

*Full Length Research Paper*

## Drivers of household participation in land rent-out market: Evidence from Amigna District, Arsi Zone, Ethiopia

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This research is attempted to understand drivers of household decision to participate in land rent-out market. Using data from 88 farm households surveyed in 2009 the paper tested for factors that affect the degree and extent of households' participation in the rural land rental market. Result of the Tobit model revealed that landholding size, and age of the household heads are important variables which had positive and significant influence on participation and intensity of participation in land renting-out market. The result further explained that less oxen ownership and older households are more likely in renting-out their land. This implying that rental market helps to facilitates adjustments in farm size in order to meet emerging current needs of young households and enabling smooth replacement of older generations. The analyses figured-out that the liquidity of land renting-out market is hampered by insecurity of tenure in arranged rental land market. The twin effects of land tenure insecurity and poor infrastructure development cause farms to operate below optimal level. Therefore, it would thus be desirable for the government to improve the regulatory framework for the land rental market to operate efficiently; and development interventions should give emphasis to strengthening infrastructural development so as to enhance well functioning dynamic land rental markets in the district.

**Key words:** Land rent-out, tenure security, drivers to land markets.

### INTRODUCTION

A historical survey of the land tenure system in Ethiopia revealed that since the 1975 radical land reform, all rural land have been owned by the state. The reform brought to an end the exploitative type of relationship that existed between tenants and landlords. Tenants become own operators with use rights, but with no right to sell, mortgage, or exchange of land (Demeke, 1999). The common practice was to allocate land considering the number of household members (Dessalegn, 1984; Yigremew, 1997; Abebe, 2000). Other factors such as quality of land, size of family workforce and ownership of

farm assets, which have a 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 land per household, but with significant variations in factor intensity, such as land per adult labor, land per oxen, and land per working capital. As a result the ability to meet the growing demand for land, especially their capacity to balance factor proportions at farm level was limited (Teklu and Bedassa, 2002).

After the fall of the military government in 1991, the rural land policy and administration continued in the same

direction state ownership of land regardless of its announcement of free market economic policy (Belay, 2004). Land is a common property of the nations, nationalities, and people of Ethiopia and shall not be subject to sale or other means of exchange (FDRE, 1995). It also stated that Ethiopian peasants have the right to obtain land without payment and the protection against eviction from their possession (Article 40 sub-article 4). Another important provision about property rights is sub-article 7 which says that “every Ethiopian shall have the full right to the immovable property he builds and to the permanent improvements he brings about on the land by his labor or capital. This right shall include the right to alienate, to bequeath, and where the right of use expires, to remove his property, transfer his title, or claim compensation for it.”

The constitution provides the Federal Government shall enact laws for the utilization and conservation of land and other natural resources and Regional Governments have the duty to administer land and other natural resources according to the Federal laws. The land use and administration proclamation (No.56/2002) of Oromia declares provision of land certifications to holders and limits distribution/redistribution of land to only certain specified categories of land. Similarly the proclamation permits for land leasing, which is a significant change compared to the *derg's* land policy, but the leasing period is restricted: Leasing-out of up to half of the landholding for up to 15 years if modern technologies<sup>1</sup> are used and up to three years if modern technologies are not used. Cash rental and sharecropping have again become common in the region.

Following this policy reform, farmers started to participate in land rental transactions. Evidence of study conducted by Abayineh and Fekadu (2012) showed that land rental transaction was widely practiced and it was the preferred contract in Amigna district agriculture. This is increasingly important due to the fact that the growing population in the area created increasing pressure on land and opportunities of getting land for allocating to newly emerging households are quite limited. As a result of increasing population of young farmers who are often landless, there will be unbalanced resource endowment (Bezabih et al., 2005). It is also felt that in area where no frequent land redistribution (in the study area there has been no general land redistribution since 1991), there is a skewed landholding pattern that might have resulted in landlessness (Bruce, 1994). The cumulative effect of skewed landholding pattern, heterogeneity in resource endowment, and uncertainties and limitations in credit and other markets, called as missing or incomplete non-land markets (Teklu, 2004), drive farmers to use these land markets as a substitute for missing or incomplete factor markets such as credit, oxen, and labour markets (Belay and Manig, 2004). In such circumstances land rental markets can play an important role in improving

land use and access to those in need (Deininger and Binswanger, 2001).

Generally, the existing empirical literature (Amare, 1998; Gebeyehu, 1999; Ahmed et al., 2002; Bezabih et al., 2005) on land rental transaction in Ethiopia is dominated by studies conducted on the impact of land rental market for efficient use of land for increasing agricultural production and impact on the amount of land allocated to high value crops and food crops. Therefore, this research is interested in understanding drivers of household decision to participate in land rent-out market, which include the characteristics of households' resource endowment, land tenure security; household characteristics; and formal and informal institutions; and probe how these characteristics affect the rural land rent-out market.

## METHODS AND DATA

### Sample size and method of sampling

The research design was based on a multi-stage sampling procedure. In the first stage, among the 19 peasant associations found in the district, four PAs with similar agricultural production systems and fairly similar access to major road and urban centers were selected purposively based on information from Amigna Bureau of Agriculture and Rural Development and others institutions found in district offices. In the second stage, households in the selected Peasant Association's were listed down and stratified by whether the households hold any Peasant Association allocated farmland in a prior land distribution or not. This was done with intention to include landless<sup>2</sup> households in the district; hence households are registered even with homestead land. Lack of registered participants in land rental markets forced researcher to stick to the above stratification. In the last stage, a total of 118 sample households were selected randomly using probability proportional to sample size technique. From the total of 118 sampled households, 44.9, 29.7 and 25.4% was found to be non-participated in any land market, participated in land rent-in, and participated in land rent-out market respectively. For the purpose of this study, a comparative analysis was done only between households participated in land rent-out and households that do not participated in any land market.

### Data sources and method of data collection

Both primary and secondary data were gathered and used for this study. Secondary data was collected from different stakeholders particularly from the Amigna Bureau of Agriculture and Rural Development office of the district, cooperative office and others who are supposed to have relevant information for this particular study. Primary data was collected from the sampled respondents on diverse sets of issues such as household characteristics, farm characteristics and tenure related issues in which farmers operate and all other variables hypothesized to influence participation and intensity of participation in land rental market using interview schedule. The interview schedule was pre-tested prior to conducting the formal survey by administering it to selected

<sup>1</sup> It refers mechanized production methods

<sup>2</sup> Landless in this study context refers to households who have registered only for homestead land. However, the research fails to address unregistered households in the district i.e. those who have no Peasant Association allocated land and not eligible to pay tax.

respondents. On the basis of the results obtained from the pre-test, necessary modification were made on the interview schedule. Training on methods of data collection and the contents of the interview schedule was given to selected enumerators. The survey was conducted under the close supervision of the researcher.

Due to the nature of this study, quantitative data took a larger share of information required. However, to have detail information useful to draw the right conclusion from the survey work, qualitative information was also gathered from selected respondent farmers, development agents, and community leaders. Collection of primary qualitative information was managed through holding discussion with focused group and individual farmers to understand the source of access to farmland, and the link between access to farmland and other important factors such as availability of credit, and tenure security.

**Methods of data analysis**

Both descriptive and econometric analyses were employed using the primary data to meet the objective of the study. Hence, descriptive statistics such as chi-square test and t-test were used for dummy and continuous variables, respectively. Tobit model was used to analyze the determinants and intensity of households' participation in renting-out land. The model assumes that many variables have a lower or upper limit that is known as threshold value and take on this limiting value for a substantial number of respondents. In the case of this study, the threshold value is zero that is the value assigned for non-participant sample respondents in land rental transactions. For the remaining sample respondents the variable(s) takes on a wide range of values above the limit.

There are several occasions where the variable to be modeled is limited in its range. Because of the restriction put on the values taken by the regressand, the Tobit model called limited dependent variable regression model. When information on regressand is available for some observation, using Ordinary Least Square (OLS) may result in a biased and inconsistent parameter estimates. The bias arises from the fact that if one consider only the observable observations (that is, only observations for which the values of the dependent variable are observed) and omit the others, there is no guarantee that the expected value of the error terms, E(ui) will be necessarily zero. Moreover, without E(ui) = 0 we cannot guarantee that OLS estimate will be unbiased. It is intuitively clear that if one estimates a regression line based on the observed values only, the resulting intercept and slope coefficients are bound to be different than if all the observations were taken in to account (Greene, 2000). In this study from a total of 88 sample households 35 households are participated in land rental transaction while the rest (53) did not. Because of the significant observations on dependent variable having a value zero, proceeding with OLS estimation procedure will result in biased and inconsistent estimates. In such cases we need to go for a censored regression model.

Tobit model is an extension of probit model and it is one of the approaches dealing with the problem of censored data (Johnston and Dandiro, 1997). Tobit model is superior to other dichotomous regression models (Logistic and Probit) in that the later only attempts to explain the probability of renting-out or not of land by the farm households rather than the intensity or extent of renting. However, knowledge that a farmer is renting-out his or her land may not provide much information about the quantity of land he/she transacted because the farmer may rent-out only some part of his or her land and may also do this on 1 or 100% of his/her farm. Strictly dichotomous variable often is not sufficient for examining the extent and intensity of renting-out land (Feder et al., 1985).

**Specification of the Tobit model**

The econometric model (Tobit model) applied for analyzing

determinants of farmer's decision to rent-out land and intensity of land transaction is shown in Equation (1). Following the analogy used by Maddala (1992), Amemiya (1985), and Johnston and Dinardo (1997), the Tobit model can be specified as:

$$\begin{aligned}
 Y_i^* &= \beta X_i + u_i \quad i = 1, 2, \dots, n \\
 Y_i &= Y_i^* \quad \text{if } Y_i^* > 0 \\
 &= 0 \quad \text{if } Y_i^* \leq 0
 \end{aligned}
 \tag{1}$$

where,  $Y_i$  = the observed dependent variable, in this case is the area of land (in ha) transacted per household.  $Y_i^*$  = the latent variable which is not observable.  $X_i$  = vector of factors determining household participation in land rental markets and intensity of land rental markets.  $\beta_i$  = vector of unknown parameters to be estimated.

$u_i$  = residuals that are independently and normally distributed with mean zero and a constant variance  $\sigma^2$ .

The Tobit model shown above is also called a censored regression model because it is possible to view the problem as one where observations of  $Y^*$  at or below zero are censored (Johnston and Dinardo, 1997). The model parameters are estimated by maximizing the Tobit likelihood function of the following form (Amemiya, 1985; Maddala, 1997):

$$L = \prod_{Y_i^* > 0} \frac{1}{\sigma} f\left(\frac{Y_i - \beta_i X_i}{\sigma}\right) \prod_{Y_i^* \leq 0} F\left(\frac{-\beta_i X_i}{\sigma}\right)
 \tag{2}$$

Where  $f$  and  $F$  are respectively, the density function and cumulative distribution function of  $Y_i^*$ .  $\prod$  mens the product over those  $i$  for  $Y_i^* \leq 0$

which  $Y_i^* \leq 0$ , and  $\prod_{Y_i^* > 0}$  means the product over those  $i$  for which  $Y_i^* > 0$ .

An econometric software known as "STATA" was employed to run the Tobit model. It may not be sensible to interpret the coefficients of a Tobit in the same way as one interprets coefficients in an uncensored linear model (Johnston and Dinardo, 1997). Hence, one has to compute the derivatives of the estimated Tobit model to predict the effects of changes in the exogenous variables. Large body of literatures (Maddala, 1997; Johnston and Dinardo, 1997; Nkonya et al., 1997), proposed the following techniques to decompose the effects of explanatory variables into renting and intensity effects. Thus, a change in  $X_i$  (explanatory variables) has two effects. It affects the conditional mean of  $Y_i^*$  in the positive part of the distribution, and it affects the probability that the observation will fall in that part of the distribution. Similar approach is used in this study.

1. The marginal effect of an explanatory variable on the expected value of the dependent variable is:

$$\frac{\partial E(Y_i)}{\partial X_i} = F(z) \beta_i
 \tag{3}$$

Where,  $\frac{\beta_i X_i}{\sigma}$  is denoted by  $z$ , following Maddala (1997).

2. The change in the probability of renting land as independent variable  $X_i$  changes is:

$$\frac{\partial F(Z)}{\partial X_i} = f(z) \frac{\beta_i}{\sigma}
 \tag{4}$$

3. The change in intensity of land rental with respect to a change in

an explanatory variable among participants is:

$$\frac{\partial E(Y_i / Y_i^* > 0)}{\partial X_i} = \beta_i \left[ 1 - Z \frac{f(z)}{F(z)} - \left( \frac{f(z)}{F(z)} \right)^2 \right] \quad (5)$$

Where,  $F(z)$  is the cumulative normal distribution of  $Z$ ,  $f(z)$  is the value of the derivative of the normal curve at a given point (that is, unit normal density),  $Z$  is the z-score for the area under normal curve,  $\beta$  is a vector of Tobit maximum likelihood estimates and  $\sigma$  is the standard error of the error term

### Definition of variables and working hypotheses

The dependent variable is the area of land rented- out measured in hectare. As observed in different empirical studies this variable can be expressed in terms of ratio, actual figure and log form depending on the purpose of the study. For example, in their study of factors affecting entry and intensity in informal rental land markets, Teklu and Lemi (2004) considered area of land rented-in and rented-out as the dependent variable of the Tobit model. In this study, the total area of land (in hectare) the farmers transacted in 2009 was taken as the dependent variable.

Farmers' decision to rent-out land and the intensity of land rental markets in a given period of time was hypothesized to be influenced by a combined effect of various factors such as household characteristics, farm characteristics and institutional factors in which farmers operate. Brief explanation of the selected explanatory variables is presented as follows:

#### **Size of landholding (LANDHOLD)**

This refers to the area of land the households hold in hectare. The size of the land under disposal of the household is a key variable affecting the decision whether a farmer should rent-out land or not. The probability and intensity of renting-out land has a positive relation with size of landholding (Tikabo et al., 2007). It was, therefore, hypothesized that as the size of the holding of land increases, the probability and intensity that the farmer rent-out land was expected to increase.

#### **Age of the household heads (AGEHH)**

It is a continuous variable measured in years. As the population increases rapidly, the pressure on land and the demand for it increases. As a result it would be difficult for the PA administration to fully accommodate the rising demand. The young and the newly married farmers should either shift their career to other sectors or involve in land transaction to engage in agricultural production. However, the chance of shifting to other sectors is limited (Bezabih et al., 2005). Households with old age of the household head were significantly more likely to rent out land (Tikabo et al., 2007). It was, therefore, hypothesized that the age of the household head and the probability and intensity of renting-out land is positively associated.

#### **Family size (TOTALFAM)**

Family size in this study refers to the number of members who are currently living within the family. Large family size is an indicator for availability of labor provided that the majority of the family members are within the age range of active labor force. Moreover, as the family size increases, the demand for food production increases.

Unless yield increasing inputs are used, land size has to increase with increasing family size if the food consumption of the family to be met (Bezabih et al., 2005). Moreover, the survey of Belay (2004) revealed that lack of labor was the reason cited by the respondents for renting-out land. Thus, it was hypothesized that family size negatively affects the decision to rent-out land.

#### **Number of oxen owned (OXEN)**

It is a continuous variable that refers to the number of oxen the respondents owned in 2009 measured in tropical livestock unit. Lack of traction power is one of the reasons why households rent-out their holding (Belay, 2004). Lack of draught power and probability and intensity of renting-out land was positively associated.

#### **Sex of household head (SEXHH)**

Refers to sex of the head of the household having a binary value. If the household head is male, it takes a value of 1; 0 otherwise. In most case males are more endowed with farm resources than females. It was therefore, female-headed households are more likely to rent-out land.

#### **Access to credit (CREDIT)**

It is a dummy variable, which takes the value 1 if the farm household access to credit and 0 otherwise. Credit is considered as an important source of investment and helps to improve livelihood strategies of households, and households who have better access to credit can have better investment in preferred livelihood strategies which in turn reducing income poverty (Yared, 1995; Belay and Manig, 2004). In this study, it was hypothesized that credit service has negative influence on the decision to rent-out land.

#### **Extension contact (ADVISRY)**

It is a dummy variable, which takes the value 1 if the farm household access to advisory service by the development agent(s) and 0 otherwise. It is supposed that such contacts prompt the farmer to take measures that would increase production. As one way to increasing productivity, the farmer is supposed to take measure of land renting. Hence advisory service itself would have negative influence on the land rent-out.

#### **Education level of the household heads (EDUHH)**

It is a categorical variable representing illiterate, read and write, grade 1-4, grade 5-8, and above grade 8 of the household heads. Basically education improves the decision making of individuals. Education of the household head reduced the probability that households rented- out land (Tikabo et al., 2007). This is probably is due to the fact that agricultural productions require managerial abilities. Education was therefore expected to negatively influence participation and intensity of participation in land renting-out.

#### **Distance of household home from market access (DISFCMAR)**

It is a continuous variable measured in hours and refers to distance of the farmer's house from the district (main) market. Lack of proximity of district (main) market to the farmer's house shows

**Table 1.** Differences of continuous explanatory variables between renting-out and not renting-out households.

Variable	No renting of land (N=53)	Renting-out land (N=35)	t-value/ $\chi^2$	Sig. value
	Mean	Mean		
Size of land holding (ha)	1.769(0.485)	2.546(0.769)	-5.001	0.000
Farm land cultivated (ha)	1.769(0.485)	1.717(0.636)	0.420	0.675
Age of the HH (year)	47.377(11.560)	60.767(5.456)	-7.143	0.000
Total family size	6.038(1.687)	6.133(2.113)	-0.226	0.822
Distance to the main market	28.491(11.668)	30.333(12.589)	0.672	0.504
Oxen owned (TLU)	2.736(1.211)	0.833(.699)	9.073	0.000
Education status <sup>+</sup>			13.48	0.036
Sex of HH <sup>+</sup>			2.192	0.139
Access to credit <sup>+</sup>			0.044	0.834
Tenure security <sup>+</sup>			39.925	0.000

\*Figures in parenthesis refer to standard deviation; <sup>+</sup> refers to dummy variables. Source: Own Survey, 2009.

limited access to the main market system to sell output (Legesse, 2001; Teklu and Lemi, 2004; Tikabo et al., 2007). It was therefore, hypothesized that lack of proximity to the main market is positively correlated to the decision of rent-out land.

#### **Degree of perception of security of tenure (REMAINFU)**

It is measured by duration in which the households hold their holding. New research suggests that insecurity of property rights is a key constraint on land rental market (Alston et al., 1999; Macours et al., 2001; Deininger and Jin, 2005). It was hypothesized that volume of trade (renting-out) is negatively affected where there is a strong perception of insecurity of tenure.

## **RESULTS AND DISCUSSION**

### **Descriptive analysis**

#### **Characteristics of participant and non-participant households in land rental markets**

Attempt was made to investigate differences of explanatory variables emanated from farm characteristics, household personal and demographic factors, and institutional factors reflected in selected variables between participant and non-participant households in land rent-out market. For this purpose, the above hypothesized variables were selected for descriptive analysis.

**Landholding and land cultivated:** On average households renting-out land hold more land (2.55 ha) than households not participating in land rent-out market (1.77 ha). The average landholding of participant in land renting-out is significantly larger than households not participating in land rental market ( $t = -5.001$ ;  $p < 0.01$ ). This result showed landholding size of the sample respondents significantly influenced their decision of participation in land rental market. However, in terms of

land cultivated, those renting-out end up cultivating about 1.72 ha of land which is comparable to those who not participating in rental activity (Table 1). This result is consistent with argument of previous study conducted by Deininger et al. (2004) who reported rental market appears to exchange cultivable land which confirms the adjustment mechanism by households to their factor endowments that are imperfectly tradable. In other word, land transactions play an important role in providing land access to those who are productive but hold little or no land.

**Age of the household head:** Very significantly (at less than 1%), the mean age is highest for those respondents renting-out their land than respondents not supplying their land to rental market. To this end, the reason may be due to the fact that household heads participating in renting-out land were probably retired in order to cultivate all of their farm plots.

**Oxen ownership:** On the supply side of land rental market, there is a statistical differences ( $t = 8.989$ ;  $p < 0.01$ ) in the distribution of oxen ownership between households renting-out their parcels of plots to others and not renting-out their farmland. The latter owned about three times as many oxen as renting-out counterparts. Not surprisingly, the analysis of the survey data on oxen ownership revealed highly significant difference ( $t = 9.073$ ;  $p < 0.01$ ) between households renting-out farmland and not.

**Family size:** Households engaged in renting-out land had on average 6.13 members. Turning to household composition, households that rent-out land had on average 2.8 members aged below 15. On average those not participating in land market activities had 2.86 family members below 15. In terms of labor endowment, those aged between 15 and 65 years, there is no difference between the two groups. Moreover, for those aged over 65, there is no difference between participants and non-

**Table 2.** Definition and measurement of variables used in the model.

Variable	Description	Variable type	Value
<b>Dependent variable</b>			
Y1=ROUTLAND	Area of land rented-out	Continuous	Measured in hectare
<b>Explanatory variable</b>			
X1=EDUHH	Education of HH	Categorical	Measured as illiterate, literate, grade 1-4, grade 5-8, and above 8
X2= SEXHH	Sex of HH	Dummy	Takes a value of 1 if male, 0 other wise
X3=CREDIT	Access to Credit	Dummy	Take a value of 1 if the response is yes , 0 otherwise
X5=LANDHOLD	Area of total landholding	Continuous	Measured in hectare
X6= AGEHH	Age of the HH	Continuous	Measured in years
X7= LIVESTOC	Livestock ownership without oxen	Continuous	Measured in Tropical Livestock Unit
X8= OXEN	Oxen ownership	Continuous	Measured in Tropical Livestock Unit
X9=TOTALFAM	Total family size	Continuous	Measured in numbers
X10=CERTIFC	Having land use certificate	Dummy	Take a value 1, if response is yes and 0 otherwise
X11=DISFCMAR	Walking distance from household home to main market	Continuous	Measured in hours

participants in land rent-out market.

**Education level of the household head:** On the other hand, households participated in land renting-out took large share from a low level of educational attainment as compared with not renting-out households. The surface reading of the result confirmed that more educated sample farmers are less likely in supplying their land to rental market. This is more probably due to the fact that education helps to enhance individuals' managerial abilities for their agricultural activities. The finding of this study is in agreement with many of the previously conducted studies. For example, Bezabih et al. (2005) and Tikabo et al. (2007) have reported positive and significant influence of education in participation in land rent-in market.

**Duration of landholding:** Tenure insecurity in Ethiopia could not only be triggered by farmers perception about landholding system good or bad. Farmers were asked whether or not they feel that their land holdings will remain with them indefinitely in the future. This question is meant to solicit farmers' perception of tenure security in terms of duration. The result showed strong statistical significant difference ( $\chi^2=39.925$ ) at less than 1% significance level between households rent-out and not rent-out their farm plots with regard to duration of landholding. This result is derived from the fact that much proportion of sample respondents who rent-out their farm plots are sure that their plots of farmland remain with them in the future. On the other hand, limited level of tenure security constrains households from supplying

their land to land rental market.

### ***Econometric analysis***

Looking at descriptive statistics just presented above allows one to spot the main differences between households renting-out and those not participating in rental transactions at all. However, presented figures are group averages. Therefore, there is a concern that they may build up a picture, which would not be too precise. Hence, in order to get more reliable and accurate description of determinants and intensity of household participation in the rental markets, an econometric model was used. Definition and measurement of variables used in the model is presented in Table 2. The major objective of this here is to identify important socio-economic variables, and institutional factors that affect smallholder farmers' decision to participate and intensity of participation in land rent-out market.

### ***Determinants of renting-out land***

The Tobit model estimated results of the variables that were expected to determine the probability of households' participation in land rent-out market. Among the eleven hypothesized explanatory variables, five variables are found to significantly affect participation in land rent-out. Area of landholding, age of the household head, oxen ownership, tenure security, and distance of household home from main market are found to be

**Table 3.** Maximum likelihood estimates of Tobit model for land renting-out.

Dependent variable				
Yi=ROUTLAND				
Variable	Estimated coefficients	Standard error	t-Ratio	Change in probability of participation
constant	-1.8096	0.50229	-3.60***	-
EDUHH	0.01690	0.04820	0.35	0.01771
SEXHH	-0.00802	0.10299	-0.08	-0.00834
CREDIT	-0.02253	0.08790	-0.26	-0.02357
CERTIFC	0.01041	0.10464	0.10	0.01087
REMAINFU	0.29353	0.13709	2.14**	0.30761
LANDHOLD	0.21761	0.05926	3.67***	0.22805
AGEHH	0.01592	0.00626	2.54**	0.01669
OXEN	-0.15341	0.05418	-2.83***	-0.16077
TOTALFAM	0.00539	0.02290	0.24	0.00565
DISFCMAR	0.01130	0.00430	2.63**	0.11844
Log likelihood ratio	-8.10413			

\*\* and \*\*\* represent significance at <5 and 1% probability levels respectively; Source: Own Survey, 2009

significant variables affecting the probability and intensity of participation in land rent-out. All the significant explanatory variables that determine household participation in land rent-out have the expected signs (Table 3).

Land endowment significantly affects the likelihood of renting-out in the positive direction at 1% significance level. The result revealed a hectare increase in landholding of the household heads, would increase the probability of their participation in land rent-out by 22.8%. Households with large landholding have higher probability of renting-out their land. A possible explanation might be that households with relatively large landholding do not tend to specialize in agricultural production and therefore do not want to maintain their farm size.

As hypothesized, the regression coefficient of age of the household head positively influenced probability of participation in land rent-out. Households with old age of the household heads are significantly (5% significance) more likely to rent-out their land. The regression result indicated that a year increase in the age of the household heads would increase probability of supplying their land to land rental market nearly by 1.7%. The reason may be due to the fact that household heads participating in renting-out land are probably retired in order to cultivate all of their farm plots.

Oxen ownership is also another factor which negatively affected probability of participation in land rent-out market at 1% significant level. The result revealed, a unit (TLU) increase of oxen ownership will decrease the probability of participation in land rent-out by about 16%. Similarly speaking, household's poor in this non-land factor more likely tend to rent-out their land. This indicated that adjustment in the land rental market is a response to

imperfection in the markets for oxen traction. An increase in oxen ownership reduces the need to rent-out land. This is due to the fact that as number of oxen owned increases, farmers are more willing to work on their farms.

The rental land markets are thriving in areas with developed rural infrastructure and markets, and commercialized agriculture. Distance of household home from main market of the district had positive and significant effect in participation of land rent-out market at 5% significance level. As distance of households home increased by one hour long from market access, the probability of participation in land rent-out will increase by nearly 11.9%. The possible reason might be that poor infrastructure development reduces incentive of sample farmers to produce surplus production to supply to the markets. The finding of this study is in line with the study conducted so far on land rental markets. For example, study conducted by Tikabo et al. (2007) indicated that the behavior of farmers to rent-out their land is significantly influenced by their proximity to market access.

Probability of participation in land rent-out market is positively influenced by tenure security<sup>3</sup> at 5% significance level. The positive and significant coefficient on a dummy for whether or not the head hold his/her land indefinitely in the future provides strong support for the notion that households with more tenure security may be more likely to rent-out. The result shows that making a household head to perceive he/she will hold his/her land indefinitely in the future will increase the probability of participation in land rent-out by 30.8%. In fact this requires institutional reform concerning land tenure

<sup>3</sup> This issue is not a concern for tenants; tenure security would be expected to be an issue only for landlords wanting to rent-out their land (Teklu, 2004).

**Table 4.** The effect of change of explanatory variables in intensity of participation in land renting-out.

Dependent variable		
Y2=ROUTLAND		
Variable	t-Ratio	Change in intensity of participation
EDUHH	0.35	.00345
SEXHH	-0.08	-.00163
CREDIT	-0.26	-.00459
CERTIFC	0.10	.00212
REMAINFU	2.14**	.05984
LANDHOLD	3.67***	.04436
AGEHH	2.54**	.00325
OXEN	-2.83***	-.03127
TOTALFAM	0.24	.00110
DISFCMAR	2.63**	.00230

\*\* and \*\*\*represent significance at <5 and 1% probability levels respectively. Source: Own Survey, 2009.

security. This confirms the hypothesis that households who enjoy land tenure security tend to rent-out part of parcels of his/her farmland. The result of this study is in agreement with the findings of many authors. For instance, Alston et al. (1999), Macours et al. (2001), and Deininger et al. (2004) reported that tenure insecurity reduced farmers incentives to supply their farmland to land rental market.

#### **Intensity of household participation in land renting-out**

The result of Tobit model that demonstrate the influence of significant explanatory variables on the degree of household participation in land rent-out market is presented here. Since the variables that determine area of land supply to land rental market are believed to have different level of influence, five variables are found significantly influencing the action arena (area of land rent-out) and summarized in Table 4.

Area of landholding is significant (at 1% significance level) variable that positively influenced area of land supplied to rental market by the household. On the average an increase in the area of landholding by a hectare will increase the area of rent-out land by 0.044 ha. In other saying, those with large area of land endowment tend to rent-out more land, in line with the above hypothesis.

Age of the household head is another important variable that affected the decision of respondents on the extent of land they supply to rental land market. It affects area of land rent-out significantly and positively at 5%

significant level. The coefficient of the model revealed that a unit (year) increase in the age of the household heads will increase the area of land rent-out by 0.003 ha. This may be due to the fact that older individuals might not be physically capable and have less motives to farm the land themselves.

Oxen ownership determined the area of land rent-out significantly at 1% in the negative direction. The result revealed that a 1 unit increase of oxen ownership will decrease the area of land supplied to rental market by 0.031 ha. This is consistent with the argument that lease markets in oxen services do not function well. Thus, as suggested in reviewing the descriptive data, the land rental market is helping to exchange oxen per unit of landholding.

The effect of change in land tenure security in the intensity of participation in land rent-out is 0.0598. This is to say that if the households perceive their landholding will remain with them indefinitely in their life, the area of land supplied to rental market will increased by 0.0598 ha. It appears therefore that ensuring land ownership right will made household heads more willing to rent-out their land.

Distance of the households' home from the main market positively affected household intensity to rent-out land. The result revealed a 1 unit (hour) increase in walking distance from their home to the main market would increase the area of land rent-out by 0.0023 ha. A possible explanation that has been used to account for the positive influence of distance on area of rent-out land is poor infrastructure development might reduce farmers' incentives to cultivate on their farm. This result supports the finding so far conducted by Leggesse (2001) and Teklu and Lemi (2004).

#### **CONCLUSIONS AND POLICY IMPLICATIONS**

Land rental markets are emerging in an environment of skewed landholding pattern. It is learnt that transactions in these markets tend to reduce disparity in the distribution of area of landholding. This indicated that this market provide a venue for short-term land acquisition for landless and nearly landless farm households from large landholding households.

The finding also showed that age of the household heads is significant determinant of both participation and intensity of participation in land rental markets. Older households are more likely renting-out their land where as younger households not. The possible reasons for this is older households are probably retired (while younger not) to cultivate their farm land effectively. In this study, the possible lesson learnt is that the existence of land rental markets would serve as alternative venue in which land transferred to the next generations with different needs and capacities in managing farms particularly in area where land redistribution was prohibited. Another important lesson derived from this study is that the



presence of dynamic land rental markets tends to correct imbalance in oxen ownership per their landholding for both land constrained but oxen rich households and large landholding but oxen constrained households.

As often stated in land tenancy theory, tenure security increase farmers confidence to supply their land to land rental market to more efficient users who are well endowed with production factors such as capital and labor but land constrained. In practice, although current reform helped to increase the security of land use rights and improves functioning of land markets (land use certification even if statistically not significant), tenure insecurity remains an important concern voiced by survey respondents. Consequently, the benefits from land rental may be reduced or entirely forgone if concerns about tenure security lead households to refrain from participating in land rental or to limit transactions to relatives, implying that additional efforts to increase tenure security may have a beneficial impact on land rental markets. Such measures would be particularly important as a secular increase in the willingness of households' participation in land transaction. To ensure such incentives, ways to increase security of land ownership and institutional arrangements allowing (longer-term) land transfers will be needed.

Analysis of the survey data demonstrates a significant and positive effect of distance of households' home from the main market access on the area of land rent-out. This appears to have reduced incentives of farm households cultivating on their landholdings to produce surplus production to supply for the markets. This is therefore; developing physical infrastructures will have a momentum for the emergence of dynamic land rental markets.

Generally the evidence on determinants and intensity of participation in land rental markets shows that development of physical infrastructure, improved accessibility of credit market, and secured land tenure rights favor expansion of land markets in future. Moreover, the emergence of dynamic land rental markets compliment the role of administrative based land allocation that lack addressing continuous access to farmland and exchange factor proportions.

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