

Determinants of Coffee Growers' Choice of Financing Options: The Case of Dale District, Sidama Zone, Ethiopia

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Abstract

The study assessed determinants of coffee farmers' choices of financial options in Dale district. The study followed multistage simple random sampling method. Data collected from 162 coffee producing households in Dale district were used. Descriptive statistics for summarizing the socioeconomic and demographic characteristics of coffee producing households and multinomial logit model to analyze the determinants of farmers' financing source choices were used. According to descriptive statistics finding, education level of the household head, total livestock owned by the household, total land holding and land covered by coffee, average annual coffee supply of household, households past loan experience, membership to SACCOs, holding saving account and local administrative role of the household head shows statistically significant difference among households choice of financing options. The multinomial logit analysis result shows that, compared to financial institution (base category), household's livestock holding and households' proximity to financial institution positively affects the use of equity financing, whereas house heads' sex, holding a saving account, affiliation to local administration and past loan history negatively affects the use of equity financing. While holding a saving account, house head's age and affiliation to local administration negatively affects the choices of value chain financing. Households' total livestock holding found to positively affect choice of value chain financing and other informal sources of finance than financial institutions. Conversely, holding a saving account, total land holding of the household and affiliation to a local administration are found to negatively affect the choice of other informal sources of financing than financial institutions. The study suggests that mounting of financial institutions; overcoming the bureaucracy and transparency problems of government owned financial institutions; provision of financial information and awareness creation for chain actors will improve the farmers' financial choice decision.

Keywords: Sidama coffee, financing sources choice, value chain financing, MNL, Dale district,

Introduction

Coffee is the world's second most traded commodity after crude oil. It ranks high among the most important agricultural commodities traded in international markets, both in terms of volume and value. Coffee is a labor intensive business in which over 100 million people were engaged in around the world (ICO, 2010).

Coffee plays a significant role in the world's poverty reduction, as over 25 million smallholder farmers all over the world directly depend on it for their livelihood. African countries account for 13% of global coffee production. Among them Ethiopia is the largest coffee producing country, with 90% of coffee produced on smallholder farms. Coffee has been and remains the leading cash crop and export commodity of Ethiopia. It has accounted on average for about 5% of gross domestic product (GDP), 10% of total agricultural production and 60% of total export earnings for the past three to four decades (Zerihun, 2008; Mekonen, 2009; Almseged and Yeabsera, 2014).

Among the places where coffee is largely produced in Ethiopia, Sidama Zone is one of the leading ones. From 2009-2011, Sidama coffee was exported in large quantities accounting for 28.82, 33.97 and 25.35 percent of the national share, respectively. Similarly, in value terms Sidama coffee took a share of 34 percent followed by Jimma coffee (south west part of Ethiopia) which accounts for 21 percent in the indicated period (ECEA, 2012). Majority of Sidama zone population have based their daily life on coffee production and coffee related business, which is dominated by traditional production and business system. Despite this, the production and productivity are constrained by different farm input related problems, of which finance is the major one. To be competent and profitable in this globalized world, the adoption of technology is incontestable and this can be done by using finance as a best weapon. But agricultural financing is not an easy task especially in developing countries like Ethiopia (Amare, 2005).

Farmers use different agricultural financing source to overcome their farming (input, marketing and so on) problems. Agricultural finance is a sectoral concept which comprises financial services for agricultural production, processing and marketing, such as short, medium and long-term loans, leasing, and crop and livestock insurance (GIZ, 2011a).

According to theoretical literatures, depending on the source, structure, governance and other qualitative characteristic, agricultural financing options can be classified into different forms: finance from own capital

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(equity financing), from financial institutions or from trade partners (input suppliers providing credit for producers or lead firm financing a marketer) known as value chain financing or from other informal sources like relatives and friends. Financial institution (FI) as a source of agricultural financing can be formal like Bank, MF, insurance, semiformal like SACCOs, in which agricultural stakeholders benefit financial services directly from the institutions regardless of their trade or agricultural relationship with other farmers or agricultural business participants. When farmers or agricultural stakeholders obtain financial service from any source as a result of their business relationship gives us the third forms of agricultural financing option called value chain financing (KIT and IIRR, 2010; Calvin and Linda, 2010; Jeremy, et.al, 2010; Mike, 2011).

Finance is the backbone of any business undertaking, and access to it is the main problem faced by Ethiopian farmers and the same holds true for Sidama coffee farmers. Coffee in Ethiopia plays a crucial role by contributing more than 60% of the foreign exchange earnings, creating large job opportunity and contributing to the GDP (Zerihun, 2008). Hence, creating a favorable play field for farmers to finance their farm is indispensable. Given different financing options and their respective characteristics, farmers are forced to choose one or more of the available options which are better off to them. Thus, the present study thrives to uncover what determines the farmers' financing source choice decisions.

Objectives of the study

The general objective of the study is to assess the determinants of coffee growers' choices of agricultural financing option. The specific objectives are 1) to assess the difference among socioeconomic and demographic characteristics of household on choices of financing options 2) to examine factors determining household's choices of agricultural financing options in the study area.

Methodology

Methods of Data Collection

Data was collected from coffee producing farmers' in Dale district those who are producing Sidama coffee. Data which mainly focus on how farmers' finance their coffee farm and what determined their financing source choices were collected, three purposively selected coffee producing *kebeles*¹ in Dale district were sampled.

Two types of data, primary and secondary, were used in this study, which were collected from January to March 2015. The primary data was collected by using personal interview and semi structured questionnaire from sample household and key informants respectively. On the other hand, secondary data was collected from zonal and district bureau of agriculture, Sidama zonal cooperatives and marketing bureau, different financial institutions and primary and union level Sidama coffee farmers cooperatives and published and unpublished materials from various sources are also used.

Sampling Procedure

Multistage sampling procedure was employed in the study. First, from 19 districts in Sidama zone Dale were purposively selected following the suggestion of zonal agricultural officers, based on the population proportion engaged in coffee production and annual supply of coffee. Second, 3 *kebles*' from 36 *kebles*' in the district were selected purposively with the help of Dale district agricultural office based on the location, coffee supply and number of coffee producing households in the *kebele*.

Then sample households were selected using simple random sampling with probability proportional to size technique. Hence, out of the three selected *kebeles*, 162 coffee producing households were selected by using Green's (1991) sampling method: $n \geq 50 + 8p$ where 'n' is sample size and 'p' is number of explanatory variables in the model. Hence, 154 according to the formula plus 8 contingency totally 162 coffee growing household heads were selected.

Methods of Data Analysis

Descriptive statistics and econometric model were employed to analyze the primary and secondary data collected based on the research objectives put forth.

Descriptive Statistics

Descriptive statistical tools such as mean, percentages, frequencies, standard deviations and were used to summarize the information gathered. Crosstabs, F-test, chi-square test and a one-way ANOVA tests were employed to compare group means.

Econometric techniques

The study employed multinomial logit model to assess the determinants of financing choices. In multinomial logit

¹Smallest division within a district

model each household makes only one choice from a group of available strategies, and this discussion is based on a number of exogenous factors; most of the factors are imamate from the households' socio-demographic and economic characteristics of the household.

Assuming that Y_i represents the choice taken, then with j disturbances being distributed identically and independently the multinomial logit model adopted. The multinomial logit is actually an extension of the binary logit model, having more than two values for the dependent variable. Let $(p_0, p_1 \dots p_m)$ be the probabilities of $m+1$ alternatives of choice. The probability of an individual 'i' to choose the alternative 'j' is given by:

$$\text{Prob}(Y_i=j) = \frac{\exp(x_i b_j)}{1 + \sum_{j=1}^m \exp(x_i b_j)}, \text{ where } j = 0, 1 \dots m \dots \dots \dots (1)$$

Where x_i is the vector of the independent variables associated to the individual i , and b_j is the vector of parameters associated to the alternative j .

Following Equation 1, the generalization of the logit model for the multinomial case is made by taking different parameters b_j depending on the alternatives of choice, such that the independent variables x_i remain constants depending on the products. Still, there is another possibility: the McFadden's conditional logit model which considers a constant vector of parameters b and allows the independent variables x_{ij} to depend on the alternatives (McFadden, 1980). The probability of an individual i to choose the product j is given by:

$$p_{ij} = p(y_i/j) = \frac{\exp(x_{ij}b)}{\sum_{k=1}^m \exp(x_{ik}b)} = \frac{\exp(x_{ij}b)}{1 + \sum_{k=1}^m \exp(x_{ik}b)}, j=1,2,\dots,m \dots \dots \dots (2)$$

Where $x_{ij}' = x_{ij} - x_{i0}$.

Based on Equation 2, according to Greene (2002) and the fact that choice of households financing options is categorized into different alternatives those who use financial institutions are used as the base alternative. The other financing options are equity financing, value chain financing and other informal financing option. The ratio of the probabilities, hence estimated as follows:

$$\frac{p(y_i=j)}{p(y_i=l)} = \frac{\exp(x_{ij}b)}{\sum_{k=1}^m \exp(x_{ik}b)} \frac{\sum_{k=1}^m \exp(x_{ik}b)}{\sum_{k=1}^m \exp(x_{il}b)}, j, l = 1, 2 \dots m \dots \dots \dots (3)$$

This, as in the case of the multinomial logit is independent of the other alternatives of choice i.e. financial institution, equity financing, value chain financing or other informal financing.

The marginal effects are obtained from the multinomial logit regression results by the following Equation:

$$\frac{\partial P_{ji}}{\partial x_{ji}} P_{ji} (\beta_i - \sum P_{ki} \beta_k) \dots \dots \dots (4)$$

Where, β and P represents the parameter and likelihood, respectively, of the choices. Marginal likelihood gives better indications and represents changes in dependent variable for a given change in a particular explanatory variable whereas holding the other explanatory variables at their sample means. The models are estimated under maximum likelihood procedure which yield consistent, asymptotically normal and efficient estimate.

The model passed through different tests like test for variance inflation factor (VIF), to test degree of multicollinearity among explanatory variables and Breusch-pagan test, test conducted to check for heteroskedasticity among the disturbance in the model.

Variables Included in the Analysis

The dependent variable used in the multinomial logistic regression model is households' source of financing; four source of financing that the households used to rely on the most during the previous production year. 1) *Finance from financial institution (FI)*: - this includes finance from both formal and semi-formal financial institutions; those are commercial banks, micro finance institutions (MF), saving and credit cooperative societies (SACCOs) etc. 2) *Equity financing (EF)*: - all source of investment from the farmers own pocket, saving and financing using own assets e.g. sales of livestock to invest on coffee farm. 3) *Value chain financing (VCF)*: - include all financing source as a result of business relationship; it can be direct value chain financing or indirect value chain financing option. 4) *Other informal*: - includes other informal sources of finances, like finance from relatives, friends, and other social organizations (like *iqub* and *idir*).

Age(age of the household head): It is a continuous variable measured in years. Age is expected to have a positive and negative effect on choice of other informal financial service providers' and financial institution, respectively.

Sex(sex of the household head): It is a dummy variable that takes a value of 1 if the head of a household is male, 0, otherwise. Sex of household head affects choice of equity financing and other informal source of financing option positively.

Education levels of the household head (edu): It is a continuous variable which is measured in the number of formal years schooling of the household head. It is hypothesized that formal years of education have a positive effect on the choice of financial institution option choice decision.

Land holding: it is a continuous variable measured in hectares. Land holding is relatively expected to have a significant and positive effect on the choice of other informal financing option than the other.

Land certificate: it is a dummy variable that takes a value of 1 if the household holds a land certificate, 0, otherwise. Holding a land certificate is expected to have a positive and significant relation with the choice of FI.

Average annual coffee supply: It is a continuous variable that measures the quantity supplied per year in kilogram. It is expected to have positive effect on the household's choice of value chain finance as source of finance.

Membership to SACCOs: is a dummy variable that takes a value of 1 if the head of a household is member of SACCO, and 0, otherwise. It has a positive effect on the choice of financial institution option.

Member to social organization: is a dummy variable that takes a value of 1 if the head of a household is member of any organization, 0, otherwise. Common social organizations in the study area are *iqub*¹, *idir*² and *mahiber*³. Has positive effect on the choice of other informal source of financing option

Proximity to financial institutions: it is a continuous variable measured in minute. Has positively and significantly affect household's decision to financial institution choice.

Local administrative positions: is a dummy variable that takes a value of 1 if the head of a household have any type of position in local administration, and 0, otherwise. Has positive relation with formal financial sources.

Past loan experience: it is a dummy variable that takes 1 if a household received a loan in the past five years, 0, otherwise.

Livestock holding: it is a continuous variable measured by tropical livestock unit (TLU). It has a positive effect on the choice of equity financing and other informal sources of financing.

Holding saving account: it is a dummy variable that takes 1 if the household holds/had a saving account in any FI, 0, otherwise. Has positive effect on the household's choice of financial institution as a source of finance.

Membership to any cooperatives rather than SACCOs: is a dummy variable that takes a value of 1 if the head of a household is member of any cooperatives rather than SACCOs, and 0, otherwise. Has positive effect on the choice of value chain financing option.

EMPIRICAL RESULTS

Descriptive Statistics

The data summary depicts that, Out of 162 total sample households, majority of the respondents (46.3%) relied on their saving (equity financing) to finance their coffee farm, whereas only 8.70% of them relied on formal and semi-formal financial institutions as a source of financing.

Table 1 Source of financing options used by the sample households during the previous year

Financing Options	Frequency	Percentage
Financial Institution	14	8.70
Equity Financing	75	46.30
Value Chain Financing	29	18.00
Other Informal	44	27.00
Total	162	100.00

Source: Own survey, 2015

Past loan history: from sample households, 47.06 and 8.82 % of respondent who collected loan in the last five years used other informal financing sources and formal financial institutions, respectively. At the same time, sampled farmers' paid on average 10% interest rate for financial institutions and 25% for value chain actors and they paid interest cost ranging from zero rate up to 100% for informal financiers for the loan they collected (cost of money used). On collateral used for the loan received; 46% of the respondents who received loan from other informal source of financing were based on trust (absence of collateral requirement made this source preferable especially by small holding farmers even if they sometimes charge an interest rate up to 100%). On the other hand, formal and semi-formal financial institutions used human guaranty (common in case of SACCOs and MF) and land certificate as collateral, whereas value chain actors used mainly sales contract and trust sometimes as collateral.

Holding Saving account: According to the study 51% of the total respondents had a saving/current account from financial institutions. From the total population who holds saving/current accounts, 51% are from micro finance (Omo and Sidama microfinance institution), 22.6% from commercial banks (specifically commercial bank of Ethiopia) and the remaining 26.4% holds saving account from local saving and credit cooperatives societies. Besides, there are farmers who owned saving account from more than one source. On the other hand, 31.65% and 44.3 % of respondents who did not own saving account rely on equity financing and other informal sources of financing, respectively.

Local administrative position: Out of the interviewed coffee growing household heads, 37% of them were affiliated in different position of local administration during the study time, which are directly related with politics. Majority of the affiliated farmers are educated and works in local administration like leaders of *kebele* level political associations (cadres).

¹*Iqub*: rotating money among members.

²*Idir*: mostly religious association and sometimes area demarcated informal social association.

³*Mahiber*: similar with *idir* except the fact that *mahiber's* geographic coverage is smaller than *idir*. *mahiber's* usually village level association.

Table 2 below summarizes the categorical variables frequency and percentage (in parentheses) of sampled households. The table also depicts the chi-square test which shows the statistical difference among the financing option in terms of the categorical explanatory variables. So, according to the Chi2 test, households past loan experience, membership to SACCOs, holding saving account and local administrative role of the household head creates statistically significances ($p < 10\%$) difference among households choices of financing options.

Table 2 descriptive statistics results of the categorical variables

Categorical Variables	Financing options				Chi2
	Equity	FI	VCF	Other informal	
Sex of Household head					
-Male	64(85.33)	13(93)	27(93)	39(88)	1.57
Land certificate					
-Yes	65(86.6)	13(93)	23(79.3)	39(88)	1.93
Received loan					
-Yes	6(8)	11(78)	19(65.5)	32(72.72)	66.9*
Membership to SACCO					
-Yes	31(41.33)	9(64.28)	4(13.8)	11(25.0)	14.40*
Member of social org					
-Yes	42(56)	9(64.28)	22(75.86)	26(59)	3.61
Holding Saving account					
-Yes	40(53.33)	13(93)	11(38)	19(43.18)	13.03*
Local administration position					
-Yes	27(36)	10(71.42)	8(27.58)	15(34)	8.4*

***and* implies significance at 1 and 10% level respectively. Values in the parentheses represent percentage of respondent in each category

Source: Own survey, 2015.

Household head years of formal education: Out of the 162 house heads interviewed, only 16 house heads did not attend formal education; whereas the other house heads attended a mean of 5.7 years of formal education. The statistics shows that those who use FI and VCF as a sources of financing were relatively more educated (> 6.6 years) than those who relied more on equity and other informal financing category (< 5.5 years).

Livestock holding (TLU): the main agricultural tradition in the study area is farming of tree crops, which in Ethiopia case are performed by hand unlike that of perennial crops farmed by livestock. So it seems due to this feature of the locality that majority of the farmers did not own livestock; the mean livestock owned by the respondent farmers' were 4.5 TLU. As the data evident, due to the fact that financial institutions do not accept livestock as collateral, it is advantages to have large numbers of livestock to access finance from value chain actors and informal sources of finance.

Land holding: land is the major agricultural asset of all type. All respondent farmers own their own farm land. Respondent households owned on average 0.95ha of land, of which on average they had 0.62ha of land cultivated by coffee. Of course most of a time farmers' practiced inter-cropping but still the major crop is coffee. The remaining majority of land were covered by *Enset* and other tree crops especially Avocado. As land is owned by the government according to the current Ethiopian land policy, using land as collateral by the formal financial institutions is not appreciated, so farmers use their land as collateral in front of value chain actors and informal financial sources that unlike financial institutions provide short term working capital finance.

But nowadays keeping the land policy unchanged, the government is doing on providing land certificate which serves as the confirmation of the land under the control of the farmer but not allowed to exchange it. So, this policy is helping farmers to use certified land as collateral to access finance from financial institutions, especially in case of the study area from micro finance institution. Also as owning large size of land is associated with cultivating large land by coffee which in turn implies, supplying large amount of coffee, and that makes it easy to rely on value chain financier. According to the survey result 86% of the respondent owns a land certificate which is given by the local land administration office as a guaranty of land ownership.

Average annual coffee supply: On average, each sample respondents supplied 1,149 kg red cherry coffee each year. The data shows that, those who supply on average large amount of coffee (1967.85 kg/year) rely on financial institutions unlike those supplies on average the smallest quantity of coffee per year (786.36 kg) who rely on other informal sources. Also the finding shows 92% of the sample respondent supply their coffee immediately up on harvesting; so, there is almost no storage in use for their products. On the other hand, 85% of the respondents sell their coffee for primary coffee farmers' service cooperatives society in their respective *kebeles*. While 1.23% used to sell for traders and processors, other 13.58% of the respondents have no regular buyers, so they sell their coffee for local traders/collectors as well as for anyone who they expect to pay higher.

Given the above description for the continuous variable, the one way analysis of variance (ANOVA) is performed with the view to compare the mean difference between the four financing options the sample household

chooses. F-tests were used to judge whether or not there are statistically significant difference among the available financing option in terms of the explanatory variables included in the analysis. According to finding there is significant difference between some of the factors associated with the choices of financing options. Education level of the household head, total livestock owned by the household (TLU), total land holding and land covered by coffee and average annual coffee supply of household shows statistically significant difference ($p < 0.1$) among households choice of financing options.

Table 3 descriptive statistics results of the continuous variables

Continuous Variables	Financing options				F-value
	Equity	FI	VCF	Other informal	
Age of household head	43.76	39	39.5	43.34	1.19
Education level of HH head	5.5	7.4	6.6	4.9	2.86**
Livestock holding (TLU)	4.56	2.43	5.62	4.52	3.01**
Total land (ha)	0.923	1.34	1.17	0.73	3.98***
Land covered by coffee (ha)	0.58	0.90	0.80	0.50	3.5**
Coffee supply (kg)	1134.66	1967.85	1343	786.36	2.52*
Distance from FI	18.73	23.92	21.48	18.52	1.32

*, ** and *** imply level of significance at 10, 5 and 1%, respectively.

Source: Own survey, 2015.

Econometric Analysis

In this section, results from the estimation of the multinomial logit model results and interpretations of significant variables in the model are presented. Discussion of the results focuses on the three comparisons within the model; the comparisons of equity financing, value chain financing and other informal source of financing options to the base category, financial institutions.

Prior to fitting the multinomial logit model and running the margins of each outcome in STATA13 analytical tool, different tests were done. This are, first, Variance inflation factor (VIF) to test degree of multicollinearity among explanatory variables. The VIF test confirms that the data have no serious problem of multicollinearity (VIF values less than 10). Second, the data is tested Breusch-pagan test. This test is conducted to test for heteroskedasticity among the disturbance in the model; the test result proofs that the model is free from heteroskedasticity problem.

Thirdly, the model is run and tested for independence of irrelevant alternative (IIA) assumption; and the model is interestingly good enough to meet the assumption, in that all the dependent variables are independent of each other. Finally, the model was tested and found acceptable in terms of goodness of fit. The test results likelihood ratio χ^2 of 169.19 and the pseudo-R² measures of 0.4245 which is satisfactory. The MNL regression coefficient, marginal effect and there significant level is presented on table 4 below. Here under, the three comparisons within the model (equity financing, value chain financing and other informal sources of financing) compared with the base category (financial institutions) are illustrated in terms of individual explanatory variables that are found to be significant.

Table 4 parametric estimation of MNL model for choice of financing options

Explanatory variables	Equity financing			Value chain financing			Other informal financing		
	Coef.	P _{value}	ME	Coef.	P _{value}	ME	Coef.	P _{value}	ME
HH head age	-.044	0.411	.0016	-.096*	0.096	-.0064	-.039	0.471	.0029
HH head sex	-4.413*	0.079	-.1745	-3.029	0.234	.089	-3.762	0.128	-.055
HH head education level	.089	0.608	.0197	-.026	0.885	-.0003	-.127	0.454	-.019
Livestock ownership	1.237***	0.010	.0106	1.348***	0.005	.0192	1.280***	0.008	.0163
Total landholding	-.821	0.404	.1383	-1.469	0.151	.0353	-2.87***	0.009	-.236
Land certificate	.823	0.617	-.0284	.755	0.641	-.045	1.594	0.327	.113
Past loan history	-5.836***	0.000	-.5865	-1.774	0.235	.135	-.760	0.605	.338
Annual average coffee supply	-.0006	0.14	-.00004	-.0003	0.401	7.59e-0	-.0003	0.523	.00001
Membership to SACCOs	1.532	0.271	.2895	-.768	0.591	-.104	-1.069	0.430	-.181
Membership to <i>iqub</i>	-.0449	0.969	-.0164	.501	0.681	.073	-.251	0.830	-.057
Holding saving account	-4.981**	0.011	-.1672	-4.582**	0.018	-.060	-3.743*	0.051	-.0669
Proximity FI	.037*	0.056	.0017	.030	0.141	.0002	.023	0.239	-.0008
Administrative position	-3.707**	0.031	-.0040	-4.406**	0.012	-.090	-4.001**	0.020	-.0492
_cons	9.130	0.047		9.163	0.052		9.342	0.044	

Diagnosis

Base category

Number of observation

LR χ^2 (39)

Log likelihood

Pseudo R²

*, ** and *** indicate statistical significant at 10, 5 and 1% level respectively. ME: marginal effect; coef. Regression coefficient

Source: own survey, 2015.

Household head age: The model output shows that compared with the base category as the age of the household

head increases by one year the predicted probability of the household to rely on value chain financing decreases by 0.64% at 10% level. This indicates that as the household head age increases the production as well as the participation in the coffee market decrease, this reduces the relation and trust between the farmer and chain actors. So, relatively, as the household head become aged the likelihood of a farmer to be supply finance from value chain financiers is less than from financial institutions. Results obtained in the present study are in agreement with the expectation of the study and the finding of Tomyki (2013).

Household head Sex: as expected, household heads sex significantly associated with financial option selection. It is evident from the model output that men headed households use of equity financing option compared to their counterpart women headed households is negatively and significantly related at 10% level. According to the marginal effect result, for male headed household, the probability of using equity financing than financial institutions as a source of financing is 17.45% lesser than women headed households. This is associated with the fact that financial institutions are more comfortable to deal with male household heads than women heads. In other words, given different financing alternatives, unlike men heads women headed households cannot easily access finance from financial institutions rather they used to rely on whatever they own (equity financing). However, this result contradicts with the finding of Tomyki (2013) who argued that, due to past experience of loan default by women household head is lower than men household heads in Uganda, financial institutions have a trust on women headed households than men headed; as a result there is a positive relation between women headed household and financial institutions.

Livestock ownership: The result indicated that the household's ownership of tropical livestock positively and significantly influence the use of equity financing, value chain financing and other informal financial sources at 1% level each. Compared to the base category, as the number of tropical livestock the farmer owns increases by one unit the probability to rely on equity financing, value chain financing and other informal financing sources increases by 1, 1.92 and 1.63%, respectively. This is in line with the theory that because of financial institutions did not accept livestock as collateral but value chain financier and other informal financiers do, livestock ownership favors this source of financings compared to the base category. Also the present finding agrees with the results obtained by Sisay (2008) which says the more the household owns a livestock, the more the farmer possess wealth (easy to rely on equity capital) and depend on equity financing.

Landholding: contrary to the expectation, the household's landholding negatively influences the use of other informal source of finance at 1% level of significance compared to financial institution. This shows that households who own large size of land fall back to the base category. The marginal effects hinted that as the households' landholding size increases by one hectare, the probability of using other informal financial source than financial institutions decreases by 23.64%. This implies the larger the land holding the farmer owns the large the quantity supply and the larger the income the farmer generates, which contributes positively during loan assessment and other financial service supply provision by the financial institutions and also increases trust and credit rating of the household. The present study result is also in contrary with Aliou's (1999) finding which shows a positive relation between households land and choice of informal sources of financing.

Past loan history: past loan history significantly and negatively influences the choice of equity financing option compared to financial institutions as a financing option at 1% level. The model result shows that, as a result of households past loan experience, the likelihood to use equity financing than financial institutions as a source of finance decreases by 58.65%. Due to different reasons like cost of using finance, it is true that sourcing finance from financial institutions is relatively cheaper compared to cost of equity capital. This is true according to the expectation and Sisay (2008) finding that, households experience in the loan market helps them to access finance from financial institutions easily than those who did not have loan experience given the loan processing and loan assessment time for new borrowers.

Holding saving account: this is in accordance with the theory, compared to the base category holding saving account has negatively and significantly relates with the choice of equity financing, value chain finance and other informal source of financing options at 5, 5 and 10% level, respectively. If a household holds a saving account in any financial institutions the probability to source finance from those financial institutions is obviously greater than those who do not have. So, holding a saving account shifts the probability of household's choice to the base category. For households who hold saving account from any financial institutions compared to the base category (FI), the probability to rely on equity finances, value chain financing and other informal sources of financing decreases by 16.72, 6 and 6.69%, respectively.

Proximity to financial institution: in accordance to the expectation of this study, proximity to the source determines households financing choice positively. The model output evidence this theory that there exists positive and significance relation between households distances from financial institution to the use of equity financing sources, at 10% level. The final choice available for a farmer in relation to proximity is equity financing; so, if the farmers location is too far from any financing sources it is fact that they tend to rely on their own saving /equity/. The marginal effect in the output table hinted the following, as the distance from the household to the nearby financial institution increases by one minute, the household's probability to rely on equity financing compared to

financial institution increases by 0.17%. Implying that as distance from financial institution increases households tends to use whatever they own than going to financial institutions. Findings of the present study are in agreement with what have been reported by Victor (2010) and Dason et al. (2012), which they found positive relation between distance and choice of financing option.

Local administrative position: as expected in the hypothesis, compared to the base category the households use of equity financing, value chain financing and other informal financing sources are negatively related with household heads administrative role in the community and the result is significant at 5% level for each. Household heads affiliation to any position in the local administration reduces the level of the bureaucracy to use financial institutions especially government owned institutions than nonaffiliated household heads. Due to this fact, the probability of households financing choices decision well fails back to the base category than the other three financing options. The negative marginal effect result shows that compared to the base category the predicted probability of a household whose head is affiliated in local administration is lesser by 0.4, 9 and 4.9% in using equity financing, value chain financing and other informal financing options than financial institution respectively.

Conclusion

The study finding shows that education level of the household head, total livestock owned by the household, total land holding and land covered by coffee, average annual coffee supply of household, households past loan experience, membership to SACCOs, holding saving account and local administrative role of the household head shows statistically significant difference among households choice of financing options.

The study result also shows that household's total tropical livestock positively affects the use of equity financing, value chain finance and other informal sources of finance as compared to use of financial institutions as a source of finance. On the other hand, holding saving account and being affiliated in local administration negatively affects the use of equity financing, value chain financing and other informal sources of financing than financial institutions. Compared to the base category, households distance from financial institution positively affects the use of equity financing as a source of finance. Whereas, household heads sex and past loan history negatively affects the use of equity financing than financial institutions. Similarly household heads age negatively affects the use of value chain financing than financial institutions. Land holding of the household found negatively affecting the use of other informal financial sources as compared with the use of financial institutions.

Based on the data findings, the researches draw the following recommendations; make an intensive awareness creation on the use of formal financial institutions, smoothing the formal financial institutions service delivery, expanding branches of financial institution to rural areas, formalizing the value chain financing sources through enhancing horizontal linkages by using cooperatives as means to farmers' linkage and helping farmers on their capital accumulation and wealth formation by creating strong saving cultures.

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