The Determinant of Saving Behavior of Women's in Urban Ethiopia
In Case of Arba Minch Town

Workineh Ayenew

School of Graduate Studies, Arba Minch University, Economic Policy Analysis. POBOX 21, Arba Minch, Ethiopia

Email: workinehayenew@gmail.com

Abstract

The role of savings in investment and therefore in the development of a country cannot be exaggerated. In poor countries like ours most of the savings is done by households**.** In this paper the behavior of women saving in Arba Minch town is examined. Total of 50 women's samples is taken using systematic sampling and Logistic regression model using MLE technique was applied. It has been shown that various factors influence the saving behavior of women's including credit, employment , income, urban agriculture, family size, education attainment of women's and age. It is found that, education and age have negative influence on saving but statistically insignificant. Whereas, ownership of urban agriculture and income level have significant and positive effect on saving behavior of women's. Access to credit and family size has a significant negative influence on the behavior of women saving. Tests of goodness of fit of the model shows the model is fitted, robust hetroscedasticity test prove that the model is free from the problem. The link test also shows the model is correctly specified.

Keywords: Saving, Odds Ratio, Logistic Regression, Marginal Effect, Link test

1. INTRODUCTION

1.1 Introduction

 Personal saving has two primary functions. It provides the economic security of a safety net. Saving transfer resources from the present to future and hence, help individuals to cope up with future unexpected surcumintances. Second, saving leads to accumulation of wealth that enables individuals to improve their living standard and to respond to new opportunities (Gokhale, 2000). Everyone agrees that starting to save early has merit in it and "Money grows on the tree of patience" and there are benefits of "power of compounding", but few actually practice it.

National savings is the sum of savings by public and private sector. Public savings can be mobilized by increasing revenue resources and by controlling non-development public expenditure, thereby generating a budgetary surplus. Private savings can be organized by banking system, development of financial institutions and the stock exchange. In private savings, large portion of savings is due to large share of household sector. Low level of income has a deadly effect on saving, average propensity to save is low and numbers of the poor outstrip the rich in developing countries. Because of low income and formal financial intermediates scarcity developing countries are overwhelmed by insufficient saving (Mustafa Sawa, 2000)

Saving rates around the world vary widely: on average East Asia saves more than 30 percent of gross national disposable income (GNDI), while Sub-Saharan Africa saves less than 15 percent. Regional differences have been rising: over the past three decades saving rates have doubled in East Asia and stagnated in Sub Saharan Africa and in Latin America and the Caribbean. Ethiopia is among the developing countries that needs fast and sustainable investment growth. However, its domestic saving rate was on the lowest for the past several decades. The average domestic saving rate was only 7.9% of the GDP during the past four decades (1970/71 to 2010/11). Splitting the available data among the three regimes of Ethiopia during the study period also shows that the average saving rate was 13.8% of GDP during the period from 1970/71 to 1973/74, 7% from 1974/75 to 1990/91 and 7.3% from 1991/92 to 2010/11. This classification implies that, though saving rate was relatively good during the Imperial period, it declined to lower percents during the Dergue and the current regimes of Ethiopia (that is, EPRDF).

 Saving level differs across countries and regions of the world. Even within the same region/ countries saving is very different for different classes of income groups, age groups and gender. In Ethiopia the gross domestic saving and gross national saving as a percentage of GDP is still below the Sub Saharan average which is 9.7% and 18.7% respectively, which is less than 10.6% and 24.7% for the Sub Saharan Average in 2011.

1.2. Statement of the Problem

Savings is the most reliable and convenient way to cushion against economic shocks while providing a way for women to accumulate the means to purchase productive assets. A woman with her own savings may be able to exercise more bargaining power and decision-making capabilities within the household, which could allow her to

accumulate individual wealth, invest in her children's education and nutrition, or enable her to leave an abusive relationship (Cheryl D, Carmen, 2012).

Inadequate savings not only negatively affects financial management; individuals are increasingly in charge of their own financial security after retirement. With the declining employment opportunities, income instability and eroded purchasing power of households, workers have to decide not only how much to save for retirement but also how to allocate their pension wealth. Millions people struggle financially, and many of those near retirement lack the funds needed for a comfortable life. Now a day's economically life is tougher, workers face higher food prices, energy costs, and health care expenses. Deficient emergency savings increased anxiety among moderate- and low-income households this often leads to health problems, such as lack of sleep, especially among low-income households.

Previously on the same study researchers found inconsistent result using different methodology, Mehboob & Tasneen Asghar (2000) using OLS method found that income has positive and significant effect on saving behavior of households. Whereas, study on gender difference in saving behavior (Xuewei Qiao, 2012) using multinomial logit model found that there is no significant difference of financial behavior between male and female. On the other hand,(Liela Falahati,2012) using simple random sampling technique and multiple linear regression found that males have better financial knowledge and better saving behavior than female households.

It is arguable that female households in urban areas have less saving behavior as they are engaged in less payable job, and spend more on fashions which are subjected to periodic changes, less house ownership and hence high cost of living, spending on luxury products, and females often take all the risk of child bearing hence spend on the families consumption.

On the other ground it is argued that female households in urban areas spend small proportion of their income despite how much they earn, they spend on very attractive but least cost commodities and have better household management. Despite this all, no previous studies are conducted on the issue in Arba Minch town and due to prolonged gender discrimination persisted till recent past, women's were menial workers, less educated. But the government give a due attention for women's in economic participation as" **without women development is not practical**" Hence this paper tried to analyze the saving behavior of women in Arba Minch town using binary logit model. This study aimed to know the reason of dis-saving and if saving occurs then what are the determinants which are responsible for saving.

1.3. Objective of the Study
The general objective of the study is to analyze the determinants of women saving behavior in Arba Minch town.
Specific Objectives are:
1. What are factors affecting saving behavior of women's?
2. Examine the characteristics of women's in the town
3. Forward some policy implications

1.4. Hypothesis of the Study
1. Ho: Saving habit of women's are very low
   H_1: the habit of saving is higher for urban women's
2. Ho: Income has negative and in significant effect on saving behavior
   H_1: Income has positive and significant effect on saving behavior
3. Ho: Education and saving has positive relationship
   H_1: Correlation between education and saving is negative

1.5. Significance of the Study
It is important for who are interested in searching for saving issue of women's in the area and provide hint for other researchers interested to do on the issue. More specifically it may put an important insight for policy makers, local administrators and economic sectors who directly or indirectly responsible for women like micro and small scale institutions.

1.6. Limitation of the Study
The study is conducted in Arba Minch town. The sample size is too small to take the results obtained to make generalization about the saving behavior of the whole women population. Furthermore, variables taken in the analysis of the econometric model may not be as large as possible, that may limit the result reliability, because there may be omitted variables that have significant influence on the behavior of women saving. Out of these mentioned limitations all the results obtained is credible to take for application.

2. REVIEW OF RELATED LITERATURE
2.1. Theoretical literature
In the short run, spending dynamics are of central importance for business cycle analysis and the management of monetary policy. And in the long run, aggregate saving determines the size of the aggregate capital stock, with consequences for wages, interest rates, and the standard of living. Aggregate savings for an economy is a

predominant component.

2.1.1. The Life -Cycle Hypothesis (LCH) is an economic theory that pertains to the spending and saving habits of people over the course of a lifetime. The concept was developed by Franco Modigliani and his student Richard Brumberg. LCH presumes that individuals base consumption on a constant percentage of their anticipated life income. An example supporting the hypothesis is that people save for retirement while they are earning a regular income (rather than spending it all when it is earned). This simple theory leads to important and non- obvious predictions about the economy as a whole, that national saving depends on the rate of growth of national income, not its level, and that the level of wealth in the economy bears a simple relation to the length of the retirement span. , the life- cycle hypothesis remains an essential part of economists' thinking.

2.2.2. Relative Income Hypothesis states that the satisfaction (or utility) an individual derives

From a given consumption level depends on its relative magnitude in the society (e.g., relative to the average consumption) rather than its absolute level. It is based on a postulate that has long been acknowledged by psychologists and sociologists, namely that individuals care about status. In economics, relative income hypothesis is attributed to James Duesenberry, who investigated the implications of this idea for consumption behavior in his 1949 book titled Income, Saving and the Theory of Consumer Behavior. At the time when Duesenberry wrote his book the dominant theory of consumption was the one developed by the English economist John Maynard Keynes, which was based on the hypothesis that individuals consume a decreasing, and save an increasing, percentage of their income as their income increases. At a given point in time the rich in the population saved a higher fraction of their income than the poor did. However, Keynesian theory was contradicted by another empirical regularity: .

2.2.3. The Permanent Income Hypothesis was formulated by the Nobel Prize winning economist Milton Friedman in 1957. The hypothesis implies that changes in consumption behavior are not predictable, because they are based on individual expectations. This has broad implications concerning economic policy. Under this theory, even if economic policies are success full in increasing income in the economy, the policies may not kick off a multiplier effect from increased consumer spending. Rather, the theory predicts there will not be an uptick in consumer spending until workers reform expectations about their future incomes.

3. METHODOLOGY OF THE STUDY

The study was based on collection of primary data from the field. The secondary data was also used. Systematic sampling technique was employed to draw a representative sample. Cross- sectional primary data were collected by structured questionnaire from household level and used in this study. Main variables of interest related to women include; education level of respondent, employment status, income from various sources, and credits accessibility, age of the respondent, family size, urban agriculture.

The study was conducted with 50   women households drawing a sample from 10 Kebele of Arba Minch town. Several decisions made by households are "either-or" in nature and such choices can be represented by a binary variable which assumes the value of one (1) for a chosen outcome and takes the value of zero (0) otherwise (Hill et al., 2008). The variable of interest in this study is a binary variable with two options "decision-to-save" or "decision-not-to-save". The models for analyzing binary regressand include the Linear Probability Model (LPM), probit model and Logit model (Greene, 2003; Gujarati, 2004). It is argued that the logit model is frequently used than LPM and the probit   model due to ease of explanation and computationally simple. Also, the probit model is based on the assumption of normality of the error terms and the result of the Jarque-Bera test suggest otherwise.

The logit model is a way of estimating the probability that an event occurs or not, by predicting a binary dependent outcome from a set of independent variables (Maddala, 1992). The logit model is first based on a representation likes as follows;

$$pi = E(Y = 1/X) = \frac{1}{1 + e^{-(B_0 + B_1 X_i)}}$$

………… (1) Expressed also as follows

$$P_i = \frac{1}{1 + e^{-z}} = e^z / 1 + e^z$$ …..(2) Cumulative logistic distribution function

Where $Z = \beta_0 + \beta_1 X_i + e_i$,   pi = the probability that women would decide to save , X_i represent thee explanatory variables. The decision not to save can be expressed as

$$1- P_i = 1 - \frac{e^z}{1 - e^z} = \frac{1}{1 + e^z},$$ the ratio of the probability to save and not to save is given by

Odds ratio $\frac{pi}{1-\text{P}i} = \frac{e^z/1+e^z}{1/1+e^z} = e^z = e^{\beta_0 + \beta_1 X_i + e_i}$, taking the natural logarithm

$\text{Ln}(\frac{pi}{1-\text{P}i}) = \beta_0 + \beta_1 X_i + e_i$, Li which is the log of odds is the logit model

$L_i = \beta_0 + \beta_1 X_i + e_i$, letting Si as a decision to save, this model is specified

$$S_i = \beta_0 + \beta_1 Y + \beta_2 EMP + \beta_3 CR + \beta_4 EDU + \beta_5 AGE + \beta_6 FAMSIZE + \beta_7 URBAGRI + e_i$$

Where, β_0 is the constant term $\beta_1, \beta_2, \ldots \ldots \ldots \ldots \ldots \ldots \beta_7$ are slope coefficients of explanatory variables

Y= income level from various sources, which is a continuous variable

EMP = employment status of women which is dummy

$\qquad\qquad$ EMP = 1, if employed

$\qquad\qquad\qquad$ 0, otherwise

CR= credit, dummy variable $\quad$ CR=1, if accessible,

$\qquad\qquad\qquad\qquad$ 0, otherwise

EDU = educational qualification, 1 for primary and 0 otherwise

AGE is the age of women, which is continuous variable

FAMSIZE= family size, continuous variable

URBAGRI= urban agriculture which discrete variable 1 for owned, 0 otherwise

4. RESULTS AND DISCUSSIONS

4.1. Descriptive statistics

Women's saving is one major determinants of future household consumption and the probability of the households to withstand unforeseen happenings. It is part of household saving in particular and sources of countries domestic saving at large. Various economic and demographic factors affect the behavior of women saving for future; like family size, age, income, employment, education, access to credit and ownership of agriculture.

Table 4.1 Relationship between age structure and income of women respondents

Age	Gross Income(in birr) (A)	No of Respondents Fall In Age Group(B)	Mean Income(in birr) (A/B)
20-35	9690	14	629.1429
36-45	15010	11	1346.545
46-55	9450	8	1181.25
56-65	16050	10	1605
above 65	6470	7	924.2857

Table 4.1 shows the relationship between income of women and their age structure. It presents that half of the respondents lie in age group less than 45 year, and only seven above 65 year. This deduces that they largely fall in productive age group. Around 28 percent of the sampled respondents lie between 20-35 years. As the table depicts mean income of women's is the lowest (i.e. 692.1429 birr) for age below 35 years, and 924.2857 birr for those above 65 years. This might be because they engage in informal and or low wage employment, and the old aged are only receive as transfer payment from their relatives or they only receive retirement fee if they had been employed in formal job. Hence on average income is relatively increasing to some limit (to 65 years) and then falls.

Table 4.2. The Income Level and Number of Family Size Relationship

Income range (in birr)	Number of respondent(A)	Family Size(B)	Average Family Size(B/A)	Total Income(C)	Total Income/Family Size(C/B)
0- 500	20	107	5.35	5960	55.70093
501-1000	11	62	5.636364	8010	129.1935
1001-1500	4	13	3.25	5100	392.3077
1501--2000	9	43	4.777778	16680	387.907
2001-2500	1	3	3	2220	740
2501-3000	3	12	4	9000	750
3001-3500	1	8	8	3200	400
>6000	1	4	4	6500	1625
total	50				

Table 4.2 depicts that 40% of respondents income is below 500 birr per month. The average income receipts of each individual in this income range are 55.7 birr monthly. The total family size of these respondents is 107, while each family size of a respondent is 5.35. As income raises both total family size of respondent in each income range and the average family size fall. Whereas, lower income is associated with higher fertility, higher income relates with lower fertility of women's. This is because when income is poor, women's can't afford family planning and giving birth of large child will serve as source of income through sending child's to work. On the other hand, higher income help women to afford family planning, and women spend much on the child human capital development, hence need less family size.

Table 4.3 Education Level and Saving Decision of Women Respondents

	Saving Decision		
Education	save	Not Save	Total
Below primary	12	11	23
Beyond primary	15	12	27
Total	27	23	50

Table 4.3 shows that out of total respondents 54% are educated above primary education. 12 out of 23 below primary educated have decision to save, whereas 15 out of 27 women, who are educated beyond primary level, save. Out of total women respondents 54% of them save out of their income.

Table 4.4 employment status of women's and saving decision

	Saving decision		
Employment	**save**	**not save**	**total**
Employed	17	20	37
Unemployed	10	3	13
Total	27	23	50

Of all 50 respondents, 37 are employed in formal jobs and the rest are self employed. 17 of 37 employed women's save and 20 of 37 do not save. On the other hand, 10 out of 13 unemployed save. This might be because those employed are in low wage paying job and unemployed have other assets, like rental houses, urban agriculture, etc

Table 4.5 Ownership of Urban Agriculture and Saving Decision

Ownership of urban agriculture	Saving decision		
	save	Do not save	total
Owners	25	19	44
Non owners	2	4	6
total	27	23	50

From the table 4.5 it shows that of all women respondents who save from, 25 or 92% are owner of urban agriculture and only 2 are non owner's who save. Whereas, 19 or 43% of owners do not save. Those who do not have agriculture are almost do not save. This magnifies the importance of this economic activity for saving.

Table.4.6 women's decision to save and access to credit

	Decision to save	

Access to credit	save	Not save	total
access	13	19	32
no access	14	4	18
total	27	23	50

In table 4.6 one can deduce that many of the respondents have access to credit. But it is possible to say that credit is not devoted in productive areas that women's can able to pay back their debt and add to their saving. This is because in the table only 13 of 32 women's having access to credit that save and 19 of them do not save, and if only they get access it may be used to balance only monthly consumption deficit. On the contrary, 14 of 18 women's having no credit access have decision to save.

4.2. Econometric result

Table 4.7 summary statistics of variables

sum

Variable	Obs	Mean	Std. Dev.	Min	Max
AGE	50	48.02	16.5054	23	87
FANSIZE	50	5.04	2.498653	0	13
EDU	50	.52	.504672	0	1
EMP	50	.74	.4430875	0	1
INC	50	1133.4	1159.368	200	6500
URBAGRI	50	.88	.3282607	0	1
CR	50	.64	.4848732	0	1
saving	50	.54	.5034574	0	1

Table 4.7 presents that the mean age of women's is 48 years, and average each woman gives birth of 5 children in her life time. On average 74% of women's are employed in formal job and the mean income is 1133.4 birr per month. 88% of them own urban agriculture, 64% have access to credit and 54% of sample respondents have saving habit.

Logit regression result

Table 4.8 results of logistic regression of the model

. logit saving AGE FANSIZE EDU EMP INC URBAGRI CR

```
Iteration 0:   log likelihood = -34.497188
Iteration 1:   log likelihood = -14.160836
Iteration 2:   log likelihood = -12.168867
Iteration 3:   log likelihood = -11.684536
Iteration 4:   log likelihood = -11.665264
Iteration 5:   log likelihood = -11.665218
Iteration 6:   log likelihood = -11.665218
```

Logistic regression

Log likelihood = -11.665218

Number of obs = 50
LR chi2(7) = 45.66
Prob > chi2 = 0.0000
Pseudo R2 = 0.6619

saving	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
AGE	-.0218248	.0417171	-0.52	0.601	-.1035888	.0599393
FANSIZE	-1.061877	.4751198	-2.23	0.025	-1.993095	-.1306593
EDU	-1.111244	1.427066	-0.78	0.436	-3.908242	1.685755
EMP	-3.321741	1.604248	-2.07	0.038	-6.466009	-.1774733
INC	.0042823	.0020548	2.08	0.037	.0002551	.0083096
URBAGRI	8.3478	3.896301	2.14	0.032	.7111901	15.98441
CR	-3.867207	1.855162	-2.08	0.037	-7.503258	-.2311569
_cons	1.496607	2.785006	0.54	0.591	-3.961905	6.955119

Note: 0 failures and 2 successes completely determined.

The logit model is interpreted as change in log of odds for a unit changes in x, other things the same.

Saving = 1.496607 – 0.0218248 AGE – 1.061877 FANSIZE –1.111244EDU – 3.321741EMP + 0.042823 INC + 8.3478URBAGRI – 3.867207CR

Saving and age found to be negatively related and but it is insignificant at 5% level of significance. When a women age increase by one year, the log of odds of saving is decrease by 0.022 units. This may be because as

women's become aged, they receive less and unable to afford all expenditures. This shows that age of the women has little impact on household savings. The results suggest that savings decrease with age, but at a decreasing rate and tend to increase as the age crosses a certain limit.

Saving and family size has negative relationship and it is significant at 5% level of significance. An increase in family size by one results in decrease in logs of odds of saving by1.061877. This is associated with the higher consumption expenditure required due to additional child in the family. Also the risk of bearing and rearing child is taken by women's that forces them to stay in house rather than working for some other activity that generates income. This shows that saving decrease significantly with an additional family size.

Education has negative effect on saving, but it is found that the negative influence is statistically insignificant at 5% level of significance. The Table shows that the negative influence of education increases as the women's moves from lower level of education to higher level of education. This negative relationship between savings and education level of women could be due to the fact that, educated women's like to educate their children more and more to make sure that they follow their parents in their future career. As a result saving is expected to decline as more and more money is spent on educating the future generation of educated parents.

Employment results reduced saving and it is significant at 5% significance level. As women move from unemployed in formal government or NGO work, the saving behavior of them decreased. This is the fact that, they give up their own self employment that generates better income, and that the wage they receive from employment is low to support them to save.

Income has positive effect and significant at 5% significance level. Higher income increases the saving behavior of women's and vice versa.

Ownership of urban agriculture increases saving of women's and it is significant at 5% significance level. While women own an asset, it generates more income and saving behavior increased. Credit has negative and significant effect on saving behavior of women's. it is due to the fact that, it is accessed for balancing some seasonal short fall of consumption expenditure or for owning assets having no future return, or on investment which is exposed to natural calamity that women's fail to be solvent. Even they may dis-save.

The constant shows that all variables being zero, the natural logarithm of the odds ratio is 1.496607.

Table 4.9 Odds ratio of the model for significant variables

. logistic saving CR URBAGRI INC EMP FANSIZE

Logistic regression

			Number of obs	=	50
			LR chi2(5)	=	44.92
			Prob > chi2	=	0.0000
Log likelihood = –12.037763			Pseudo R2	=	0.6511

saving	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf. Interval]	
CR	.0287478	.0464187	–2.20	0.028	.0012139	.680816
URBAGRI	4057.808	14789.86	2.28	0.023	3.205082	5137405
INC	1.003741	.001706	2.20	0.028	1.000403	1.007091
EMP	.043309	.0661922	–2.05	0.040	.0021658	.8660225
FANSIZE	.3104906	.1355017	–2.68	0.007	.1320001	.7303359

Note: 0 failures and 1 success completely determined.

The odds ratio is the proportion of the probability of event occurs to the probability of the event do not happen. That is the ratio of probability that women save to probability she does not save.

Table 4.9 shows that if amount of credit received increase by one birr, women's move to saving increased by 0.29 and it is significant at 5% significance level. Whereas, if women become owner of urban agriculture, odds ratio increased by 4057.808. Similarly a birr increase in income leads the ratio to increase by 1. That means women get in to saving from not saving.

Table 4.10 Marginal effect (mfx) of each variable on saving behavior of women's

```
. mfx

Marginal effects after logistic
      y  = Pr(saving) (predict)
         =   .83931922
```

variable	dy/dx	Std. Err.	z	P>|z|	[95% C.I.]		X
CR*	-.3878557	.18502	-2.10	0.036	-.750495	-.025216	.64
URBAGRI*	.9305454	.08563	10.87	0.000	.762714	1.09838	.88
INC	.0005036	.00018	2.78	0.005	.000148	.000859	1133.4
EMP*	-.2837728	.15782	-1.80	0.072	-.59309	.025544	.74
FANSIZE	-.1577354	.07337	-2.15	0.032	-.301536	-.013935	5.04

```
(*) dy/dx is for discrete change of dummy variable from 0 to 1
```

Marginal effect is the effect of each variable x on the probability of women's saving behavior, all else being constant.

Credit, employment, and family size have negative and significant effect on the probability that women's save. That means a unit increase in these variable causes probability of saving by the amount of its respective coefficients.

When women's gets employed, the probability that she will save decrease by 0.2837728. That means the probability that women's will not save increase. Therefore, a woman employed in certain sector of government saves less than those who are not employed.

A birr increase in credit receipt by a woman, or when women who have no previous debt become indebted, it significantly reduces her probability of saving by 0.3878557. Women who increase debt increase the probability not to save. Women with increasing family size also have less probability to save. As a child is added to a family the spending level increase, other things being the same; as a result probability of saving gets reduced by 0.1577354.

Non owner of urban agriculture who become owner, significantly increase probability of saving by 0.931. When the income receipt of a women increase by one birr, the probability that she save increase by 0.0005. Though it is statistically significant, it is economically insignificant.

4.3. Test of logistic regression
Specification error test
Model Specification: Assumptions of logistic regression realize that the model is correctly specified. When the assumptions of logistic regression analysis are not met, we may have problems, such as biased coefficient estimates or very large standard errors for the logistic regression coefficients, and these problems may lead to invalid statistical inferences. Therefore, before use our model to make any statistical inference, check that our model fits sufficiently well and check for influential observations that have impact on the estimates of the coefficients. (www.ats.ucla.edu/).

The Stata command **linktest** can be used to detect a specification error. After the regression command (in our case, **logit** or **logistic**), **linktest** uses the linear predicted value (**_hat**) and linear predicted value squared (**_hatsq**) as the predictors to rebuild the model. The variable **_hat** should be a statistically significant predictor, since it is the predicted value from the model. This will be the case unless the model is completely misspecified. On the other hand, if our model is properly specified, variable **_hatsq** shouldn't have much predictive power except by chance. Therefore, if **_hatsq** is significant, then the **linktest** is significant. This usually means that either we have omitted relevant variable(s) or our link function is not correctly specified. In this study **linktest** report that the model is correctly specified. Because (**_hat**) is significant and **_hatsq** is not significant

Table 4.11 Specification Test of The Model

```
. linktest

[teration 0:    log likelihood = -34.497188
[teration 1:    log likelihood = -12.062279
[teration 2:    log likelihood = -11.680803
[teration 3:    log likelihood = -11.666458
[teration 4:    log likelihood = -11.660878
[teration 5:    log likelihood = -11.660801
[teration 6:    log likelihood = -11.660801

.ogistic regression                    Number of obs    =         50
                                       LR chi2(2)       =      45.67
                                       Prob > chi2      =     0.0000
.og likelihood = -11.660801            Pseudo R2        =     0.6620
```

saving	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
_hat	.99855	.3510115	2.84	0.004	.3105801	1.68652
_hatsq	-.0109588	.1138187	-0.10	0.923	-.2340393	.2121218
_cons	.0237917	.579095	0.04	0.967	-1.111214	1.158797

Good Ness of Fit Test

The p-value associated the chi-square with "n" degrees of freedom and Hosmer and Lemeshow's are used to test goodness-of-fit test. In this study p-value associated the chi-square with 12 degrees of freedom. The p- value of .0000 indicates that the model as a whole is statistically significant i.e. the model fit the data well. (Table 4.8) Another commonly used test of model fit is the Hosmer and Lemeshow's goodness-of-fit test. The Hosmer-Lemeshow goodness-of-fit statistic is computed as the Pearson chi-square from the contingency table of observed frequencies and expected frequencies. Similar to a test of association of a two-way table, a goodness of fit as measured by Hosmer and Lemeshow's test will yield a large p-value. Therefore in this study the test result show that p= .9963 this suggest that the model is correctly fitted with the data

Table 4.11 Goodness of Fit test of the model

```
. estat gof
```

Logistic model for saving, goodness-of-fit test

```
       number of observations =         50
  number of covariate patterns =        50
              Pearson chi2(42) =      21.52
                  Prob > chi2 =      0.9963
```

Hetroscedasticity test

Robust logistic regression is used to control for heteroscedasticity in binary outcome models. Heteroscedasticity in binary outcome models will affect both the "Betas" and their standard errors. (Wooldridge, 2001). In this particular study both regression i.e. earlier regression and robust logistic regression have the same result. None of the coefficient estimates changed, but the standard errors and hence the Z values are a little different. Had there been more heteroscedasticity in these data, would have probably seen bigger changes. Therefore this model is free from heteroscedasticity problem.

Table 4.12 Robust Hetroscedastics Test of the Model

```
. logit saving CR URBAGRI INC EMP EDU FANSIZE AGE, vce(robust)

Iteration 0:    log pseudolikelihood = -34.497188
Iteration 1:    log pseudolikelihood = -14.160836
Iteration 2:    log pseudolikelihood = -12.168867
Iteration 3:    log pseudolikelihood = -11.684536
Iteration 4:    log pseudolikelihood = -11.665264
Iteration 5:    log pseudolikelihood = -11.665218
Iteration 6:    log pseudolikelihood = -11.665218

Logistic regression                    Number of obs    =         50
                                       wald chi2(7)     =      19.77
                                       Prob > chi2      =     0.0061
Log pseudolikelihood = -11.665218      Pseudo R2        =     0.6619
```

saving	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf. Interval]	
CR	-3.867207	1.212605	-3.19	0.001	-6.243869	-1.490546
URBAGRI	8.3478	2.853721	2.93	0.003	2.754609	13.94099
INC	.0042823	.0015909	2.69	0.007	.0011643	.0074004
EMP	-3.321741	1.139152	-2.92	0.004	-5.554439	-1.089043
EDU	-1.111244	1.512782	-0.73	0.463	-4.076242	1.853754
FANSIZE	-1.061877	.373608	-2.84	0.004	-1.794135	-.3296187
AGE	-.0218248	.0362677	-0.60	0.547	-.0929082	.0492586
_cons	1.496607	2.401528	0.62	0.533	-3.210302	6.203515

Note: 0 failures and 2 successes completely determined.

5. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusions

Women saving play an important role in the economic growth and stability of any country. Future financial capacity and ability to cope with unforeseen expenditures is financed by the currently saved money. The study shows that saving behavior of women's in Arba Minch town is not ideal indeed.

Having estimated Logit model of women's saving behavior in Arba Minch town, the following outcomes found:

i.   Urban agriculture is found to be the most important variable which has positive effect on women's saving behavior in Arba Minch

ii.   Income has positive effect on women's saving behavior

iii.   In case of employment status only unemployed in government institutions have positive savings.

iv.   Age and education have negative but insignificant effect on saving behavior of women's in Arba Minch.

v.   Access to credit, and family size negatively and significantly influence saving.

5.2 Recommendations

The following suggestions can be made based on the result obtained in the study

i.   Women's shall be engaged in more productive activities that help them to boost up their saving behavior

ii.   Women should be an aware of family planning so that, low fertility result small family size.

iii.   The amount and accessibility of credit to women must be selective i.e. on productive areas

iv.   There should be strong link between women and the government to help them strengthen their saving behavior.

v.   Educated women's have to be in such a manner that they spend more on educating their child by specifying family size, and save now for future expenditure.

REFERENCES

Cheryl D, et. al (2012), Women Who Save: Comparative Analysis of Ecuador, Ghana, India

Leila F, And Laily H (2012), Gender Difference in Saving Behavior Determinants among University Students

Green (2003), *Econometrics Analysis Fifth Edition,* New York City University

Maddala (1992) *Introduction to Econometrics second edition,* New York

Mehboob A, and Tasneem Asghar (2000), Estimation of Saving Behavior in Pakistan Using Micro Data.

Mustafa Sawani (2000), Informal Saving Practices in Developing Countries

Xuewei Qiao (2012), Gender Differences in Saving and Investing Behaviors

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:
http://www.iiste.org

CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

Prospective authors of journals can find the submission instruction on the following page: http://www.iiste.org/journals/ All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: http://www.iiste.org/book/

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digtial Library , NewJour, Google Scholar