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Determinants of Urban Household Saving Behavior in Ethiopia: A Survey Study in Mekelle City

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Abstract

This study is conducted under the title "Determinants of Urban Household Saving Behavior in Ethiopia." Its main objective was to empirically investigate the determinants of urban household saving behavior in Mekelle city, Ethiopia. Cross-sectional primary data was collected using self-administered open-ended and closed-ended questionnaires from 150 households from seven sub-cities of Mekelle city. Selection of the sample was by two stage stratified sampling techniques, where the first stage units were sub-cities and the second stage units were the households. Descriptive statistics and binary logistic regression model was used to test the formulated hypotheses. The study found that household headed by a female, total income of household, and saving experience had a positive and significant impact on household saving. However, age of the household head, additional earner in the household, and dependency ratio of the household had a negative and significant influence on household saving. The governing saving motive found in this study was precautionary motive. The study recommended that government in collaboration with financial institutions should promote household saving by introducing different packages of prize-linked promotional savings; government should continue and spend the utmost effort to stabilize inflationary pressures using short-term and long-term strategies; and, government should strive to increase the disposable income of households. This study focused on household saving using only financial saving and employed smaller sample and binary logit regression model. Thus, further research may be undertaken to incorporate larger samples by employing other econometric models such as Heckman sample selection model and OLS regression models.

Keywords: saving, household, urban, Ethiopia, logit.

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Introduction

Saving by the household sector is defined as that part of current income, after the payment of taxes, that is not consumed or postponed as part of household current consumption. Likewise, saving includes current payments made in the form of a reduction in household liabilities, such as repayment of capital on a loan used for housing, and consumer durables (Prinsloo, 2000).

Saving is that part of a disposable income of a certain period that has not been allocated to consumption (Umoh, 2003; Uremadu, 2006). Thus, saving encompasses the residual income which to be invested either for income generation or to meet some future planned or uncertain events.

Household savings are vital as a supply of investment funds because financial developments have significant implications for economic growth in developing countries (Abdelkhalek, Arestoff, Freitas, & Mage, 2009).

Development economics has for several decades renowned the importance of the mobilization of domestic savings for economic growth in developing countries. The positive relationship between saving and/ or investment and economic growth has long been an established fact in economics (Ahmad, Atiq, Alam, & Butt, 2006).

According to UNCTAD (2000), Ethiopia is the second-most populated country in Africa with more than 80 million people. It is also among the low-income sub-Sahara African countries and has been an exemplary of poverty for a number of decades. Though gross domestic savings rate in the sub-region have improved slightly in recent years, from about 5.3% of GDP in 2000 to 7.5% in 2005, it is still far below the average rate of Sub-Saharan Africa in 2005 of 17.6% and that attained by the African continent in the 1980's of about 26% (UNCTAD, 2007). Gross domestic saving is a serious obstacle in reaching the goal of realizing high economic growth and significant poverty reduction, in the absence of increased external inflows.

The domestic saving rate in Ethiopia has been very low and has reduced over time. From 1997 to 2010, the average saving rate in low-income countries of the sub-Saharan Africa was about 9%, while it was about 19% for middle-income countries. In the same period, the average saving rate of "fragile" sub-Saharan African states was 11.5%, still significantly higher than Ethiopia's rate of 4% (IMF, 2009a, 2009b, as cited in Tsegabirhan, 2010).

The recent rate of saving is too low by Ethiopia's own standard and relative to other developing countries. The trend has also made the economy increasingly reliant on external financing sources, with excessive exposure to external shocks, and delaying the necessary reforms to create favorable investment to the private sector and put the economy on a sustainable path of growth and financing (Abu, 2004). A developing country with a weak saving performance cannot secure enough investment resources to finance its investment necessities. Hence, low saving performance of the country is due to various determinants of saving.

A study by Faridi, Hafeez, and Bashir (2010) on household saving behavior in Pakistan reported that spousal participation, total dependency rate, total income of household, and size of landholdings significantly increase household savings. Education of the household

head, children's educational expenditures, family size, liabilities to be paid, marital status, and value of the house significantly reduce the savings level of households.

Bizuneh (2011) studied the determinants of household saving behavior in Nekemte town, and reported a positive relation across household age, volume of income, academic level, and saving. In addition, the three dominant saving motives found in this study were precautionary saving, bequest saving, and saving for purchase of durable asset(s).

The major objective of the current study was to investigate the determinants of household saving behavior in Ethiopia, specifically in Mekelle city, by analyzing sociodemographic and socioeconomic factors of households. The study has also tried to address the following specific objectives:

- To identify the main sociodemographic and socioeconomic factors that affect household saving behavior.
- To examine whether any significance difference exists between saver and non-saver groups with regard to sociodemographic and socioeconomic factors.
- To assess the main purposes/motives of saving by households.
- To identify the factors that hinder households to save.

In order to achieve the aforementioned objectives, binary logit regression model and descriptive statistics technique had used. Thus, the first two specific objectives were achieved by using binary logit regression model and the second two specific objectives were achieved by using descriptive statistics techniques.

Literature Review

Household savings literature is based on two major hypotheses. The pioneering work of Keynes (1936) defined savings as a linear function of income, though the first major advance in savings literature is the permanent income hypothesis (PIH) of Friedman (1957), as cited in Muradoglu and Taskin (1996). The other major contribution to savings literature comes from the lifecycle hypothesis (LCH) by Ando and Modigliani (1963), whose basic assumption is that individuals spread their lifetime consumption evenly over their lives by accumulating savings during earning or working years and maintaining consumption levels during retirement.

According to Beverly and Sherraden (1999), the existing saving theories do not focus on low income households who are a majority in the Least Developed Countries (LDCs), relatively, little is known about the true determinants of saving in such households groups. The prior study's findings are summarized as follows:

When age increases, saving also increases at a decreasing rate, both in developed and in developing countries and have a positive impact on household saving behavior (Attanasio, 1997; Burney & Khan, 1992; Faridi, Hafeez, Chaudhry, & Bashir, 2011; Foley & Pyle, 2005 as cited in Pailwar, 2010; Unny, 2002).

Women were found to have more probability of saving than male counterparts in developing countries. Thus, being a female household head positively impacts on household saving behavior in developing countries (Chowa, 2006; Faridi et al., 2011, as cited in Bizuneh, 2011).

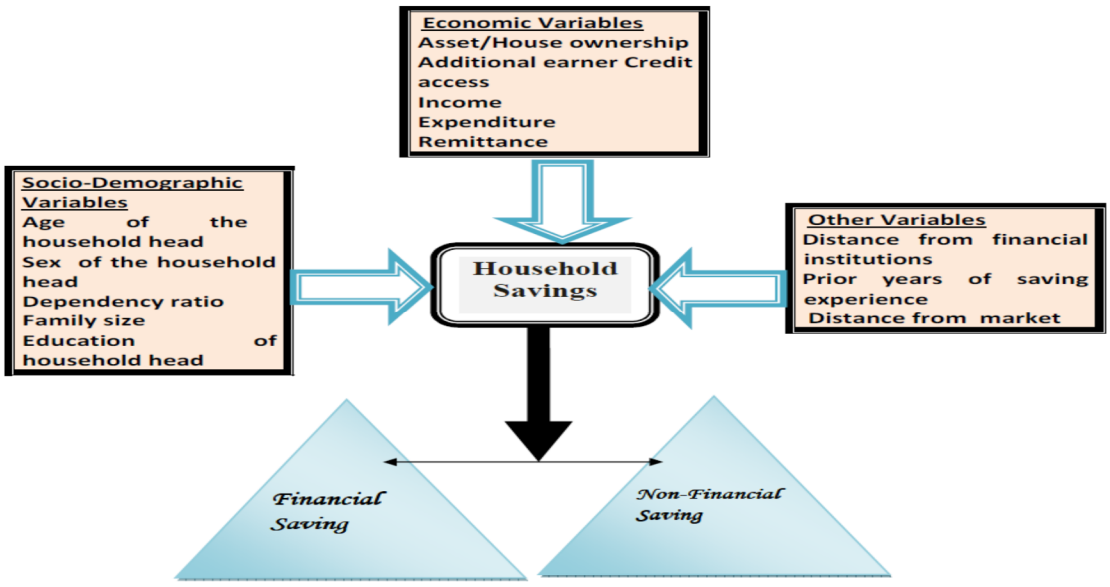
Family size in a developed country such as The Netherlands positively impacts on household saving behavior (Eizenga, 1961). However, family sizes in developing countries such as some Latin American countries negatively correlate with household saving behavior (Edwards, 1996). However, dependency ratio negatively correlates for both developing and developed countries (Leff, 1969).

Education has a positive impact on household saving behavior for developing countries, specifically countries such as India, Indonesia, and the Philippines (Bernheim & Garrett, 1996; Kelly & Williamson, 1968; NCAER, 1964; Rodriguez & Meyer, 1988; Sharma, 1986); however, it negatively correlates with household saving behavior in Estonia (Kulikov, Paabut, & Staehr, 2007).

Household income positively correlates with household saving for both developing and developed countries (Faridi et al., 2010; Kraay, 2000; Kulikov et al., 2007; Loayza, Schmidt-Hebbel, & Serven, 2000; Nasir & Khalid, 2004).

Credit access positively impacts on household saving in developing countries such as in Ecuador, El Salvador, Paraguay, and in Mexico (Aportela, 1999; Rogg, 2000). Credit constraints negatively impact on household saving in developed country such as the United Kingdom (Berry & Williams, 2009). Home ownership has varied effects on household saving behavior in developed and developing countries. In Japan, saving varies across homeowners and renters (Suruga & Tachibanaki, 1991). However, real estate ownership does not have a significant effect on household saving in some developing countries such as Morocco (Abdelkhalek et al., 2009). Most of the prior studies adopted a macroeconomic approach to saving behavior, yet the behavior of economic units on the aggregate level may not necessarily be the same as on an individual level. The impact of demographic variables have been extensively studied in the literature, but the results are inconclusive about the impact of these variables on household saving.

Figure 2.1. Conceptual Framework of Household Saving



Source: Adapted from Rodriguez and Meyer (1988); Faridi, Hafeez, and Bashir (2010).

Methodology

The current study presents an empirical analysis of determinants of household saving behavior in Mekelle city, Ethiopia, based on cross-sectional data. The study is an explanatory research determining the relationship between the dependent variable (household saving) and independent variables (age, gender, dependency ratio, education, house ownership, income, additional earner, credit access, saving experience, and distance from financial institution/s), and explained the results by way of comparison with empirical evidence.

Data was collected in a field survey by using a self-administered questionnaire, and hypotheses formulated and tested using descriptive statistics and binary logistic regression analysis.

Both quantitative and qualitative data were used. The data were collected by self-administered questionnaires that were converted in to quantitative terms. Therefore, the study utilized both qualitative and quantitative data.

The data source for the study was primary, or firsthand, data that were collected from household respondents through self-administered questionnaires.

For the selection of the sample, a two-stage stratified sampling design was adopted, where the first stage units were sub-cities and the second stage units were the households. Based on the administrative structure and their homogeneity, the city was divided into seven sub-cities, namely; Adi-haki, Ayder, Hadinet, Hawelti, Kedamay-weyane, Semen, and Quieha; and there was heterogeneity within the households in each sub-city, like differences in distribution of wealth (asset ownership), level of education, proportion of different ethnic groups, etc. Thus, a two-stage stratified sampling technique was applied. The sample size using Yemane's (1967) formula was applied in order to select a representative sample from the total population. Accordingly, 150 sample households were selected via stratified random sampling techniques from each of the sub-cities based on their weights.

The analysis was performed in two stages. In the preliminary stage, descriptive statistics were applied. The sociodemographic and socioeconomic characteristics were described and those objectives not attained by logistic regression model were analyzed using descriptive statistics. Finally, binary logit analysis was applied in order to identify the determinants of households' saving behavior of Mekelle city.

Model Specification

In order to increase the level of precision and quality of the research, econometrics model was used in combination with the descriptive statistics. The econometrics model, which was used in the study, is the binary choice model.

Logit/probit model is a model for binary response where the response probability is the logit function or standard normal cumulative function evaluated at a linear function of the explanatory variables (Wooldridge, 2009). In the logit model the probability of being a saver can be defined as:

$$p_i = \frac{e^z}{1 + e^z}$$

Where $z_i = \beta x$, is an estimated value of saving for the observed household characteristics.

As to why the logistic regression model is used; when the dependent variable is binary (0, 1), OLS regression technique produces parameter estimates that are inefficient and of a heteroscedastic error structure. As a result, testing hypotheses and construction of confidence interval becomes inaccurate and misleading (Aldrich & Nelson, 1984). Similarly, a linear probability model may generate predicted value outside the 0 - 1 interval, which violates the basic tenets of probability. It also creates a problem of non-normality, and of heteroscedasticity of the disturbance term; thereafter leading to lower coefficients of determination (Gujarati, 1988). To alleviate these problems and produce relevant outcomes, the most widely used qualitative response models are the logit and probit models (Amemiya, 1981). Even though the logit and probit models are comparable, Liao (1994) reported that the logit model has the advantage in that these predicted probabilities could be arrived at easily. He also indicated that when there are many observations at the extremes of the distribution, then the logit model is preferred over the probit model. Therefore, for the current study, binary logistic regression model was applied so as to estimate the strength of the relationship of each independent variable with the dependent variable (household saving) when the other variables are controlled. Therefore, there is no compelling reason to choose one over the other. In practice, many researchers choose the logit model because of its comparative mathematical simplicity (Gujarati, 2004). In the current research, the logit model is used for the estimation of the probability of saving based on observable household characteristics. Thus, the model can be specified as follows:

$$p_i = \frac{e^{zi}}{1 + e^{zi}}$$

Where *Pi* is 1 with the probability the household is saver and 0 otherwise.

$$z_i = \beta_0 + \sum_{i=1}^{n} \beta_i x_i + u_i$$

Where $i = 1, 2 \ldots n$, where n = number of explanatory variables, β_0 = intercept term, β_i = coefficient of explanatory variables, u_i = disturbance term, x_i = explanatory variables, and e = base of natural logarithms, which is approximately equal to 2.718.

The probability that the household belongs to non-saver will be $(1 - p_i)$ i.e. $1 - p_i = 1 / 1 + e^{zi}$

General form of the equation: Z_i denotes the following saving equation:

Household saving = Functions of (Gender, Age, Education, Income, Additional earner, Dependency ratio, Distance from financial institutions, House ownership, Credit access, Prior saving experience).

Therefore the specified model is:

$$Z_i(S) = \beta_0 + \beta_1 GENDERHH + \beta_2 AGEHH + \beta_3 EDUHH + \beta_4 INCHH + \beta_5 ADDEH + \beta_6 DDRH + \beta_7 DFFI + \beta_8 HSOHH + \beta_9 CRAHH + \beta_{10} PSE + \varepsilon i$$

Where Zi(S) = Household Savings (Dichotomous Variable "1" if household is saver, else "0").

Results

The collected data was analyzed by using descriptive statistics and logistic regression. Descriptive analysis was employed in order to explain the relationship between independent variables and saving behavior of households, and to identify major saver and non-saver household characteristics. Besides, logistic regression analysis was used to identify the major determinants of household saving behavior.

Of the total sampled households, 99 (66%) were headed by males. This finding shows that males were holding a leading and decision-making position in economic terms, and had greater active participation in their home affairs than their female counterparts.

Out of the total 150 sampled respondents, the majority of the sample households were relatively educated, with secondary and tertiary educational background accounting for 62.67% of the total sample respondents.

The result indicated that the majority of the household heads (72.7% of the total sampled respondents) were married and lived with their spouses, children, and other family members. However, some household heads were a single family unit since they lived with their brothers, sisters, or other family members.

The majority of sampled households had a family size of between four to six members, which applied to 52% of the total sampled households.

From the total sampled respondents, the majority of sampled respondents were informally employed either on a hired-basis or self-employed, which accounted for 56% of the total sampled respondents.

The majority of the sampled respondents had an additional earner in the household, which accounted for 65% of the total sampled respondents; with the households of an annual income greater than 45,000 Birr holding the larger share of 45.33%.

Households who owned their place of residence took the larger share from the total sampled respondents, at 54% of the total sampled respondents.

Finally, those households who did not have access to formal/informal credit sources held the majority at 64% of the total sampled respondents.

Out of a total of 150 sampled households, 89 (59.33%) were non-savers. This shows that most of the households in the study area were non-savers. The majority of non-saver households had different reasons for not saving. Lack of adequate sources of income and high cost of living due to inflation on food items and non-food items were the major reasons given for not saving by the sampled non-saver households. Even if adequate income was available, due to the weak purchasing power of their money, the sampled respondents were unable to save money regularly.

Even the majority of the saver households were not saving for long periods of time. This implied that the majority of saver households saved for short periods only, which may have an adverse effect on the finances available for investment activities. Mostly, the result showed there still lacked saving habit in the study area.

Future contingencies and for emergencies were the major reasons given for saving by the households. Since the future is seen as uncertain, the majority of sampled households saved in order to handle unexpected future expenses (precautionary motive). The result is similar to the prior empirical evidence, that is, precautionary motives for saving can have a significant influence throughout life; retirees may hold some precautionary savings in order to pay for unexpected medical treatments and uncertainty gives a reason to hold some savings in reserve: these are "precautionary" savings.

The study found that the majority of saver households save with the purpose of being able to cope with future contingencies or for emergency purposes such as to cover unexpected medical expenses, and to fulfill household requirements when the need arises. Thus, they may withdraw from these saved monies instantly in order to cover such unexpected expenditures.

Dependent variable: Household saving (1= household belongs to saver, 0 = Non-saver household)					
Explanatory variables	**Coefficient**	**Robust std error**	**Z**	**P-value**	**Marginal effect (dy/dx)**
Sex of the household head	-1.363145	.4729284	-2.88*	0.004	-.3257742
Age of the household head	-.0580205	.0334518	-1.73***	0.083	-.0139407
Education of the hhd	-.0660831	.0523137	-1.26	0.207	-.0158779
Total yearly income of the hh	.000023	0.0179214	3.19*	0.001	.0137075
Additional earner in the hh	-1.18051	.6109693	-1.93***	0.053	-.2834925
Dependency Ratio in the hh	-3.205458	1.225568	-2.62*	0.009	-.7701817
Distance from FIs	-.0064885	.2594386	-0.03	0.980	-.001559
House ownership by the hh	-.1460049	.6092252	-0.24	0.811	-.0351072
Access to credit by the hh	.0924707	.5357127	0.17	0.863	.0222705
Prior saving period of the hh	.7995918	.1937612	4.13*	0.000	.1921195
Constant	3.342468				
Log pseudo likelihood = -55.468607				**Number of obs.** = 150	
* &*** indicates significant at 1% & 10% level of significance				**Wald chi2(10)** = 37.13	
hh- represents household				**Prob > chi^2** = 0.0001	
hhd- represents household head				**Pseudo R^2** = 0.4527	

As per the *t*-test performed on the continuous independent variables and the Chi-square(X^2)-test on the discrete variables, the results implied that those factors, which showed statistical significant difference between saver and non-saver group, have an observable influence on households saving behavior. The significant differences observed were between household saving characteristics and household head gender, household income, household expenditure, household saving experience, dependency ratio, and additional earner in the household. However, no significant difference was seen to exist

between household saving characteristics and household head age, educational level of the household head, family size, number of additional earners, house ownership, and access to credit service by the household, distance from financial institutions, and distance from nearest market.

Household savings are a crucial determinant of the supply of funds for investment. For low-income countries, financial development is likely to have important implications for economic growth. By using a first-hand survey, the current study presents an analysis of saving determinants using sociodemographic and socioeconomic factors.

In order to test the fitness of the logit model, Multicollinearity, Heteroscedasticity, Endogeneity problem, Likelihood ratio, and Goodness of fit tests were applied. None of these tests showed any problem with regard to the input data. Thus, the logistic regression model was deemed acceptable to determine the major determinants of household saving behavior.

Based on the above logistic regression result, gender of the household head had a negative and significant impact on household saving. This result revealed that households headed by males had a negative impact on household saving. Based on this finding, households headed by females had more probability of saving than their male counterparts. This finding is consistent with the prior empirical results; that is, female household heads save more than their male counterparts.

The research result indicated that household head age had a negative and slightly significant impact on household saving; that is, when age increases, the individual's capacity to save decreases. This result is similar with the results of previous empirical studies, i.e., an individual's age is expected to be negatively correlated with saving.

Total income of the household showed a positive and significant impact on household saving. This means when income increases, the probability to save also increases. This finding is similar with empirical study conducted in China and Pakistan; i.e., total income of a household has a significant and positive relationship with household savings.

Dependency ratio of the household had a negative and significant influence on household saving decision. This shows a negative correlation between dependency ratio and probability of saving in the household. This result is consistent with the prior research; that is, a significant inverse relationship exists between dependency rates and saving rates in less developed countries.

Saving experience had a positive and significant impact on household saving decision. This means that as saving experience increases, the probability of saving habit also increases. The finding of the current study is confirmed by prior empirical evidence; that is, the experience of saving can change the way an individual conceives their own future and nurtures certain attitudes, choices, and behaviors, or "asset effects," which can lead to positive outcomes, including the perpetuation of the act of saving itself.

The current study's research result revealed that the majority of the sampled households had additional earners who contribute to the household income. This income may help the household to segregate for different consumption purposes, and the remaining set aside for saving. Whether or not there is an additional earner in the household, there is an impact on household saving decision/behavior. The study's results indicate that

additional earners negatively impact on the probability of saving. This may be due to immaterial income contribution for the household, yet their consumption may be substantial. The study was confirmed by empirical research from Pakistan that concluded that secondary earners in a household were found to have a negative relationship with the household's saving. However, this result is contrary to previous studies undertaken in India; i.e., the number of earners governs the income of the household, which implies savings are enhanced.

Education level of the household head showed a negative relationship with household saving, but it was not statistically significant. The study's results were found to be consistent with prior empirical results; i.e., higher levels of education lead to less saving, and this may be the consequence of households with higher education expecting higher and/or stable income streams in the future.

Physical distances from financial institutions showed a negative relationship with saving, but it was not statistically significant. This finding was found to be similar with that of studies made in selected countries of Africa; that is, the physical distance from banking institutions is one of the reasons behind Africa's low savings rates.

The result of the current study showed a negative impact of house ownership, but that is was not statistically significantly. This finding was found to be consistent with an empirical study conducted in Morocco, which suggested that no statistically significant effect of the ownership of a household's lands or other real estate on their saving behavior.

Credit access showed a positive impact, although it was not statistically significant. The finding of the current study was found to be consistent with a study made in three Latin American countries, which concluded that saving was positively related to credit access.

The results obtained are mostly in accordance with the previous empirical evidences on saving. That is, that the gender of the household head, the total income the household, dependency ratio, and prior saving experience of households were the major determinants of household saving behavior in Mekelle city, Ethiopia.

Conclusion and Suggestions

The following recommendations are made based on the research findings of the current study in order to promote and strengthen household savings.

Government in collaboration with financial institutions should promote household saving through introducing and continuing different packages of prize-linked promotional savings. Saving may be best promoted if it had multi-purpose importance to households. In addition, the researcher observed that the majority of households had Television and Radio, which are important instruments in the dissemination of information, and to create awareness related with the advantage of saving for households in particular and the nation in general by using these media.

High cost of living was one of the most important factors seen to contribute to low saving performance by households. The government should continue and make the utmost effort in order to stabilize the inflationary pressure employing both short- and long-term strategies. The government should continue the work of stabilizing price on food items as a short-term strategy since the majority of household income is disbursed to cover food items.

In addition, the government should promote and encourage domestic producers of food and non-food items for the local market as a long-term strategy since one of the major reasons behind inflation on food and non-food items is the instability of the global market.

Significant effort is needed from the government and developmental agencies in order to encourage women to generate their own income and to empower them economically. This could be achieved with female-oriented policies which contain packages related to income generation, credit access, and leadership development for women. If women are economically empowered, the saving performance of the country could be developed as a direct result.

As indicated in the findings, income is positively and significantly related with household saving. Consequently, an important policy implication would be that the government strives to increase disposable income of households through different mechanisms. This may be achieved through the creation of employment opportunities for citizens and the efficient utilization of domestic resources. Income can also be enhanced when the gross domestic product (GDP) of the country is increased. Therefore, the government should promote policies aimed towards higher levels of GDP and to continually check the extensiveness of those policies.

Dependency ratio of the household was shown to have a negative and significant influence on household saving decisions. This means that when the dependency rate increases the saving performance of households is reduced. Thus, this finding shows a clear need to educate households to have family's that are sized based on their total household income. This could be achieved by designing and delivering short-term training for households related with income-oriented family sizing by community leaders and development agencies. The government should also promote linked policies related to family planning and household saving. In addition, if dependent family members are not elderly, children, or disabled, they should have to participate in some income generating activities in order to support the income of the household. This may develop a work habit and create opportunities for other household members. In turn, incremented income for households and in turn savings may be enhanced.

The current study was based on a small sample taken from a large number of households. The results concluded are based on these sample households, yet the study cannot generalize at a regional or national level. Thus, future researchers working in collaboration with stakeholders for funding sources may undertake similar studies that are based on a significantly larger sample size.

The study did not undertake data collection by way of interview or focus group discussions. The research could have been stronger had it included interviews and focus group discussions. Hence, researchers may seek to undertake similar studies that employ triangulation techniques.

The study only focused on formal financial savings, which ignores informal, semi-formal, and non-financial savings; all of which need to be comprehensively studied. Researchers in the future may undertake studies based on such areas of savings.

The current study employed cross-sectional data collection due to a lack of adequate secondary data. Therefore, it is suitably important to organize stakeholders to have panel

data and a continuous household survey in order to have a fuller picture of the city's saving profile, which is important for any policy intervention. Future researchers must therefore undertake studies based on panel data.

The study used binary logistic econometric model for analyzing the determinants of household saving behavior. Researchers in the future may apply other types of econometric models such as Heckman sample selection model and ordinary least square regression models.

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