies on the efficiency of these arrangements have been conducted, regardless of location, crop type, economic and technical perspectives, in a country like Ethiopia where agriculture employs the vast majority of the population; it remains an important issue of research and policy concern. In fact, most of the previous studies in this regard, mainly focus on the functioning of the land market itself; their effect on productivity/efficiency and/or equity as compared to administrative reallocation of land (Ahmed et al., 2002; Deininger *et al.*, 2003). Some other studies focus on the effects of land markets (Ayele and Mamo, 2004). Little research to date, however, asks to what extent land markets influence farm productivity, land redistribution and each other, and almost no research examines empirical evidence on this matter at the whole-farm level across regions and locations in the country. This paper aims to contribute at filling this gap. In this regard, for instance, a review report commissioned by The Land Investment for Transformation (LIFT) programme on rural land policy issues in Ethiopia indicates areas of further research that could improve land management issues in the country and promote its sustainable development. The study identified the dominant land arrangements including sharecropping, fixed rentals, lending and gifting in Ethiopia. The study also highlights that the ability to readily rent and sharecrop agricultural land is essential to increase agricultural efficiency.

Problem Statement, Research Question and Objectives

In recognition of the crucial role that rural plays in the lives of the poor, especially women, an attempt is made to determine the extent to which small-scale producers benefit from rental market in terms of access to land, production growth and equitability.

Thus, as the developing land rental market has efficiency and equity implications for rural economic development and with those pointed out problems and research gaps, the study seeks answers to the following key questions:

- What factors affect farm household participation in the land rental market?
- What benefits do different land rental arrangements offer different groups (landlords, rentees, female)?
- Can participation in the land rental market improve agricultural production efficiency?
- Can participation in the land rental market alleviate livelihood inequality in rural areas?
- Can participation in the land rental market improve equity in land distribution?

In line with this and observed research gaps, understanding the efficiency of these evolving institutions (i.e., the different land rental arrangements), would provide policy makers and other development partners and/or practitioners with the information needed to design for effective policy and programs that can help to enhance production and productivity of land while improving the equitable distribution of land. This study, therefore, attempts to fill those gaps specifically focusing on the relevant and actionable land issues and disseminates findings.

The study commissioned by LIFT, in collaboration with the Government of Ethiopia, was conducted in two LIFT regions, Amhara and Tigray, combining both qualitative and quantitative research methods. This study analyzed relative effects of current land arrangements on the efficiency and equity and its implications on land policy debate in Ethiopia. Aiming to address a priority area identified by LIFT, the focus on land rental arrangements may provide information that might stimulate discussion on how to deal with the effects of current land arrangements and problems at a national level.

With this understanding, this research was conducted with the objective to better understand the effects that different rural land rental arrangements (sharecropping [and some of its variations] and fixed rental) have on efficiency and equity of land holdings in Ethiopia.

Literature Review

This literature review assesses the concepts of land rental arrangement impact on the efficiency and equity and the association between drivers of land productivity, and its importance in creating an equitable ground both theoretically and empirically. The review of empirical studies concentrates on the situation in Ethiopia.

Definitions and Measurement

The emergence of land markets has implications on land use and addresses issues of poverty, equity and efficiency across African countries. In a continent characterized by growing population, soil degradation, technology stagnation and drought, land becomes the only resource accessible to the poor (Martin, 2011).

Land shortage

Ethiopia is a large, ecologically diverse country with a rapidly growing population of more than 80 million people living in nine regions and two chartered cities (Addis Ababa and Dire Dawa). Ethiopia's economy is heavily dependent on agriculture, with more than 80% of the population said to rely in whole or in part on the production of crops and livestock and more than 40% of GDP coming from that sector. Coffee and livestock dominate exports, and, although Ethiopia's floriculture sector has grown significantly in recent years; Ethiopia continues to run a negative trade balance. In 2007, agriculture and allied activities comprised 43% of Ethiopia's GDP (WRI 2007; Seleshi 2010; CBD 2009; EIU 2008).

Land rental market is a critical issue in many developing countries in terms of differential impacts on efficiency and equity. In particular, fear of its efficiency reducing outcomes has led a number of countries including India to impose restrictions on rental markets (Akter et al., 2006).

One of the prevailing thoughts in side land rental arrangement has been in search for "equitable but efficient" land tenure arrangements that promote land access to efficient farmers and provide incentives for efficient use of land so that the goal of productivity growth is pursued with low economic and environmental costs. With farmers increasingly engaged in market mediated land transactions, albeit thin and fragmented, the quest is for market-mediated equitable but efficient tenure arrangements (Tesfaye, 2001).

Women and Vulnerable groups

Women's problem which is socio-economic problem of the society that should be addressed by all sectors of the economy. Women are the most overburdened social group engaging in productive and reproductive activities more than the men, boys, and girls do. On the other hand, men's role is the highest of all gender classes in community/social activities in the agro-pastoral communities.

To date, men and women are not using resources and benefits on equitable basis. The situation is even worse in case of critical resources like land and information/knowledge. Men have more access to critical resources than women do. In both agro-pastoral and pastoral communities, 90% of the critical resources are solely accessed by men and boys, while women and girls are marginalized from accessing such a resource.

Household family number

Households having a limited number of family labor and/or have fewer assets are likely to rent out land, given the limited coverage that their labor force can achieve. On the other hand, those having higher assets and having higher numbers of adults tend to rent in, to spread their assets over a larger area.

The process of PA-based land allocation is largely driven by "equity" consideration where every eligible farm-household is provided land, subject to Peasant Association (PA) specific allocation criteria. The common practice is to allocate land in relation to number of household members so that equal sized households have equal sized PA-land. Other factors such as quality of land, size of family

Work force and ownership of farm assets, which have substantial influence on ability to use land, are not given as much emphasis as family size. Hence, there are farmers who hold equal size of PA-land per household, but with significant variations in factor intensity, such as land per adult labor, land per oxen, and land per working capital (Tesfaye, 2001).

Availability of input

In reverse-share-tenancy, which is the common sharecropping arrangement in our study area, the land moves to households relatively richer in non-land resources mostly oxen (Ghebru and Holden 2008). More asset rich households (tenants) are more able to take risk by choosing crops that are more profitable and riskier.

Bandiera (2007) while analyzing the land tenure, investment incentives, and the choice of techniques from Nicaragua found that tenants choose less labor intensive but high marketed-input-intensive crops on rented plots than on owner operated plots. In the Philippines, landlords' choices of sharecropping contract were seen to be affected by soil quality characteristics where fertile plots had more incentive contracts than non-fertile plots (Dubois, 2002).

Equity

Changes in the resource tenure arrangements are likely to produce changes with regard to equity, both within the groups that traditionally have held user rights to the resources, as well as in the balance between traditional users and their competitors.

Changes in resource tenure may originate from a number of different sources. The authority structure of pastoral societies is often undermined and weakened as these societies are incorporated into large state formations. This provides opportunities for individuals to seek new ways of exploiting available resources. The most commonly reported instances seem to involve the creation of private reserves of various kinds, within the commons. The construction of water tanks and the erection of fences to exclude other resources have been reported from a number of different pastoral contexts in Ethiopia and Eastern Africa (Helland, 2006).

Land rental markets, agricultural production and distribution in Ethiopia

The process of the evolution of land contracts is better understood when it is analyzed in light of the land tenure systems during the three Ethiopian regimes (i.e., H/silassie, pre-1975; Dergue, between 1976 and 1991' and EPRDF, since 1983) (ILRI, 2009).

There is a broad consensus that the main causes of rural poverty lie in low rates of agricultural growth and factor productivity (Fan, Hazell and Thorat 1998). The evidence also suggests that countries with more equal land distribution experience higher rates of economic growth (Deininger and Squire 1996) and that the key to raising productivity in agriculture lies largely in the deregulation of the policy environment together with measures to broaden access to land and complementary inputs (Mearns 1999).

There is a great need to help the Ethiopian leadership think about how it can modify land policy and administration in ways that will encourage efficient farmers to produce more and improve their land management without reducing their livelihood security. This can be addressed through a multi-step process involving a national land policy conference and the establishment of a land policy task force that will be able to continue the refinement of the land policy.

Recent land tenure regimes in Ethiopia fall into three broad time periods. Before 1975, land tenure was based on a feudal system where land was concentrated in the hands of absentee landlords and the church, tenure rights were highly insecure, and arbitrary evictions took place. Following the overthrow of the imperial regime in 1974, the Marxist-oriented government (the Derg) transferred ownership of all rural land to the state for the distribution of use rights to cultivators through local peasant associations. The further transfer of land rights was highly restricted, because transfer through sales, lease, exchange, or mortgage was prohibited, and inheritance was severely restricted. Tenure security was further weakened by the peasant associations' and other authorities' ability to redistribute land. The government that took power in 1991 following the fall of the Derg—while committed to a free market philosophy— has made little substantive change to farmers' land rights, which are still considered inadequate.

The 1994 Ethiopian Constitution draws a broad framework for land policy in the country and enshrines the concept of public land ownership and the inalienability of landholdings. The Ethiopian Constitution asserts state ownership of land; there are no private property rights in land. Article 40(3) states:

“The right to own rural and urban land as well as natural resources belongs only to the state and the people. Land is an inalienable common property of the nations, nationalities and peoples of Ethiopia and shall not be subject to sale or to other means of transfer.”

The Rural Land Administration Proclamation of 1997 delegates responsibility for land administration to regional governments—including the assignment of holding rights and the distribution of landholdings—but also provides important general guidelines that the regional governments must follow in crafting regional laws. At the same time, the government's “Poverty Reduction Strategy” paper has a guiding principle that every farmer who wants to make a livelihood from farming is entitled to a piece of land free of charge. The responsibility for implementing this strategy is left to regional governments. In order to protect their rights, farmers' landholdings should be registered, and user certificates should be given to them. (Deininger *et al.*, 2003).

Given the experience of the last three decades of changing government policies with regard to tenure rights, it is critical that continuing efforts be made to inform people of current and evolving government policies and the objectives and structures of a decentralized land administration.

Informal rental land markets are thus emerging in rural Ethiopia in response to the inadequacies of the administratively based land distribution system to meet the growing demand for land and correct imbalances in factor proportions at farm level. The current evidence indicates as many as **15-30 percent** of farm households in different parts of the country transact land through these markets (Tefaye, 2001). And they are booming in some regions, particularly in areas with developed market infrastructure and commercialization of agriculture (Haile-Gabriel, 2000).

Rental arrangement in regions of Ethiopia

Access to land is a vitally important issue for the many people in Ethiopia who depend on agricultural production for their income and sustenance. Land tenure issues therefore continue to be of central political and economic importance, as they have been at several crucial junctures in Ethiopia's history (Helland 2006).

Land market participants are mainly land-constrained farmers with relatively abundant family labor. Some of these farmers have no Peasant association (PA) land, especially the newly formed young households. Those farmers with demonstrated farming experience and established reputation of trustworthiness are able to acquire land through informal rental land markets (Tesfaye, 2001).

Land rental market has played the role of enhancing allocative efficiency of land in most parts of Sub Saharan Africa and enhanced agricultural productivity when other inputs markets are imperfect or missing (Benin et al. 2005; Holden et al.2009).

The laws in general have provisions that seem to facilitate lease markets. However, there are some serious restrictions on the provisions of lease rights. For instance, the period of the lease, the proportion of holdings to be leased out, the definition of "technology use" for the lease period all limit the ability of an individual to make optimal decisions over land use (USAID, 2011).

Table 1 Description of different land rental arrangement in different parts of Ethiopia

Region	Categories of lessees	Rental duration	Condition of rented out holding	Renewal condition
Tigray	Traditional	Up to 2 years	All holdings	No mention
	Modern	Up to 10 years	All holdings	No mention
Amhara		Up to 25 years irrespective of tech.	All holding	Renewable
Oromia	Traditional	Up to 3 years	The lesson is conditioned to rent out only half of his holdings	-
	Modern and improved	Up to 15 years	Same as above	-
SNNPR	Traditional	Up to 5 years	Lessor could rent out all holdings provided substitute livelihoods	No clear provision in regulation
	Modern	Up to 10 years	Same as above	No clear provision in regulation
	investor	Up to 25 years	Same as above	Renewal upon agreement of the two parties

Source; USAID, 2011

Sharecropping

Sharecropping arrangement is dominant contracts type in Northern Ethiopia and manifests itself differently than other sharecropping arrangements in Africa depending on dominance and dependency between the landlords and tenants (Martin, 2011). In Tigray, reverse-share-tenancy is practiced between households rich in land: labor or land: drought power ratio and households poor in land resource relative to their endowment in labor and oxen (Kassie and Holden 2007). Cheung (1968) reported sharecropping arrangement as the means of sharing production risk between the landlords and the tenants. Landlords use the contract as the form of perfect risk pooling and enhancing production efficiency, depending on the landlords' ability to enforce and monitor effort. The most common duration for a sharecropping arrangement is for one crop season. In different regions of Ethiopia, "Yeikul" (half each crop yield share) is the most common term of sharecropping arrangement between the lessor and the lessee. Some literature (i.e., shows (not necessarily the pilot areas) that a more formal lease market creates more equitable land distribution and factor market utilization. Typical lessors are those individuals who lack input such as, labor, oxen, and other factors of production. These are generally the elderly, women, and resource-poor households. The lessees are generally better off in terms of household resource endowments.

Resource pooling may have played a critical role in the south for the existence of sharecropping especially for the less powerful landowners that resided in the same community as their tenants and farmed part of their land. Landowners provided credit to their tenants (Dessalegn 1984), who supplied their labor and animal power. Fixed rents, on the other hand, most likely resulted from absentee landlordism and inability to enforce contracts (ILRI, 2006).

In both the north and south, there existed **three** major forms of sharecropping arrangements.

Classified according to the share of harvest paid to the landowner as rent. In **siso** (one-third) arrangement, the tenant supplied all the inputs, mainly seed, oxen and labor, and paid one-third of the harvest to the landowner as rent. Since the tenant paid one-tenth of the harvest as land tax, known locally as *asrat*, before sharing the harvest with the landowner, the tenant effectively retained 60% of the harvest. In *irbo* (one-quarter), the rental payment was one-fourth of the harvest after deducting the *asrat*, and so the tenant effectively retained two-thirds of the total harvest. In *equi* (equal) arrangements, the landowner sometimes supplied some of the inputs, especially oxen and seed, and after paying the *asrat*, the harvest was divided on a 50:50 basis (Cohen and Weintraub 1975).

Land based disputes

Weak government and customary institutions, population growth, frequent drought, resource degradation, and encroachment or expropriation of rangelands are some of the causes of inter-pastoral conflicts and between pastoralists, the government, and farmers (USAID, 2010; Rahmato, 2006).

Lack of adequate demarcation, registration and record keeping has led to overlapping land claims stemming from inheritance that is beginning to result in conflict. There is evidence that violence and intimidation are used against women who attempt to use the law to establish and defend their right to landholdings (Stein 2008).

The Constitution allows the resolution of disputes between individuals using customary laws and practices and may apply to land-related disputes. The State has generally ignored the administration and adjudication of pastoralist tenure. While this has resulted in the loss of crucial rangeland to crop cultivation, sometimes as a result of government expropriation, it has meant a continuing role for clan-based tenure regimes (Crewett et al. 2008).

Methodology and Data Collection

Study Area and the Community

The study was conducted in Hullet eju endesse and Raya Alamata *Woreda*, of Amhara and Tigray Regional State, respectively. Hullet eju endesse is located at about 350 KM North of Addis Ababa. *Hulet eju endesse* has 48 *Kebele* Administrations (4 town and 44 rural *Kebeles*). It has land holder population of over 66,000 people. *Hullet eju endesse* is structured into highland (*Dega*), midland (*weyna Dega*) and lowland (*Kolla*). The major means of livelihood of the people are crop and livestock production. Crop production contributes the lion's share to the livelihood of the people. The major crops that are growing in the study area were teff, maize sorghum, etc., and livestock such as cattle, sheep, goat, chicken, donkey has been raising in the community. The role of other means of livelihood such as trade is also growing in the *woreda*. Three *kebeles* were selected from 44 rural *kebele* administrations which are found in the *woreda*.

The second *woreda* which was taken for this study was Raya Alamata from Tigray regional state. The *woreda* is located at about 849 km to the North from the central city, Addis Ababa. Raya Alamata has 18 *kebele* administrations (town and rural *kebeles*), and is structured into highland (*Dega*), midland (*weyna Dega*) and lowland (*Kolla*). The major means of livelihood in the *woreda* are crop and livestock production. The major crops that are growing in the study area were teff, maize sorghum, etc., and livestock such as cattle, sheep, goat, chicken, donkey has been raising in the community. The role of other mean of income generation is also showing a great progress in development and has been supporting the agricultural sector.

Data Collection Techniques

Training of Enumerators and Facilitators

The consulting team conducted training for the enumerators and facilitators on the objectives of the study, sampling methods and methods of data collection, the household survey instruments, Pastoral Community Dialogues, and MEERA. The detail contents of the household questionnaire and data collection checklists were discussed with the enumerators and facilitators.

Household Surveying

Within each kebele, the household was used as our basic unit for research. A list of farmers in the district was taken from the districts office of Agriculture that was used to select the farmers to be sampled. At kebele level, FGDs and KII interview was held for identified households based on farmers farming activity at least in the 2008 seasons from the survey report and hence triangulate the data obtained. Such discussion and interview were also used as introduction and got community trust for the household interview.

Then the farm households were selected through stratified proportional sampling since the population of the farmers was homogeneous. The sampling frame was comprised of all farmers (in the 2008 season) in each Dega, w/dega and Kolla AEZs. Each kebele was ended up with 40 households.

Following this, the households in the selected kebeles was stratified into four kebele as rich, medium, small and landless. The classification was based on variables that are indicative of ways of agricultural production and the strategies employed by farmers in sustaining household survival or wealth category, which were, at the same time, linked to farm characteristics (available land per capita, livestock holding and the share of non-farm earnings). The rationale behind this was that the impact, opportunities and constraints of different lease arrangements were quite possibly influenced by these variables. In order to determine sample size in each stratum (household category), the first step of the study consisted in running a cluster analysis on the 40-farm household dataset in order to best represent distinct sets of observations within the sample. This was important to constitute a more representative sample. Four separate lists from the sampling frame were developed to proportionally select farm households. Next, a simple random selection was made within each stratum to obtain a data set of 240 farm households on which further analysis was performed.

The sample size was determined using a formula developed by Krejcie and Morgan (1970) quoted in Mburuet *al.*, 2014, which is shown as follows:

S	$\chi^2 NP(1 - P)$	+ $\chi^2 P (1 - P)$
	$d^2(N - 1)$	

where S = required sample size; χ^2 = table value of chi-square for 1 degree of freedom at the desired confidence level which is 3.841 for 95% confidence level; P = population proportion assumed to be 0.5 since this would provide the maximum sample size; D = degree of accuracy expressed as a proportion (0.05); and N = population of farmers in the kebele.

Agricultural extension workers and local government officials were used to identify farmers' lists from which we obtained from the census list and PRA result. The data that was collected at household level, using questionnaire, include the household and farm characteristics, input-out data, livelihoods strategies, diversification and dynamics, total production, consumption, market condition, price, inputs used, interaction among crops, livestock and natural resources, factors that increase or decrease agricultural productivity of the farm, the prevalence of rental land market transactions, type of land contract (rental, sharing and borrowing), and factors behind observance of different patterns, the nature of the actors participating in different types of land markets their past experience and future expectations, the potentials/ limitations of functioning land markets.

Secondary data on social status, land holding, biophysical characteristics, prices at local markets and other community characteristics was used for matching and later research. Primary data was collected on HH-level in 6 kebeles, complemented by more qualitative in-depth analysis.

Focus Group Discussions (FGD)

The FGD's was held to investigate the history of land use and tenure arrangement within the kebele, constraints to smallholder agriculture and natural resources management, institutional issues (both local and external) that affect the tenure arrangements. These FGD's was made with separate groups of community elders, women, youth, and kebele leaders. The discussion helped us to know the socio-economic, institutional and land-use and ownership conditions in the area, and identifies the differing social status, identify the most vulnerable groups and categorize farm household. At each research location, one FGD with each group will be carried out. Overall, 6 FGD's which involve 8-12 discussants in each group and a total of 48-72 discussants was participated in the FGDs.

Key Informant Interviews (KII)

For this interview, we used knowledgeable people on community level issues. They include 8 representatives and experts of regional government, 2 woreda Administrators, 6 Kebele Administrators, 6 Development Agents (DA's) (a sub total of 22 from governmental sector) and 6 elders, and 2 Experts on land administration. From the three research kebeles per woreda, 3 key informants were selected and a total of 33 KII's were conducted.

Sampling Method and the Data

To measure the effects of rental land arrangements on efficiency, productivity, and farm investment and to identify the factors that determine the effects, data for the proposed study was obtained from an in-depth qualitative and quantitative study in northern Ethiopia. The field study for this research was restricted to two regions where LIFT project operates. They are pilot woredas which are included in Tigray and Amhara regions.

In the absence of accurate sampling frames, a multi-stage sampling scheme was used within the above regions to select our sample population. Several further stages of sampling took place within the above regions. However, the research was taken place in woredas which are formerly used by the LIFT project. A total of two woredas was used from the two selected regions that the programme has been implementing. The key question that was to guide this process is the intensity of participation in the selected land tenure arrangements and security/ accessibility in a particular woreda. At each district, three kebeles, the lower administrative unit, was chosen through stratified random sampling for their varying altitudes, and, thus, mix of crop and livestock activities at the second stage. The socio-economic characteristics of farm households within each of these agro ecological zones (AEZ) and agricultural activities tend to be similar, so that random selection of the study kebele within a stratum may avoid some bias into sampling. The first kebele comprises a *dega* agro ecology (high altitude); the second is a *woina dega* agro-ecology (mid altitude); and the third one is *Kolla* agro-ecology (low altitude) where dominantly cash crops are grown.

Regional Conference

A regional conference is planned to be organized based on the results of MEERA in two pilot Woredas of LIFT in Amhara and Tigray regions. Representatives from Amhara Regional land administration office, women Associations Offices, NGOs and Woreda representatives will participate in the workshop. The regional land administration staff will participate in the organization and facilitation of the regional conference. They will also participate in the workshop, which included group work on thematic issues relevant for generating socio-cultural systems and indigenous institutions, gender relations, social differentiations and policy perceptions of pastoral communities in different Woredas.

The conference is believed to contribute a lot to identifying uncovered issues relevant for the study in different areas of Amhara and Tigray. The process will also help to create awareness about the impacts (positive or negative) of land rental arrangements to the communities of different agro ecology, gender issues, socio-economic problems of women and vulnerable groups.

Study Findings

Descriptive Analysis

As is the case elsewhere in the highlands of the country, farmers in the study areas largely practice mixed farming on the same farm unit as influenced by the ecological base and the varying levels of resources they command. To put the discussion into context, we begin with a brief description of the key characteristics of the households interviewed and farm types based on their involvements in the land markets. Characteristics of those who participant in the land rental are included for comparison purposes. A comparison between farm types highlights their main differences and show how the varying levels of resource endowment and social status determine participation in rental market, and hence, affect overall farm productivity and land distribution. This is then followed by a more in-depth analysis of the major findings of the study. Some of farm households' characteristics and farm types are depicted in table 1 and 2.

Socioeconomic characteristics of study farm households

Overall, most of our sample households were male headed comprising nearly 87% and the remaining 13% were female headed from the total 240 sample households. On average, the studied households have a total family size of 5.33 ± 2.06 in 2016/17. The households' mean age is about 47 years with a range of 22 to 87 years. As far as educational background is concerned, close to half (48.75%) of the household heads did not attend school at all or had very low level of formal education while the 51.25%, had formal education indicating that most of the farm households can at least, read and write. Eventhough very few, there are households

those who attended primary and secondary education - an important factor in the agricultural growth. 72 % of the households received neither farm skill training nor attended farmer training centre. This might have a potential negative effect on marketing and resources allocation. The absence of formal education increases among the households of East-Gojjam where the percentage rises to more than half (55%) (Table 1a). Lack of formal education among the farming communities in Ethiopia has been a reality (Abebe *et al.*, 2012; Essa, 2011) this report is not an exception. With the growing challenges of declining agricultural output growth and available land, improving farmers schooling, at least through adult education, and/or training will figure even more prominently in the future of rural communities, therefore poverty alleviation in the country. In rapidly changing socioeconomic and biophysical environment within the country, schooling may increase farm productivity as it plays a significant role in the level of awareness of the farm household about adoption of innovations/technical efficiency-enhancing technologies and new approaches including applicable laws that help improve resources allocation and farm management. Given the low levels of human capital observed in study regions, there is great scope for increasing output through greater productive efficiency, in so doing, improve economic security even in traditional farming system which generally operates far below its productive potential (Weir, 1999).

Table 2: Types of farm households and their characteristics

Variable	Overall (n=240)	Raya-Alamata (n=120)	Hullet-Ejenesie (n=120)
Family size (mean± std)	5.06±2.00	4.79±1.90	5.33±2.06
Age of HH head (mean± std)	47.22±14.09	47.77±13.44	46.67±14.74
Education status (head) (N (%))			
None	117(48.75)	51(42.50)	66(55.00)
Can read and write	77(32.08)	35(29.17)	42(35.00)
Primary school	39(16.25)	27(22.50)	12(10.00)
Secondary school	7(2.92)	7(5.83)	0(0.00)
Farm skill training (N (%))			
None	174(72.50)	94(78.33)	80(66.67)
Short term	47(19.58)	24(20.00)	23(19.17)
FTC training	19(7.92)	2(1.67)	17(14.17)
Gender distribution of HH heads			
Male heads	191(79.58)	87(72.50)	104(86.67)
Female heads	49(20.42)	33(27.50)	16(13.33)
HH heads wealth status			
Very poor	4(1.67)	2(1.67)	2(1.67)
Poor	54(22.5)	32(26.67)	22(18.33)
Medium	158(65.83)	78(65)	80(66.67)
Rich	24(10.0)	8(6.67)	16(13.33)
Average TLU	2.6	2.1	3.0
Total mean land holding	2.75	2.05	3.44

*Note that *Timad* is a local area measurement unit which is equivalent to 0.25 hectare

Further, as time and resources did not allow for quantification data were collected on the welfare status of the farm households as an alternative indicator for the analysis as it characterizes farmer's production trajectories. Accordingly, the respondents were asked to distinguish themselves compared to other households in their kebele. Almost 66% of sample households declared that they classify themselves in the middle (i.e. average) compared to other households in the same kebele, while about 10% classified themselves as relatively rich. The remaining 22.5% and almost 2 % of the households classified themselves as poor and very poor, respectively as to other households in their kebele (Table 1). The endowment of arable land held by households, excluding grazing and home garden, is, 2.75timad per household. This means that, with an average family size of five persons, per capita holding size would be about 0.55timad in the study area. The average farm size owned differs between the two regions, which is large for Amhara where, on average, one farm household has 3.44 *timads* whereas 2.05 *timad* is for Tigray (Table 1). Considering all type animals owned by the household average livestock holding is 2.6TLUs. With large family size and growing population dependent on farming, and opportunities for further sub-division is limited, the future poses many challenges when majority of the region's population are young (CSA, 2007).

Land rental market participation in the study areas

Active informal land markets (sharecropping and fixed rental) have developed in many highland areas of Ethiopia where the available land is perceived to be insufficient. Under such conditions, land rental markets might redress such shortages, and believed to play an important role in the smallholder's agriculture. Socio economic profile of the farm households by rental status is reported in table 2. The data indicate that 52% of the sample households participated in the land rental market either as tenant or as lessee or both while the

rest of the sample households (48%) did not participate at all implying, though limited, the progress development of rental market and their importance. Even in regions, Amhara for example, where land redistribution has traditionally been the main form of adjusting to population growth, rental is now quantitatively more important than administrative reallocation as a way to adjust land area to population size as observed by the percentage of participants (Appendix table 1). Of those participated in land rental markets, about 79.7 % of the households are male whereas the remaining are females. As shown in table 2, participation status of farm households in the land rental market is somewhat persistent, as 35.6% of the households currently use land acquired through lease markets (22.7% through rental and 12.9 % through sharecropping). The remaining, 16.4 % (16 % for sharecropping and 0.4 % for rental) of the farm households reported to have supplied land to the market (Appendix table 1). This twofold difference between those who demand land and supply suggests the presence of migration in the study area. In addition, in both regions, sharecropping is the most common, in line previous study reports (Bereket, 2004; DFID, 2006). These figures are not necessarily representative of the vast northern Ethiopia; however, they do indicate a dominance of sharecropping in the research area.

Characteristics of those who participant in the land rental markets are presented in table 3, for comparison purposes. Households engaged in renting in/shared in land (here after leasing in) have on average 5.6 members each with the head's mean age about 43 years. The mean age is lowest among those leasing in land and have smaller family size of about 3.6 members. Household heads participating in rented or shared out (hereon leasing out) land are probably retired. The household heads leasing in land are younger and have relatively more education (from whom nearly 32%, each, of the households can at least read and write and have primary education, respectively) than from those leasing out land. The latter have lowest educational attainment with the majority (close to 62 %) of the household heads did not attend school at all nor had very low level of formal education. From those leasing in land, about 72 % received neither farm skill training nor attended farmer-training center whereas 88 percent of the households engaged in leasing out reported that they did not have any sort of farm skill training. Livestock endowment, measured in TLU, varies within the sample households, with the largest value among those who involved in leasing in rental activities (3.6 compared to 0.94). In terms of land endowment, on average households leasing in land owned more (2.51) land than compared to 1.77 *timad* for those leasing out land.

Table 3: Socioeconomic Profile of the households by land rental activity

Variable	Land Rental arrangement (N=133)	
	Lease In(n=91)	Lease out(n=42)
Family size (mean± std)	5,36±2,01	3,60±1,84
Age of HH head (mean± std)	42,90±12,01	47,60±15,53
Education status (head) (N (%))		
None	28(30,77)	26(61,90)
Can read and write	29(31,87)	9(21,43)
Primary school	29(31,87)	6(14,29)
Secondary school	5,00(5,49)	1(2,38)
Farm skill training (N (%))		
None	64(70,33)	37(88,10)
Short term	15(16,48)	5(11,90)
FTC training	12(13,19)	0,00
Gender distribution of the participants		
Male heads	83(62,41)	11(26,19)
Female heads	8(6,02)	31(73,81)
HH heads wealth status		
Very poor	8(8,79)	1(2,38)
Poor	5(5,49)	24(57,14)
Medium	65(71,43)	15(35,71)
Rich	13(14,29)	2(4,76)
Average TLU	3,62	0,94
Average operational land holding	4,08	0,28

Participation in land rental markets characterizes mostly the middle and the resource poor categories, the former as leases and the later as leasers. As can be seen in table 3, majority (71.43%) of the farm households who leasing in land are in the middle wealth category whereas significant proportion of (57.14%) the farm households participated in leasing out are the resource poor farm households. This could portray a concentration of operational land on the hands of resource rich farm households through the land rental

market. It seems that land rental markets would lead to land transfer from the rich to the poor farm households, claiming that rental markets tend to equalize land distribution across farm households (Ghebru and Holden, 2016; Tesfaye, 2005). In the contrary, the study finds that, of those participated, small landowners largely are who leased out land to large farm operators. This might portray that, despite restrictions on land rental activities were relaxed since the mid 1990's, rental markets are not effective in redistributing land to marginal or resource poor and vulnerable groups such as females. One reason for this might be the unequal access to credits based on wealth; when access to the rural credits is a function of existing assets, then the land rental markets may not be friendly to the poor and it would have dis-equalizing effects rather than an equalizing effect (see Deininger et al. 2006 pp 7). Furthermore, shortage of oxen and labor scarcity could also be important reasons attributed to leasing out land by the poor farm households in the study areas.

Gender wise distribution shows the dominance of male household heads who are engaged in rental markets compared to the females (29%). The study further shows that female-headed households are more likely to participate in rental markets as proprietors than as tenants (appendix table 1 and table 2). Of those female-headed farm households participated in rental markets, 73.8 % engaged in leased out their land in contrary to the male-headed households the majority of whom engaged in leasing in land. The amount of land operated by the male-headed households is higher (8.8 *timad*) than female-headed households (5.6). These may imply a concentration of land operated through land rental markets i.e. leasing in. This might be due to lack of available labor and/or economic status of the female-headed households who are mostly poor in non-land resources vital for farming (Place, 2002). The study further observes mixture of sharecropping and fixed rental contract practiced by some of the households. The study shows that the development of rental market is still poor probably due to relatively restricting land laws and/or limited development of off-farm activities.

Table 4 presents average land owned and operation farm size for each of the tenure arrangements by gender. Unsurprisingly, non-participants own the most land (3.1ha and the rented out own the lowest. In addition, those who engaged in shared-out land own substantial amount of land followed by non-participants. Sharecrop tenants and those who make use of rented-in lands own substantial amounts of land (1.23 and 1.52 *timad* on average, respectively). The distribution of land holdings between participants and non-participants is somewhat closer. This might indicate farm households endowed with land are less interested to participate in land markets.

Table 4: Average Land Owned and Operated by tenure arrangement and region (in *timad*)

Lease arrangement	Overall	Raya-Alamata	Hullet-Ejenesie
Shared in land per HH	1.23	0.63	2.03
Shared out land per HH	1.52	0.51	4.27
Rented in land per HH	1.29	0.38	1.88
Rented out land per HH	0.50	0.50	0.00
Average operational farm size (<i>timad</i>)	2.96	2.13	3.79
Non-participants	3,1	2,15	3,91

Table 5: Current status of farm size due to land rental market participation

	Lease out(n=42)		Lease in(n=91)	
	M(11)	F(31)	M(83)	F(8)
land owned in <i>timad</i>	2,7	1,5	5,5	3,1
Amount of land leased	1,4	2,1	2,6	1,6
Land operated in <i>timad</i>	1,3	-0,6	8,8	5,6

Major differences of the households engaged in leasing in and leasing out

There are important differences between households who leasing in land and those who lease out. On average, households leasing-in land owned more land than households leasing out did. In terms of land operated, those renting in end up cultivating about 4.08 *timad* of land which is higher than to those participating leasing outlands. On the demand side of the land rental market, different factors appear to be important. Younger, more educated household heads are more likely participate in leasing in land than older, less educated household heads who are mainly involved in leasing out. And farms with female headed households are less likely to leasing in land. Those better endowed with labor (young aged in this case) and human capital (better trained) are more likely to demand land from the rental market (Table 2). The high levels of market

participation by the younger groups might indicate the role of rental markets in transferring land to more productive work force with the positive scope for productivity improvement in one hand and inadequacy of non-farm job opportunities, on the other. Wealth status has a positive effect on farm household's decision to lease in land.

The middle classes were the dominant participants in leasing markets (Table 3). In terms of the supply of rented land in the study areas unequal access to credits, shortage of labor and resource scarcity the contributors. The fewer assets a farm owns, the more land it is likely to rent out. Furthermore, females, less educated and older household heads are more likely to leasing out land. As shown in table 2, majority of the farm households who leasing in land are in the middle wealth category whereas significant proportion of the farm households participated in leasing out are the resource poor.

The summary data in table 3 might reflect that marginal farmers leased out land to large land owners. This is something different from previous findings in Ethiopia and elsewhere SSA that highlights marginal/small land owners rent in land from large land owners. Moreover, the average amount of land that a farm household that leased out land under a sharecropping or fixed rental is higher than the average amount of land that a tenant rents under either arrangement. The implication is that the land rental markets do not serve well as a mechanism to allocate factors at the farm level to maximize welfare.

Determinant of land rental market participation

In this section, an econometric analysis is performed to identify the household-level demographic and socio-economic factors that determine the decision of smallholder farmers to participate in market-based land transfers and to assess if participation in land rental markets improves the efficiency of production for farm households. The Multinomial Linear Regression Analysis estimation method is used to identify factors that determine participation in rental markets. Factors such as household characteristics and resources endowments of land, labour, and other assets determine area cultivated and agricultural output as predicted by theory. In this study, the household characteristics, which are believed to an influence on the decisions to participate in rental markets, are included in the analysis based on the findings of the literature. The explanatory variables that are expected to cause variation in the dependent variable are land owned, sex, age, family size, and level of education of the household head as well as farm skill training. The latter is included because it was implemented as a policy option to help improve farmer's management skill. In addition, agro-ecology (location), total livestock owned, and land size represented the household's physical endowments in the regression analysis. Results of multinomial Logistic model were presented in Table 5. Farm households who do not participate in the land rental market are chosen as base outcome.

The multinomial regression result supports the effect of land size, TLU, and sex and age on land market participation of households as shown in table 5. The study revealed that total land size has significant (at 0,05 level) influence on the household's ability to participate in rental market (i.e., sharecropping). The study result shows that households with one more unit of land are 12 % more likely to participate in sharecropping than non-participants. However, the coefficient of the land size in the sharecropping model is insignificant. This might be due to the role of land size in boosting total production level and thus sales of surplus produce giving the farmer better position to lease more land. It therefore seems likely that land is transferred to relatively resource rich farmers in the land rental markets causing concentration of land that would leave the poor without land access, similar to what was obtained in some other studies (e.g., DFID, 2006) though limitation in our data.

Though land ownership contributes most to any decision to share in or out, the contribution of livestock owned, and sex of head of the family is equally important in both share in and share out decisions. The study shows that farm households with more average livestock unit owned are more likely to lease land than to not participate in sharecropping. The coefficient of land rent via sharecropping is significant and positive. From the households' characteristics, sex has shown significant influence on farm households' participation of sharecropping rental markets. The model result indicated that male-headed households are more likely to participate in sharecropping than the female-headed ones. All the other household and physical endowment variables are not significantly influence the households' participation of renting land except age and TLU (Table 6). The farm household is more likely to participate in fixed renting as the age the head increases and with more livestock ownership from both demand and supply side as compared to the non-participant. This might be because farmers at older age have less land plough than at younger age.

Table 6. Household characteristics that rental participation

Arrangements	Characteristics	SE	ME	Sig.	
Sharecropping	Land size	.105	5.292	.021*	
	TLU	.114	4.674	.031*	
	Family Size	.126	1.818	.178	
	Number of dependents	.202	.023	.880	
	Age of household head	.016	.217	.641	
	Agro ecology	lowland	.490	.130	.719
		Midland	.476	2.903	.088
		Highland	.	.	.
	Gender		.624	7.008	.008*
	Marital Status	Married	.806	.410	.522
		Not married	1.413	2.507	.113
		Divorced	.855	.081	.777
		Widowed	.	.	.
		Education level			
		No education	1.209	3.663	.056
Primary		1.229	2.783	.095	
Above Secondary		1.223	1.157	.282	
Training	No training	.684	.308	.579	
	With training	.852	3.412	.065	
Fixed rental	Land size	.105	.462	.497	
	TLU	.147	6.585	.010*	
	Family size	.195	.055	.815	

Effects of land rental markets on agricultural production

The findings of this study showed that, there is productivity gain as a result of land allocation through land rental markets (both fixed and share cropping contracts). In terms of the efficiency effect of the land rental market, there seems to be a broad consensus that access to the land rental market can improve agricultural production efficiency which can be measured using different techniques, indicators and data sources (Bravo-Ureta and Pinheiro, 1993). As stated somewhere above, due to some constraints including time and other resources the study lacks reliable quantitative data on production and farm income. In situations where there is scarcity of farm/plot level quantified data on shares of land tenancy, it is difficult to analyze the relationship between the land rental market and agricultural production. Some studies suggest that, one way out of this dilemma is to look into the correlation between the farm household participation in land rental markets and productivity of land. Evidences have shown that land rent, either fixed or shared, positively correlates with productivity of land (Alia *et al.*, 2016; Ahmed *et al.*, 2002; Akter *et al.*, 2006). As noted in the literature, doing so yields estimate of the parameter in question. With this understanding, this study, by examining the association between farm household participation in land rental markets and land productivity, attempts to analyze the implications of land rental markets for agricultural productivity. Average land holding per farm households by lease arrangement depicted in table 3. The average land size operated in the study areas is higher for those involved in leasing in than those engaged in leasing out showing an increase in holding size by the former. Though marginal, the implications of increased farm size could be significant which indicates that increased farm size increase the likelihood of enhancing land productivity another factors constant. Empirical evidences show that the higher is the amount of land rented, the larger is the reduction in inefficiencies. In other terms, the results suggest that households renting in land can produce more to achieve the largest possible farm output. The result has important implication for agricultural productivity. Although households in land rental markets do not substantially invest more in modern inputs, they appear to have higher farming abilities and/or stronger commitments in agriculture, and these translate into less inefficiency in the production process as observed in other studies (Alia *et al.*, 2016; Chamberlin and Ricker-Gilbert, 2016). Previous estimates indicate that land transfer through rental markets have potential productivity enhancing impacts (Alemayehu *et al.*, 2004). However, since more marginal farmers including female headed households and those categorize as poor are leasing out their land (see table 2 and table 4), area of land that would lead to improved farm output could not be expanded, showing the existence of difference among farm households with respect to their capacities and constraints they faced which are policy issues that need to be addressed.

The effects of land rental markets on land distribution

Comparing the Gini index (0.34 for participants) of the distribution of own land available for crop production and actual operated land, the study reached at a conclusion that land rental contributes to equity. However, the descriptive reports above shows local level disparities in land distribution indicating dis-equalizing effects of rental markets.

To illustrate the extent to which land rental markets helped equalize land distribution between households, the results of estimation was shown in Table 6 with the Gini used as the land inequality index. Comparing the Gini index (0.34 for participants) of the distribution of own land available for crop production and actual operated land, the study reached at a conclusion that land rental contributes to equity. On aggregate, the inclusion of sharecropped and rented land tend to contribute towards equality in the size distribution of land area operated (figure 1). The Gini coefficient for the distribution of operated land was lower than the Gini coefficient for the distribution of owned land. The lower inequality in area operated suggests that rental market contributes to more equal distribution of land. However, land distribution is highly variable within the villages of both regions (see table 2). The data observed in descriptive report above indicates disparity in land holdings among the households' participating in land markets at local level (within the region) showing the marginal effects of rental markets in attaining the perceived goals. This is probably due to with-in and between village effects (see section 4.3). Such an equalizing effect of rental markets at national level or regional level and their inability to equalize at village or kebele levels is also reported in Tesfaye (2005).

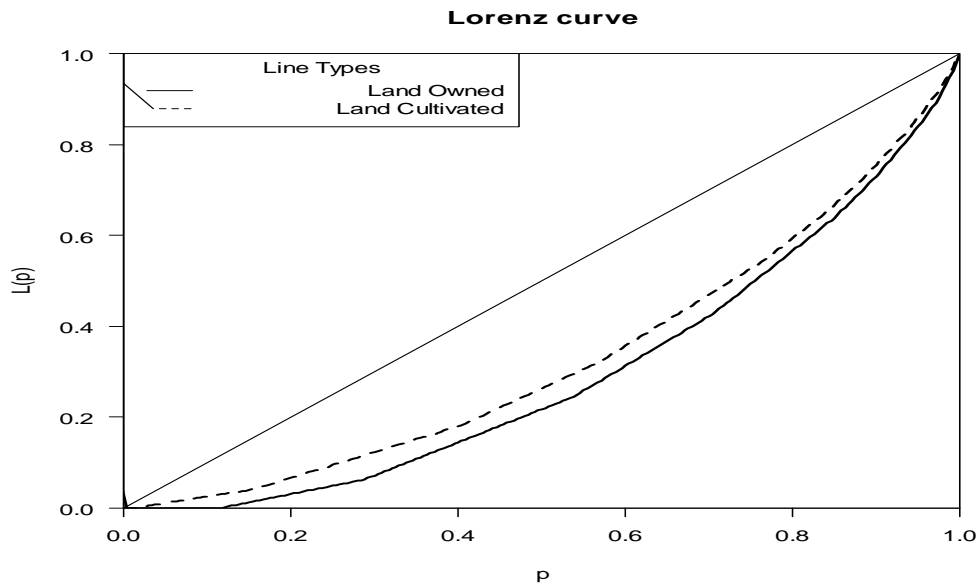
Table 6: Own farm size (non-participants) and operational land (participants) Gini Coefficients by region

Arrangement	Overall	Tigray	Amhara
Own farm size	0.41	0.33	0.40
Farm Size (operated area by the participants)	0.34	0.33	0.30

Operational land distribution was described by using the Lorenz Curve. The figures show land distribution between participant and non-participants by region. Land holding of participant farm households were made is measured by merging the sharecropped and rented land area. The aggregate land distribution between the participants and non-participants shows differences (The Gini coefficient of the participants is lower than the the Gini coefficient for the distribution of **owned land** (the non-participants). The lower **inequality in area operated suggests** that rental market contributes to more equal distribution of land. The same holds true for the farm households in Amhara region where the Gini coefficient is 0.40 and 0.30 for non-participants and participants, respectively. From the study report, on average, land distribution is equal in Amhara than in the Tigray region (see table 6 and figure 3). This is an indication that the transfers in the lease market are mainly affecting smaller land sizes and are equalizing (rather than differentiating). In contrast, the land distribution following the land rental markets shows no differences (Gini coefficients for participants and non-participants are 0.33 and 0.34, respectively).

From this finding it is possible to guess two things here; (1) regardless of tenure arrangements, land was equality distributed in the region or (2) In terms of decreasing or increasing inequality in the distribution of land, much less than the usually assumed seems to have been achieved in this region. In general, the study revealed the equalising effects of rental markets in northern Ethiopia. It is expected that land market facilitates land transfers, it can be a mechanism for redistribution of land, making land more accessible to landless, and land-poor farmers thereby contribute to improving welfare. The literature highlight that where land rental markets are more active, they have an equalizing effect on the distribution of household incomes. With this understanding, we expected access to land via rental markets would increase farm households' overall income as well as its distribution among the households. However, land concentration does not necessary reflect income distribution. Because the effect of land rental markets on income distribution depends not only on how land rental income is distributed among farm households and how land rental income correlates with other income sources, but also on land rental market conditions.

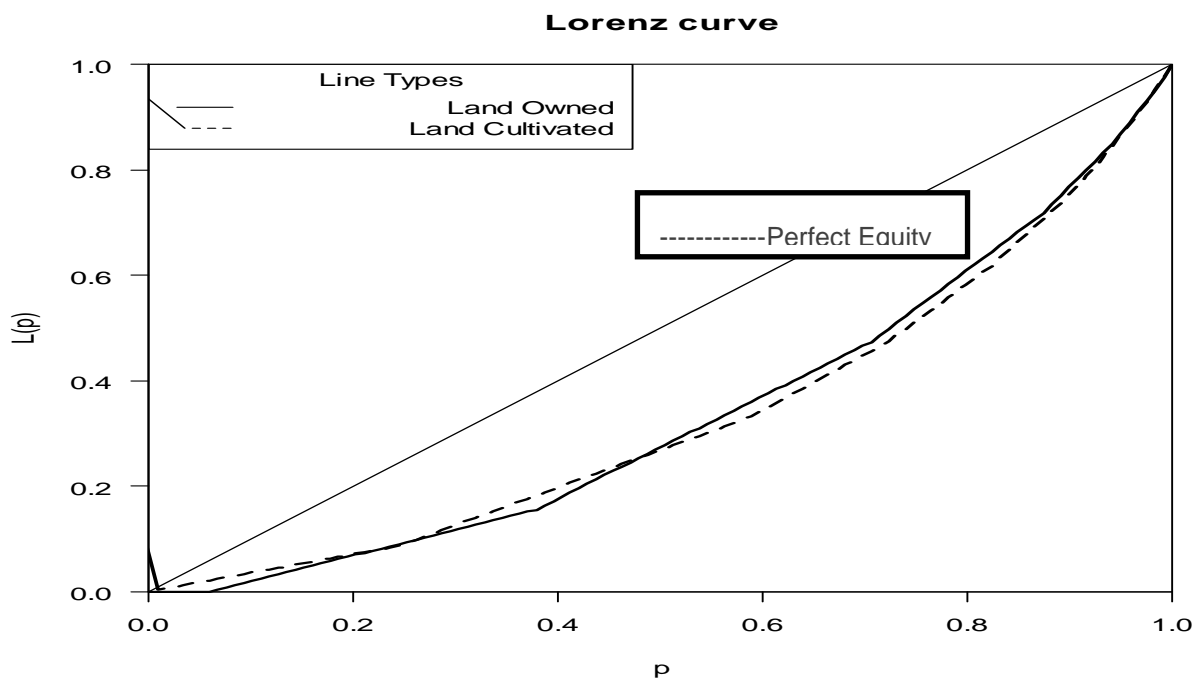
Figure 1: Overall land distribution of land in the selected woreda of Ethiopia



Key: $L(p)$: Percentage of land operated, p : percentage of farm households

Land Owned: the amount of land owned by the household in hectares (by non-participants); land cultivated is the amount of all land acquired by any mechanism (by the participants).

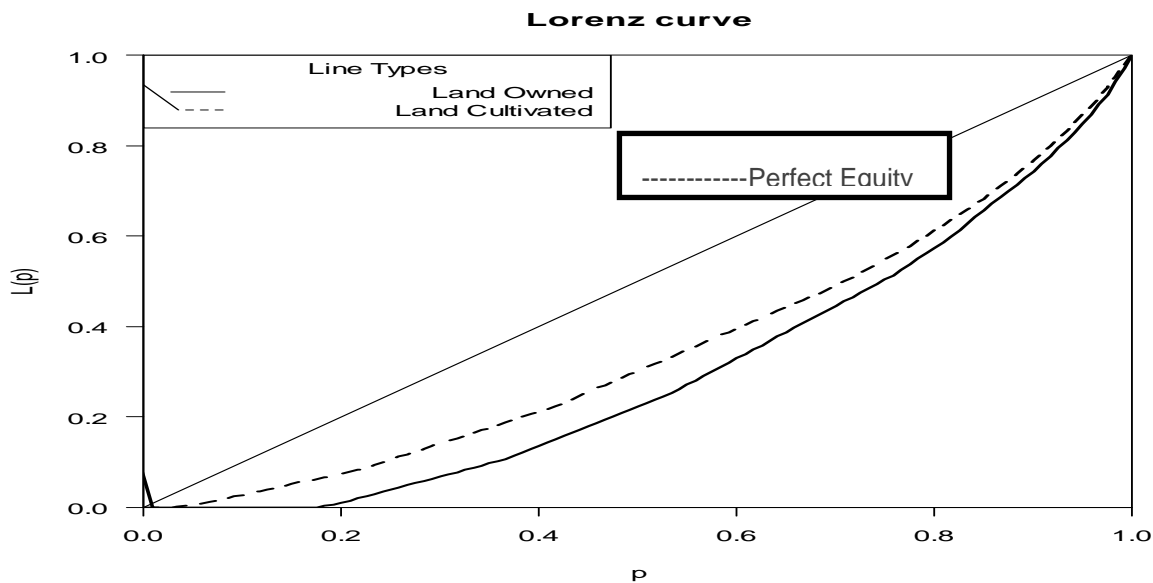
Figure 2. Distribution of Land, selected woreda of Tigray region



Key: $L(p)$: Percentage of land operated, p : percentage of farm households

Land Owned: the amount of land owned by the household in hectares (by non-participants); land cultivated is the amount of all land acquired by any mechanism (by the participants).

Figure 3: Distribution of Land, in selected woreda of Amhara region of Ethiopia



Key: L(p): Percentage of land operated, p: percentage of farm households

Land Owned: the amount of land owned by the household in hectares (by non-participants); land cultivated is the amount of all land acquired by any mechanism (by the participants).

Conclusions and Policy Implications

It is widely accepted that improved access to farmland by the rural poor may contribute to agricultural productivity and poverty reduction. Many poor rural households are still unable to gain sufficient access to land, due to market imperfections and policy constraints. This paper sought to examine the participation of rural land rental markets as a mechanism to improve land distribution and productivity enhancing effects of land rental markets in northern Ethiopia. The ultimate interest is to compare the potential impacts of rental markets (sharecropping and fixed rental) in terms of land distribution and agricultural production. As is the case elsewhere in the highlands of the country, farmers in the study areas largely practice mixed farming on the same farm unit as influenced by the ecological base and the varying levels of resources they command.

The findings of this study suggest that although rental markets have a profound effect on agricultural production and land distribution; some factors tend to affect household level total operated farms for crop production and their market participation. These include farm endowment such as land owned and livestock holding, sex, education level and age of the household head among the others.

The survey report indicates that rental markets appeared to have clear equity and productivity-enhancing advantage. While these have brought enhanced farm production and land distribution, there are also declines in farm output and land distribution. The study reveals that there exists unbalanced market participation between male and female and the resources rich and the poorer category farm households. An important conclusion come out of this study is the effects of resources endowment and gender difference in land rental participation. Of those participated in land rental markets, about 79.7 % of the households are male whereas the remaining are females. Of those female-headed farm households participated in rental markets, 73.8 % engaged in leased out their land in contrary to the male-headed households the majority of whom engaged in leasing in land. Furthermore, the land rental markets characterized mostly by the middle and the resource poor categories, the former as leases and the later as leasers. This could portray a concentration of operational land on the hands of resource rich farm households through the land rental market. On aggregate, however, the inclusion of sharecropped and rented land tends to contribute towards equality in the size distribution of land area operated in the study areas. The lower Gini coefficient for the distribution of owned land suggests the contribution of rental market to more equal distribution of land. However, the data observed in descriptive report indicates disparity in land holdings among the households' participating in land markets at local level (within the region). The average land size operated in the study areas is higher for those involved in leasing in than those engaged in leasing out showing an increase in holding size by the former. Though marginal, the implications of increased farm size could be significant which indicates that increased farm size increase the likelihood of enhancing land productivity.

There are important policy implications from this work. Although rental markets in the study areas appear equal land distribution and productivity enhancing, the differentiation at local level led to significant declines in land holding by marginal farm households, and subsequently potential decrease of the expected returns from land rental markets (see Fig 1 and table 2-4). The effects of rental markets on female-headed households were particularly important. The declining (at local level) in operation land as reflected by increases participation of marginal groups and increases in operated land holding by the resource rich households illustrate how difficult it could be to bring equity and hence improve in agricultural production of the resource poor farm households, even with the presence informal markets which are supposed to benefit the poor. In general, the study reveals that farm household's resource endowment and household characteristics limit farm household's ability to benefit from the rental markets. At the very least, the policy conclusion to be drawn from these results is that policies favorable to resources poor and vulnerable farm households in Ethiopia may encourage overall growth in the agricultural sector, so that they will contribute more to combat the problem of rural poverty.

While giving due considerations to women and vulnerable groups and the farmers located in very remote areas, the policy implications of our results point at the need to (i) mainstream socioeconomic concerns into design and implementation of tenure arrangement programs , (ii) easing access to credits and establishing a mechanism to have affordable access to farm inputs as well as (iii) establishing a well-functioning formal rental markets to smaller farms will increase overall production, as well as improve the welfare of the small and landless farm households. Addressing the questions of how to achieve these goals will be future areas of research.

References

- Abebe D., Mintewab B., and Zenebe G., 2012. Contract Duration under Incomplete Land Ownership Rights Empirical Evidence from Rural Ethiopia. *Environment for Development Discussion Paper Series July 2012 EfD DP 12-09*
- AfDB, OECD, and UNDP 2014. African Economic Outlook
- FDRoE (Federal Democratic Republic of Ethiopia), 2011. Ethiopia's Climate-Resilient Green Economy Green economy strategy
- AfDB, OECD, UNDP and UNECA, 2012. African Economic Outlook
- Akter, S., Farrington, J., Deshingkar, P., Sharma P and Rao, L., 2006. Land rental markets in India: efficiency and equity considerations Contributed paper prepared for presentation at the International Association of Agricultural Economists Conference, Gold Coast, Australia, August 12-18
- Ahmed M. M., Ehui S., Berhanu G., Benin S. and Amare T., 2002. Evolution and Technical Efficiency of Land Tenure Systems in Ethiopia. Socio-Economics and Policy Research Working Paper 39. ILRI (International Livestock Research Institute), Nairobi, Kenya.
- Amede, T., German, L., Opondo, C., Rao, S., and Stroud, A. (Eds.), 2006. Integrated Natural Resource Management in Practice: Enabling Communities to Improve Mountain Livelihoods and Landscapes. Proceedings of A Conference Held on October 12-15, 2004 At ICRAF Headquarters, Nairobi, Kenya. Kampala, Uganda: African Highlands Initiative.
- Ayele G. and Mamo, T., 2004. Determinants of Land Contracts and Efficiency in Ethiopia: The Case of Libokemkem District of Amhara Region. *Journal of Agriculture and Rural Development in the Tropics and Subtropics* Volume 105, No.2, 2004, pages 139–147
- Bereket K., 2004. Administrative Allocation, Lease Markets and Inequality in Land in Rural Ethiopia.
- Agarwal, B., 2012. Food Security, Productivity, and Gender Inequality. Working Paper No. 320
- Campbell, M., Jeffrey, S., Kozanayi, W., Luckert, M., Mutamba, M., and Zindi, C., 2002. Household Livelihoods in Semi-Arid Regions: Options and Constraints. Center for International Forestry Research.
- Chambers, R., 1994. Rural People's Knowledge, Agricultural Research and Extension Practice, London: Intermediate Technology Publications.
- CSA (Central Statistical Agency), 2008. Summary and Statistical Report of the 2007 Population and Housing Census Results
- Ali, D., Deininger, K., and Goldstein, M., 2014. Environmental and gender impacts of land tenure regularization in Africa: Pilot evidence from Rwanda *Journal of Development Economics* 110, 262–275
- Daniel A., Dercon, S. and Gautam, M., 2005. Property Rights in A Very Poor Country: Tenure Insecurity and Investment in Ethiopia
- Deininger, K., Jin, S., Berhanu A., Samuel G., and Mulat D., 2003. Market and Nonmarket Transfers of Land in Ethiopia: Implications for Efficiency, Equity, And Nonfarm Development. Policy Research Working Paper 2992
- Deininger, K., and Jin, S. 2008. "Land Sales and Rental Markets in Transition: Evidence 'from Rural Vietnam.'" *Oxford Bulletin of Economics and Statistics* 70 (1): 67-101.
- Deininger, K., Jin, S. and Nagarajan, H., 2009. "Determinants and Consequences of Land Sales Market Participation: Panel Evidence from India." *World Development* 37 (2): 410-421.
- DFID (Department for International Development), 2005 Tools for Institutional, Political And Social Analysis (Tips) A Sourcebook Poverty and Social Impact Analysis (Psia). Volume 1
- DFID (Department for International Development), 2006. Land, Land Policy and Smallholder Agriculture in Ethiopia. Policy Brief 001
- ECA (Economic Commission for Africa), 2004. Land Tenure Systems and Their Impacts On Food Security and Sustainable Development in Africa

- EEA (Ethiopian Economic Association), 2002. Land Tenure and Agricultural Development In Ethiopia. A Research Report
- Ellis, F., 2000. Rural Livelihood Diversity in Developing Countries, Oxford: Oxford University Press.
- Essa C, 2011. Economic Efficiency of Smallholder Major Crops Production in The Central Highlands of Ethiopia. An Msc Thesis Submitted to the Graduate School of Egerton University
- FDRoE-FC (Federal Democratic Republic of Ethiopia - Federation Council), 1995. The Constitution of the Federal Democratic Republic of Ethiopia.
- Gebreegziabher, Z., B. Gebremedhin, and A. Mekonnen. 2011. Institutions, Sustainable Land Use, and Consumer Welfare: The Case of Forest and Grazing Lands in Northern Ethiopia. *Environment and Development Economics* 17 (1): 21–40.
- Ghebru H., And Holden, S., 2014. Efficiency and Productivity Differential Effects of Land Certification Program in Ethiopia: Qasi-Experimental Evidence from Tigray, Working Paper, 64
- Ghebru H., and Holden, S. 2016. Efficiency and Productivity Differential Effects of Land Certification Program in Ethiopia: Qasi-Experimental Evidence from Tigray, Working Paper, 64
- Hazell, P., 2009. The Asian Green Revolution IFPRI Discussion Paper 00911
- Holden, S. T., K. Otsuka and F. M. Place .2008. The Emergence of Land Markets in Africa: Impacts on Poverty, Equity, and Efficiency. Washington DC, Resource for the Future (RFF) publisher.
- IAASTD (International Assessment of Agricultural Knowledge, Science and Technology for Development), 2009. Agriculture at Cross Roads International Assessment of Agricultural Knowledge, Science and Technology for Development, Global Report
- Jayne, T., Yamano, T., Weber, M., Tschirley, D., RuiBenfica R., Chapoto, A., Zulu, B., 2003. Smallholder Income and Land Distribution in Africa: Implications for Poverty Reduction Strategies. *Food Policy* 28, 253–275
- Kassie, M., And Holden, S. 2006. Parametric and Non-Parametric Estimation of Soil Conservation Adoption Impact on Yield. Paper Prepared for The International Association of Agricultural Economists Conference, Gold Coast, Australia, August 12–18
- Malleson, R., Asaha, S., Sunderland, T., Burnham, B., Egot, M., Obeng-Okrah, K., Ukpe I., And Miles, W., 2008. A Methodology for Assessing Rural Livelihood Strategies in West/Central Africa: Lessons from The Field. Vol. 4, No. 1 *Ecological and Environmental Anthropology*
- Melkamu and Kwasi B, 2005 Estimation of agricultural resource inequality in India using Gini coefficient approach
- MoFED, 2010.Growth and Transformation Plan (GTP) 2010/11-2014/15. FDRE, Ministry of Finance and Economic Development
- Oni, O., Nkonya, E., Pender, J., Phillips, D and Kato, E., 2009. Trends and Drivers Of Agricultural Productivity in Nigeria. Nigeria Strategy Support Program (NSSP), Report 001
- Place, F. (2002) Land Markets in Sub-Saharan Africa: Preconditions, Potentials And Limitations.
- Salami, A., Kamara, A., and Brixiova, Z, 2010. Smallholder Agriculture in East Africa: Trends, Constraints and Opportunities, Working Papers Series No. 105, African Development Bank, Tunisia
- Sharada Weir, 1999. The Effects of Education on Farmer Productivity in Rural Ethiopia
- Soini, E., 2006. Livelihood, land use and environment interactions in the highlands of East Africa. *Academic dissertation* Department of Geography, Faculty of Science University of Helsinki
- Tittonell, P. Vanlauwe, B., De Ridder, N., Giller, K., 2007.Heterogeneity of Crop Productivity And Resource Use Efficiency Within Smallholder Kenyan Farms: Soil Fertility Gradients or Management Intensity Gradients? *Agricultural Systems* 94, Pp. 376–390
- Zemen, H. G. 2013. Towards Improved transaction of land use right in Ethiopia. Annual World Bank conference on land and poverty. Washington DC, April 8-11, 2013