

Determinants of Saving Behavior of Households in Ethiopia: The Case Benishangul Gumuz Regional State

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Abstract

This study examined the factors that affect saving behavior of rural households in Benishangul Gumuz Regional State. It employed descriptive statistics and double hurdle model to analyze the data collected from a sample of 325 rural households in the study area. The descriptive result showed that about 83.4 percent of sampled households involved in saving of which 68 percent use formal financial institutions and the remaining opt for alternative saving options. The result of double hurdle model provided empirical evidence on a positive significant effect of age, income and level of education of the head on a decision of households to save; whereas household size, distance to formal financial institutions and employment status have negative influences on household's decision to save. With regards to the extent of saving; income of household head, level of education, landholding size and involvement in petty trade has a positive significant impact on amount of saving; whereas household size, employment status and distance to formal financial institutions significantly reduced the amount of saving by households. The findings implied the need for designing strategies that could improve the saving behavior, mobilization and diversification of saving by rural households. Moreover, the need for government involvement in building the capacity of rural households in terms of education and information systems with regards to savings as well as encouraging financial institutions to implement door-to-door service provisions so as to enhance saving behavior of households are desirable.

Keywords: Household, Savings, Double hurdle, Assosa

1. Introduction

Saving refers to the fraction of income not instantly consumed but kept for future investment, consumption or for unforeseen contingencies in the future. It is important in improving the well-being of individuals and serve as a security at the times of shocks for the households. Saving is being seen as a method of diminishing the risk resulting from the inability to predict the future and thus acting as precaution. According to Popovici (2012) unexpected events in the life-cycle of individuals make saving an important element in fulfilling the financial gap. Household savings could be intended to address household expenditure but rural households are constrained due to seasonality of cash flows, work culture and income; as a result of which saving is seasonal and irregular, too. Saving mobilization is also critical for individual welfare in that, at individual level it helps households' smoothen their consumption and finance productive investments in human and business capital Karlan *et al.* (2013).

At macro level, saving in the form of capital formation is considered as a crucial weapon for economic growth as it increases capital stock thereby improving the ability of an economy to produce future higher incomes (Donkor and Duah, 2013). Saving is strongly correlated with economic growth as suggested by neoclassical growth models, which stressed the importance of saving as an essential factor to economic growth of a country. Saving in the form of capital formation is important for economic growth, as countries that were able to accumulate high level of saving and thus high investments were seen to achieve faster rate of economic growths (Todaro and Smith, 2012). Investment is important for rapid and sustainable economic growth which in turn is determined by the amount of domestic (national) saving of a country (Halefom, 2015).

We know that, as in the case of already advanced countries, achieving and sustaining the high growth rates set out in the growth and transformation plan of Ethiopia requires substantial capital formation. With binding external financial constraints critical investments are needed to be financed from domestic sources. Although Ethiopia's record in mobilizing resources as compared unfavorably to its Asian comparators are relatively low (IMF, 2014), the figures by Minster of Finance and Economic Development of Ethiopia (2014) revealed an increasing domestic saving rate from 5.2 percent in 2009/10 to 17.7 percent in 2012/13 and the share of gross domestic investment increased from 24.7 percent to 33 percent in the same year.

Analysis of behavior of household saving and its parameters at micro level is crucial in that without such microeconomic data, it is very difficult to interpret aggregate savings trends at national level (Orazio and Miguel, 2000). The national saving rate statistics that forms important part of capital accumulation for economic growth are the aggregated result of household saving. Thus, it is important to study the saving mobilization and behavior of households to interpret aggregate results. The household saving situation in general and saving mobilization and behavior of households in particular in the study area of Benishangul Gumuz Regional state is highly

constrained due to many factors. According to the annual report of region's Microfinance Institute (BGRMI, 2014), even though there is some progress in saving mobilization from time to time, substantial effort is required at all levels to bring the fragmented savings available at the rural areas to the financial institutions.

In the rural area where banks are not expanded and the majority of the rural population has no access to formal banking institutions, mobilization of saving executed by micro finance institution, saving and credit cooperatives as well as informal financial institution dominate the sector. In this regard, understanding the nature of household saving behavior is critical in designing policies to promote savings and investment. Without savings, households will have few mechanisms to smooth unexpected variations in their income. Since saving is one of the few means of accumulating assets in the absence of credit and insurance markets, the capacity to save becomes critical for increasing social mobility and enhancing future income-earning possibilities. As such it is important to examine the determinants of rural household decision to save and the intensity (amount) to save.

2. Statement of the Problem

The main purpose of this research is to examine the determinants of saving behavior of households in rural Ethiopia, specifically in Benishangul Gumuz Regional State. Improving mobilization of household saving could free up significant amounts of resources for investments that could promote economic growth. Indeed, domestic savings in Africa are dominated by household savings that are not sufficiently channeled into productive use (UNDP, 2007). Understanding why and how households save, what determines their saving behavior particularly that of the poorer households can help identify appropriate policies that increase the amount of resources available for development.

The accumulation of non-financial assets such as livestock, real estate or jewelry carry symbolic value or are indicators of status and/or wealth that serve as saving instruments. However, they also reflect high risk, uncertain financial environment and lack of access to adequate financial instruments (UNDP, 2007). An improved access, adequacy and reliability on the part of the financial sector could trigger an increase in savings held in a financial form through substitution from non-financial to financial saving instruments. Moreover, the credit and insurance markets are mostly unproductive and underdeveloped in all poor countries making saving as the prime source of raising wealth and assets of the society (Mariam *et al.*, 2014). The critical economic factors that affect saving culture include low interest rate of saving, lack of incentives to savers and high inflation rates prevailing in the country. The single most determinant of poor saving habit is attitude of the societies towards consumption than saving (Aron *et al.*, 2013).

The saving mobilization and development of saving habits of a given society will have an impact on capital accumulation and thus on economic growth of a country in general and on the financial well-being of the individuals in particular. Countries having higher level of saving rates have managed to reduce the burden of foreign debt and thus domestic investments will be financed by domestic saving especially household sectors (Toddle, 2015). In the case of Ethiopia, achieving and sustaining the high growth rates set out in Growth Transformation Plan requires substantial capital formation and associated resource mobilization. The relatively low GDP per capita limits the potential for domestic savings in the short-run which would be encouraged by offering attractive interest rate for savers. Ethiopia's record in mobilization of saving, access of domestic credit to the private sector as well as the gross capital formation compared unfavorably with the Asian comparators is relatively low. While domestic resources have been crucial in financing investment in Asian peers, Ethiopia appears to have less room on that front (IMF, 2014).

Ethiopian economy faces resource (financial) gap where the savings-investment gap has been widening from an average of 1.1% of GDP during the Imperial period (1960-74) to 6% of the GDP during the Derg period (1974-91) and further to 11.7% of the GDP in the EPRDF (Tadese, 2011). So, saving is more of meant for meeting contingencies but sometimes it also acts as a form of investment for households. But people are not inclined towards saving due to a very delicate reason for lack of awareness and other socio culture factors (Tsega and Yemane, 2014). The saving culture of the society in general is poor despite the performance improvement of saving rate from 6 percent in 2006 to 9.5 percent in 2011 which is the poorest saving rate in the world and even in the Sub-Saharan countries the cause of which are many and diversified. In Ethiopia, majority of the population is living in rural sector where there is limited access to financial institutions. The financial sector was found to be not effective to reach the rural societies at the same time with lower transaction cost (Tsegabrihan, 2009).

According to Benishangul Gumuz Region Food Security Bureau (2004), the region has important income generation potentials but their contribution to livelihood of households is very limited. Most income generation activities are geared towards satisfying daily needs. Savings should affect food security through its impact on access to food through mechanisms that affect a household's ability to purchase and/or produce food. According to the annual report of the region (BGMFI, 2014), the financial outreach of the rural farm household in the region is limited. The report indicated that about 65 percent of active working age populations need a service from financial institutions. Besides to this, even though there are improvements in saving mobilization of households from time to time, one observes inadequate and fragmented savings in the rural areas of the region

(BGMFI, 2014). Moreover, formal banks are not available and thus mobilization of saving is usually conducted by micro finance institutions and other informal financial institutions.

In light of the above problems and discussions, it is important to analyze the saving behavior of households through identifying the determinants of household's decision to save and their extent of saving so as to recommend practical policy related solutions to problems of saving mobilization by rural households. This study is quite different from some previous studies in that; first, it employed different methodological approaches to analyze the households' decision to save and the extent of saving. Instead of running multiple regression or single equation Tobit specification as used by most researchers, double hurdle model was employed. Moreover, it is the only study conducted in our research area, BGRS, which will help broaden our understanding of factors hindering household saving in Benishangul Gumuz region particularly in the Asossa Woreda.

3. Objective of the Study

The general objective of this study is to analyze the saving behavior of rural households in Benishangul Gumuz Regional State. Specifically, the objectives are to:

- assess the motives and challenges of rural household saving in the study area.
- identify the determinants of households' decision to save and,
- examine the extent of saving and their determinants

4. Review of Literature

4.1. Theoretical Literature Review

There are several hypotheses of saving that are implied from consumption theories (hypothesis) as the amount of income not consumed is saved. These include the Keynesian Absolute Income Hypothesis, the Duesenberry's Relative Income Hypothesis, Friedman's Permanent Income Hypothesis, and Modigliani Life Cycle Hypothesis. These hypotheses are discussed very briefly as part of theoretical literature.

The Keynesian absolute income hypothesis asserts that individuals save out of their current income to smooth the expected consumption over time. The effect of the precautionary savings is realized through its impact on current consumption, as individuals postpone their current consumption in order to maintain the utility level of consumption in the future if income drops (Njung'e, 2013). Thus saving is only possible if someone has more than enough to meet the basic needs and can only save what is left after paying for such basic needs (Otto, 2009, as cited in Michael, 2013). According to relative income hypothesis of Duesenberry higher growth rates lead to higher saving rates, which is inconsistent with the lifecycle or permanent-income theory, since the lifetime resources of an individual increases as growth rate increases (Nayak, 2013).

The permanent income hypothesis on the other hand states that people will spend money at a level consistent with their expected long term average income. A household will save only if his or her current income is higher than the anticipated level of permanent income, in order to guard against future declines in income. According to this hypothesis, income growth is one of the primary determinants of domestic saving through its effect on the lifetime income of working population. This is because, higher rate of income growth raises the aggregate income of active workers relative to those not earning labor incomes and this will raise the lifetime resources of workers on which consumption and saving depends (Nayak, 2013).

Finally, Franco Modigliani and Richard Brumberg's life-cycle hypothesis presume that individuals base consumption on a constant percentage of their anticipated life income. With population growth, there are more young people than old, more people are saving than are not saving, so that the total not saving of the old will be less than the total saving of the young, and there will be net positive saving. If incomes are growing, the young will be saving on a larger scale than the old are not saving so that economic growth, like population growth, causes positive saving, and the faster the growth, the higher the saving rate (Nayak, 2013). The life cycle hypothesis identifies growth in per capita income as one of the important determinants of saving rates, because people are forward looking and base their savings decisions on lifetime income. But in reality the current level of income also plays a significant role in explaining saving behavior (Ahmad and Hussein, 2010).

4.2. Empirical review of Literature

4.2.1. Financial institutions and mobilization of saving in the study area

Formal financial institutions that were engaged in saving and credit/loan service deliveries for both rural and urban communities include private and government banks and Micro finance Institutions. Such institutions are formal in that they possess modern accounting and reporting systems that could help evaluate their performances every time. The banks have been considered as main type of formal institutions that have involved in saving mobilization in Africa. However, the main problems of such institutions to handle the poorer households' saving needs and mobilizing issues particularly that of the poor in rural areas of developing countries is constrained by limited access to the rural poor, lack of trust due to awareness problems by households and inadequacy of formal institutions (Birhanu, 2015).

According to Egwu and Nwibo (2014) rural women in sub-Sahara African found it difficult to increase their agricultural production and processing due to the lack of collateral to obtain fund from financial institutions to expand production as household property and security belong to the man who invariably are regarded as the head of the household. Access to financial services deeply helps the pro-poor to manage their financial resources and relieve them from abject poverty. However, providing financial service requires sound and sustainable financial institution that understands the financial needs and service requirements of the pro poor. The significance of deposit service to the poor is as important as loans services if they are given due attention and tailored to the saving patterns of the poor (Woldemichael, 2010).

Most people in Ethiopia make little or no use of the formal savings and lending institutions. Some use informal institutions that occur within the informal sector of the economy. We know that saving in the informal institutions did not yield interest for the depositors and so could not help for mobilizing resource. As a result it is not used for investment to yield income and, of course, most of the time depositors have expected to pay for saving service to their changing financial needs. In developing countries we observe a variety of informal institutions that enable transactions which are particular to the poor (Birhanu, 2015).

According to Woldemichael (2010) access to deposit services in financial institutions enables the poor to efficiently manage their financial resources. It helps in consumption smoothing during economic shocks and provide an opportunity to accumulate large sums of money for future investment and household outlays. In Ethiopia, for centuries, partly due to inaccessibility of commercial bank branches, absence of postal saving services and lack of strong cooperative movement, deposit services to the poor has been largely dominated by widely accepted and practiced informal mechanisms such as '*Iqub*', '*Iddir*', buying livestock and jewelry and hiding cash at home. The aim of the financial institutions during the GTP period has been establishing an accessible, efficient and competitive financial system. In relation to this, emphasis has been given to strengthening modern payment and settlement system, developing access to financial services, supporting the bank system with modern technology and extending the information exchange system to microfinance institutions, among others (MoFED, 2014).

4.2.2. Determinants of household saving

Household composition, individual characteristics, demographic, economic and social features of households affect saving pattern and behavior of households in a given society. The variations in such factors lead to variations in national saving rate over time (Schultz, 2005). In Ethiopia reports indicated that about six million households save money in financial institutions with average of 875 Birr per year. The saving rate as percentage of GDP is 9.5 which is very low as compared to that of China, Bangladesh and South Africa (Aron *et al.*, 2013).

Girma *et al.* (2013) applied single equation Tobit model on household survey data to analyses determinants of household saving in Ethiopia. Their finding indicated that education of household head, land holding size and annual income of the household affected household saving positively. The result further added that households mainly use the informal saving institutions as the result of which their savings is hardly traced in the national accounting system.

Family structure and composition is another important factor at influencing saving of households. Families with higher number of active working members involved in economic activities save much more than others (Popovici, 2012). The sex parameter of the household head indicated that male headed households are more likely to save money more as they are more frequently involved in different occupations (Nayak, 2013). The dependence ratio is another important factor influencing saving in many empirical studies. The elderly and young are expected to consume out of post saving while those within the working age are expected to accumulate saving (Quartey & Blankson, 2008). Moreover, the study by Hussein (2007) on the behavior of farm household saving in Ethiopia (South East) showed that the dependence ratio is highly significant in determining the saving rate of farmers.

Schultz (2005) analyzed the demographic determinants of saving in a group of Asian countries by using econometric methods and found that dependence ratio has a significant negative effect on saving across counties. The mean saving of middle age, early and old age household heads is about Birr 360.6, 206.2 and 244.6 per month respectively and also the mean saving of illiterate household heads is Birr 58.57 whereas household heads with primary education, secondary education and tertiary education on average saves Birr 261.8, Birr 269.93 and 546.65 per month respectively. Hence, as the educational level increases saving also increase (Halefom, 2015).

However, the findings by Gina *et al.* (2012) indicated that education, employment, level of social support, and degree of economic strain have a weak association with saving among rural, low-income individuals in Africa. Ndikumana (1999) found out that financial development in sub-Sahara Africa represented by the structure, nature and relative size of financial instruments and financial institution in a country is an important factor in enhancing the mobilization of saving and channeling of saving into productive investment sector.

Nayak (2013) used linear regression model to analyze saving mobilization pattern of households in rural India. He used household data where about 62 percent of the farm households had savings in financial and

physical assets but almost all farm households (about 90%) had savings held informally. His finding outlined that financial institutions with easy access, low transaction costs, higher real returns on savings and convenient withdrawal of savings provided incentives for those households who hold financial savings to channel their savings into the formal institutions.

Economic features of households such as income are also important factors at affecting the household saving. Different studies confirmed that an increase in income was found to increase saving significantly. For instance, the study by Popovici (2012) indicated that an increasing income increased the level of total savings by 1.7 percent. Moreover, Nwanchukwu and Egwaikhide (2007) found that income has a positive and significant effect on the private saving in Nigeria. In the same manner, the change in livestock holdings in TLU, access to credit, training participation, contact with extension agents, choosing saving institution and saving motives increases the level of household savings by 1044.47, 2631.3, 1388.83, 109.29, 2538.88, and 4463.67 Birr among the savers household, respectively (Girma *et al.*, 2013).

Kibet *et. al* (2009) analyzed determinants of saving by smallholder farmers and entrepreneurs in Keyna by using multiple regression analysis. One of his findings indicated that interest rate on deposits has some positive influence on the saving of farmers. Increase in interest rates is expected to motivate farmers to save since it implies that they get better returns on their saving. The rate of interest determines the saving rate of the individuals on a view to encourage people towards saving (Nayak, 2013). Workineh (2013) empirically investigated the significance of some macroeconomic variables in determining domestic saving in Ethiopia by using times series data from 1970/71 to 2010/11. The results shows that growth rate of income play a stronger positive role in determining both the short run and long run behavior of domestic saving in Ethiopia. The saving decision may depends on income, wealth, real interest rate and other potential factors such as individuals habit, such as preferences for spending now, or postpone their consumption, so that they can have a greater consumption in the future period (Ahmad and Hussin, 2010).

According to Raba (2013) growth in income, degree of financial depth, and saving interest rate have significant positive impact on savings mobilization whereas age, dependency ratio and real interest rate have significant negative impact on savings in Ethiopia. Obi-Egbedi *et al.* (2014) analyzed determinants of saving using multiple regression analysis and they found out that education, occupation, income of household head and household size affect rural household savings significantly.

Obayelu (2012) using Tobit regression analyzed saving behavior of households and found out that large household size would reduce saving rate and thus reducing the number of children can help beef up savings to protect families from income shortfall. Moreover, he pointed out that diversification into non-farming activities was found to increase saving rate of the rural household heads. Households involved into non-farm activities were found to save more as compared to those not involved. Tsega and Yemane (2014) used cross sectional survey data and applied Tobit regression analysis and they found that incomes, age, sex, marital status significantly affect household saving. Similarly Njung'e (2013) by using linear regression model found that savings is positively related to total income, gender and education but negatively to employment status, age of the household head.

Egwu and Nwibo (2014) investigated the determinants of saving capacity of rural women farmers in Ebonyi State of Nigeria using multi-regression analysis. They found that lack of access to productive resources and low returns to agricultural production has been identified as a bane to the saving capacity of the rural women. Michael (2013) conducted study using multivariate regression analysis (binary logistic and Ordinary regression least method) and found that savings habit of households are versatile and are influenced by demographic and economic factors based largely on income. The findings showed that the main predictors of the probability of an individual to have savings account were income, locality, and national health insurance registration, place of accommodation, sex, age and education. On the other hand, the main determinants of the level of savings were namely income, locality, and sector of employment, national health insurance registration, age, education, household size and marital status.

5. Research Methodology

5.1. The Data Set and Description of the Study Area

This study is conducted in Assosa Woreda of Benishangul Gumuz Regional State. The region is endowed with fertile land suitable for high value crops, livestock, apiculture, fishery, minerals like gold and marble, and economically important trees like bamboo and incense. Mixed farming system involving both crop production and livestock rearing activities are the dominant type of farm production system (BoFED, 2004). Assosa Woreda is one of 21 Woredas in the region which represent the center for the regional government. It has an estimated land area of 2,917.6 sq.km (which accounts for about 5.75 percent of the total land area of the Region). The mean annual temperature of Assosa is found between 23-25^oc in the low land and 15-20^oc in the midland areas. However, there is a slight variation of temperature by months February to May is the hottest months while October to January is the cold months (CSA, 2008).

The data set used in this study is a primary data obtained from randomly selected farm households in rural areas of Assosa Woreda. The primary data were collected through structured questionnaire. First, samples of 335 households were selected based on some statistical procedures and sampling techniques. In this regard multi-stage random sampling technique and proportionate to sample allocation methods were used in the selection of sample.

5.2. Model specification- Double Hurdle Model

Some empirical studies used single equation Tobit model to analyze the determinants of household saving (Girma *et al.*, 2013; Obayelu, 2012). However, Tobit specification has its own drawbacks; first it is actually used in cases where the dependent variable is not observed for some sample households due to censoring and not due to individual decision. This means Tobit specification can assume negative values, but will actually take zero for some censored observations. Therefore, all zero amounts of saving are interpreted as corner solutions. Second Tobit specification is based on a restrictive assumption that both the decision to save and level (amount) of saving given that decision are determined by the same set of variables which implies that a variable that increases the likelihood of household to save will also increase the extent of saving. Therefore, double hurdle model is used as better alternative over Tobit modeling in such type of settings Amsalu *et al* (2013).

In a double-hurdle model the determinants of households' decision to save and the extent (amount of) household saving are estimated independently. In the first hurdle, the decision whether or not to save is identified, and if she/he decides to save, hurdle two considered the level of household savings. The maximum likelihood estimator (MLE) in the hurdle 1 can be obtained using a binary probit regression and the likelihood estimator (MLE) for hurdle 2 can be estimated from truncated normal regression model (Mishra and Chang, 2011). Double hurdle specification is advantageous in that it permits the joint modeling of the decision to save and extent of saving. Accordingly, individuals should pass through two-step decision processes; first they have to decide to save and then they need to put some amount of money (should save).

Double hurdle specification requires two latent variables; y_1^{**} related with binary choice model determining decision to save (which is probit model) and y_2^{**} referring to the level (amount of saving) that is a truncated regression in nature. These latent variables are expressed as linear functions of the first and second hurdle regressors, x_1 and x_2 , respectively, where x_1 represents the regressors used to explain the decision to save and x_2 shows those variables used to explain the decision regarding the amount to save.

$$y_1^{**} = x_1\beta_1 + \mu_1$$

$$y_2^{**} = x_2\beta_2 + \mu_2$$

Suppose that an index variable y_1^* is expressed as $y_1^* = 1$ if the household decides to save and $y_1^* = 0$ otherwise, then we will have;

$$y_1^* = 1 \text{ if } y_1^{**} > 0 \text{ and,}$$

$$y_1^* = 0, \text{ Otherwise.}$$

Assuming that the error term u_1 in the first hurdle is normally distributed, the first hurdle corresponds to a probit model. Similarly, turning to the second hurdle, provided that the first hurdle was cleared, y_2^* can also be generated as:

$$y_2^* = y_2^{**} \text{ if } y_2^{**} > 0 \text{ and;}$$

$$y_2^* = 0, \text{ if otherwise.}$$

This second hurdle takes the form of truncated regression and is capable of generating zero levels of saving independent of the first hurdle. Finally, the observed (actual) amount of saving, y , is determined by the interaction of both hurdles, that is: $y = y_1^* y_2^*$. In specifying this model it is important to note that all required econometric test such as appropriateness tests of Tobit vs Double hurdle, comparison tests of probit vs logit, tests of normality assumption and multicollinearity tests need to be conducted and justified for relevance of the model.

5.3. Definition of Variables

Dependent variable: - There are two components for dependent variable; the first is the decision to save. It has a dichotomous nature measuring rural households' decision to save which takes a value of 1 if the household decides to save at formal financial institutions and 0 otherwise. The second dependent variable is the extent or amount of saving by households at formal financial institutions conditional on the decision to save and is of truncated regression.

Explanatory variables: - A number of explanatory variables used in the analysis include variables

representing household composition and characteristics, individual features of households, social and economic features, location and geographic features as well as monetary factors such as income were used.

6. Result and Discussion

6.1. Descriptive Data Analysis

The data for this study contains 325 randomly selected households of which 271(83.4%) involved in saving and the remaining did not participate in saving practice of any type. The summary statistics of data is given in table 2. As shown in the table the average amount of household saving annually is birr 3298.7 and almost 83.4 percent of households were involved in saving (saving be it the formal or informal institutions).

Households were seen to have large family size and are relatively more literate. About seventy one percent of the respondents are male headed households. The average annual household income is Birr 15,998.45 with the maximum ranging up to 48,000 birr per year and the average landholding size of households is 1.86 hectares. Similarly as shown in the table, on average households walk a distance of 10 kms to access formal financial institutions.

Table 1:- Summary of data used in analysis (N=325)

Variables	Mean	SD	min	Max
Household's amount of saving in Birr	3,298.674	3,825.64	250.00	3,955.97
Decision to save (1= save, 0 otherwise)	0.834	0.373	-	-
Age of household head	46.222	12.668	25	78
Household size	6.462	2.867	2	15
Sex of household head(male=1)	0.714	0.453	-	-
Primary education	0.163	0.37	-	-
Secondary education	0.338	0.474	-	-
College diploma and above	0.252	0.435	-	-
Dependency ratio	0.572	0.158	0.2	0.89
Employed	0.182	0.386	0	1
Petty trade	0.262	0.44	0	1
Annual household income in Birr	15,998.45	9,681.035	2,200	48,000
Distance from financial institutions in kms	10.123	4.085	4	18
Landholding size of household in hectares	1.863	1.527	0	6

Source: Own computation (2016)

One of the important factors in creating incentive to save money by households is the saving rate. Households who save money were asked as to what extent the interest rates were encouraging them to save in a formal financial institutions and 230 households (71%) of them reported that interest rates are discouraging. In relation to these, households were also asked about the awareness level of the interest rate of financial institutions, where only 78 savers (28 percent) reported not to be aware about the amount of interest rate on their saving.

6.2. Saving Practices and Financial Institutions in the study area

As indicated above out of the total 325 households interviewed for this study, 83.4 percent reported in the involvement of saving practices of any type. The motives behind saving by households were identified for savers. According to table given below, households gave several reasons as why they were engaged in saving. The reasons are summarized in the following table where unexpected expense constitutes the largest proportion.

Table 2: Reasons which Encourage Households to Save in Formal Financial Institutions

Reasons for households to save	Frequency	Percentage (%)
Unexpected expenses (illness, home repairs etc.)	117	43.2
Undertaking a new business	45	16.6
Education of children	53	19.6
Acquire household asset (land, house, clothes, TV, etc.)	33	12.2
Funeral/wedding for a family member	16	5.9
Retirement	7	2.6
Total	271	100

Source: own survey (2016)

Out of the sample households who participated in saving in the study area, 68.3 percent used formal financial institutions such as banks, microfinances, saving and credit associations as well as farmer cooperative unions and the remaining 31.7 percent used informal saving options such as 'Edir' 'Iqub', friends, keeping at home and changing to the form of assets. Similarly of the sampled households that used formal financial

institutions 39.6 percent were customers of saving and credit cooperatives, 25.1 percent used microfinance institutions, 15.8 percent used government banking system (Commercial Bank of Ethiopia) and the remaining used other private banks located in Assosa.

Figure 1. Formal financial institutions used by sampled households

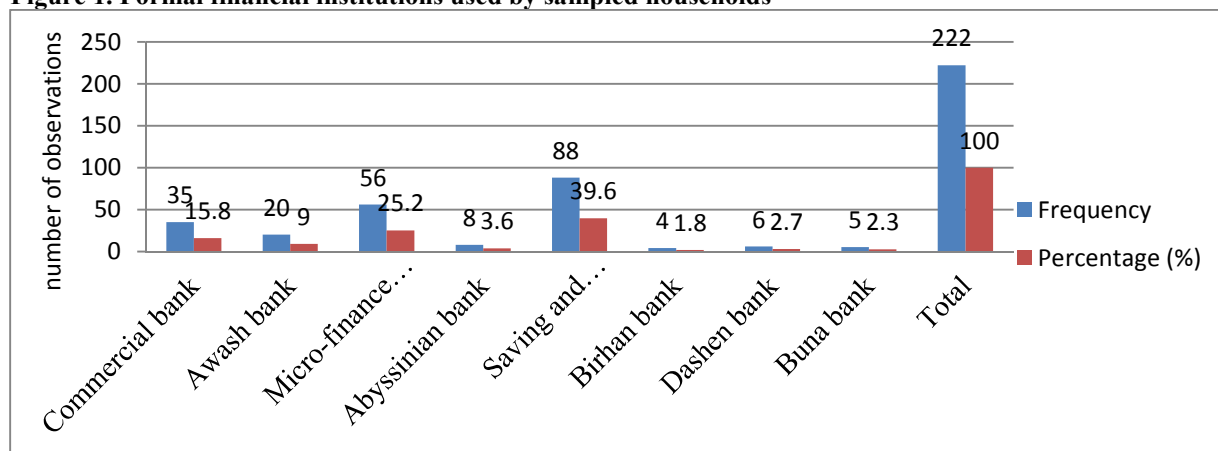
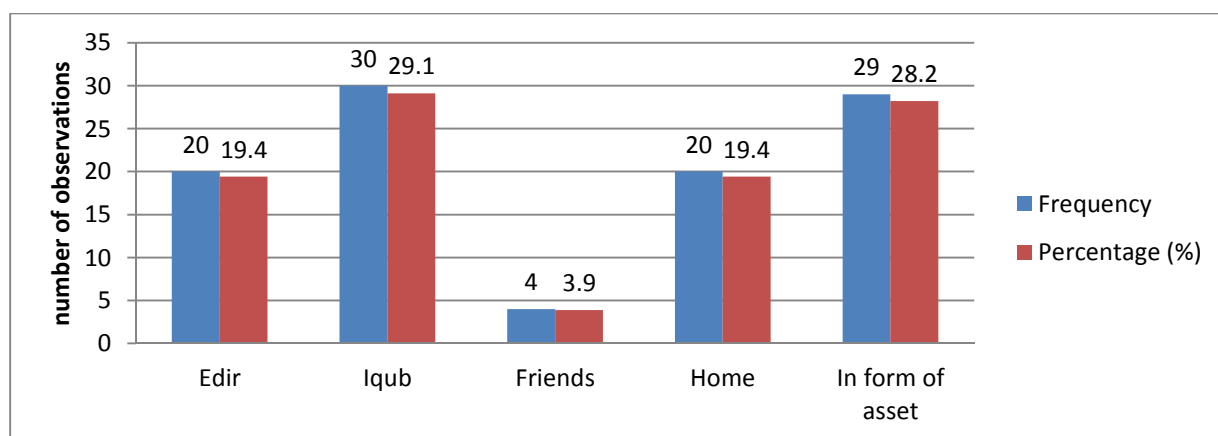


Figure 2. Informal Financial Institutions



Source: own survey (2016)

Households were also asked about their choice behind the use of formal institutions and informal saving options. About 31.7 percent of savers had no saving experience in the formal financial institutions due to different reasons. Thirty three percent reported lack of awareness about the use of formal institutions, 41.7 percent reported low income as a reason and 25.2 percent complained about the distance of the institutions away from their residence.

6.3. Econometric Results

As outlined in methodology section, this study used the double hurdle model to identify the determinants of household saving. The model analyzed the household's decision to save and their extent of saving independently by using maximum likelihood method of estimation. Before going any further, it is important to present different tests conducted as required by the methodology. First, the Wald χ^2 statistics as indicated by statistically significant p-value ($P < 0.0000$) indicates that the model has a strong explanatory power. Second, the likelihood ratio test for Tobit restrictions revealed that the computed values are greater than critical values showing rejection of Tobit model. As a result the decision to save and amount of saving are not based on the same set of decision making process.

Table 3: Test of Double Hurdle Estimation

Type of Test	Computed χ^2	Critical χ^2	Decision
Wald test for model adequacy	100.47	4.60	Model adequate
Tobit Restriction -LR χ^2	40.968	10.51	Tobit model-rejected
Covariance test ($\rho = 0$)	0.660	3.56	Interdependence of errors-not rejected

Source: own computation (2016)

Finally, computed value of covariance test statistics being less than critical value implies that the hypothesis of zero coefficient of the variance cannot be rejected for the given degree of freedom which justifies superiority of independent double hurdle model as compared to the single equation Tobit model.

The table below shows the results of the double hurdle model where analyses of households' decision to save and amount of saving were estimated. The first hurdle (probit model) and the second hurdle (truncate regression models) are estimated using the maximum likelihood method of estimation on the determinants of the decision to save and amount of saving respectively. As shown in the table, the age of household head has positive significant effect on the decision of household to save, however it has no significant effect on the amount of saving, that is as the household head gets older his decision to save will increase, this may be because his possibility of getting more income and awareness about saving will increase as age increases. Family size has statistically significant but negative effect on both the decision to save and amount of saving. This is because as family size increases, households are expected to allocate more of their income on consumption expenditure and thus there will be no income left for saving. As a result the household's decision to save and its level of saving may decrease as shown in the analysis.

Employment status, that is, whether the household head is employed or engaged in self-employment activities such as petty trade matters in this study. The rural farm households who are employed in government offices are mostly to be non-skilled and usually employed at lower salary levels so that their capacity to save is limited. For the case of petty trade, even though households are less likely to participate in saving decision (variable not significant), it may be the case that as they participated in petty trade activities, this will increase the level of saving.

Table 4: Estimation of Double Hurdle Model

Variables	Probit regression of saving decision (save =1/0)		Truncated regression of saving(amount in Birr)	
	Coefficient	SE	Coefficient	SE
Age of household head	0.056***	0.016	27.146	38.137
Family size	-0.177***	0.058	-419.932**	173.665
Sex of household head(male)	0.495	0.313	251.872	580.361
Employed	-1.252**	0.49	-2086.373*	1201.18
Petty trade	0.133	0.586	2344.623**	1057.8
Income of household head	0.00015***	0.00004	0.325***	0.049
Primary education	1.313***	0.432	2015.514*	1102.64
Secondary education	1.292***	0.399	3831.224***	1253.25
College diploma and above	1.612***	0.526	5286.080***	1332.05
Dependency ratio	-1.357	1.047	-229.158	1825.48
Landholding size	0.141	0.143	662.058**	263.342
Distance to financial institutions	-0.096**	0.032		
Sigma			2787.225	285.202

Source: Own computation (2016)

***significant at 1%, **significant at 5%, *significant at 10%

Annual income of the household has a positive significant effect on both the decision to save and amount of saving as predicted in theoretical and empirical literature. An increase in incomes of households increases their tendency to participate in saving and the amount they save. This is because such households will have income left for saving after paying for consumption expenditure. Similarly, although landholding size of households has no significant effect on their decision to save, their level of saving increases as land size increases, which may be related with the potential of households to produce more and get more incomes for saving.

Education status of the heads of the households is another important variable at influencing their saving levels. In this study education statuses of households analyzed at three levels; primary, secondary and college diploma or above have statistically significant effects on their decision to save and the amount they choose to save. This is theoretically justified from the fact that education has the probability to increase households' awareness to saving and also their capacity to save as more educated households has wider possibilities of earning more income than not educated ones. Finally, distant location of saving institutions such as banks and microfinance institutions has negative significant effect on the decision of households to save.

7. Conclusions and Policy Implications

In this study efforts were made to analyze the saving behavior of households in rural areas of Benishangul Gumuz Region. The study particularly addressed the households' decision to save and their level of saving using the double hurdle process. Application of double hurdle model over that of Tobit was justified using econometric methods and the data at hand. Generally, the estimated result confirmed the importance of family composition

and age, household income and family asset holding, education and employment status of households at influencing households' decision to save and their amount of saving.

The data also confirmed the use of formal financial institutions and informal saving options for households who decide to save. The reasons for households to save are largely guided by meeting unexpected expenses in the future. Moreover, nearly 32 percent of households opt for the use of informal saving options owing to lack of awareness about the use of formal institutions, low annual income and distance of the institutions away from their residence.

It is obvious that saving is an essential element of economic growth and growth of productivity in a country. Since a key part of nations aggregate saving is contributed by households, it is essential to investigate the household saving behavior, the determinants of saving and provide recommendations to policy makers. Accordingly, the findings imply the need for identifying alternative income sources for rural households through different income diversification options so as to mobilize more saving for economic growth. Second, as education level of household increases, the awareness regarding the importance of saving and saving institutions is expected to increase. Thus emphasis should be given to create and strengthen awareness of households to save through educational and awareness creation opportunities to rural households.

Third, as distance to financial institutions had negative and statistically significant effect on the saving decisions and amount of savings of rural households, policy interventions should focus on increasing the availability and accessibility of financial institutions in rural areas to promote rural households saving. Finally, financial institutions need to pursue favorable policies and regulations to enable financial service providers to broaden their scope of coverage by opening more branches as well as implementing door-to-door service provision to enhance the saving mobilization and investment functions in the study area.

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