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A micro-econometric analysis of household savings in Ghana.

by

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DECLARATION OF AUTHORSHIP

I hereby declare that this submission is my own work towards the degree of Master of Science (Economics) and that, to the best of my knowledge, it contains no material previously published by another person, nor material which has been accepted for the award of any other degree of the University, except where acknowledgement has been made in the text.

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ABSTRACT

The World Bank projected Ghana to be the fastest growing economy in Sub-Saharan Africa as Ghana witnessed 14% economic growth in 2011. Domestic savings are crucial in financing high capital formation which leads to increased productivity, sustained growth and development. Unfortunately, Ghana has never witnessed national savings rising above 20% of GDP. The study examined the determinants of household savings using Ghana Living Standards Survey Round six (GLSS-6) data, by estimating the likelihood that a given household will save with respect to household factors. The study proceeded to estimate Household level of savings following the model specification of Tobit (1958), censored from below zero.

Demographic factors of region, quantile income distribution, location, gender, age, educational level and house size were found as significant determinants. The pattern of savings was found skewed towards developed regions. Household with higher education were more likely to save than those with no education. With regards to income-sources and savings relationship, marginal propensity to save out of self-employed non-agricultural income sources was no different for those with self-employed non-agricultural income and wage nonagricultural income sources.

The estimated level of savings result showed that, the rich (those in higher income quantiles) save more than the poor (lowest income quantile). Those in higher income quantiles had significant marginal propensity to save more than household's in the first (1st) quantile. The house size – savings profile was examined and found to be non-linear and statistically significant. The idea of low savings has been found to be an issue of one's literacy status. Thus, financial literacy educational reforms should be put in place.

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LIST OF ABBREVIATIONS

KNUST



CHAPTER ONE

INTRODUCTION

1.0 Background of study

Ghana, the very first country to obtain independence in West Africa, had a stable move from colonial into post-colonial era. Since 1983, Ghana had adopted economic policies of the Economic Recovery Programme (ERP), Programme of Action to Mitigate the Social Cost of Adjustment (PAMSCAD), Structural Adjustment Programme (SAP), Appropriate Technology (APPROTECH) etc., under the counselling of World Bank and IMF (Osei, 1999 and Meng 2004).

In Ghana the implementation of the structural adjustment programme called for government expenditure reductions via cuts in social services. Carrying out SAP gave significant improvement in Ghana's overall economic performance. From 1980s to early 1990, Ghana's gross national investment rose from 4% to 16% and inflation fell from an average annual rate of 73% to about 13%. The industrial capacity also boomed from 25% in 1970 to 46% in 1990 (Hutchful, 2002).

These upturns led to a shift in Ghana's overall balance of payments position away from deficit to surpluses, this facilitated in decreasing external debt payments and enhanced the accumulation of gross official reserves (Anyinam, 1994). There was increased international confidence in the Ghanaian economy, which helped attract foreign capital particularly in the fields of mining and infrastructure (Konadu-Agyemang, 2001).

Although Ghana has recently witnessed positive growth, increasingly large current-account deficits have made sustainability in Ghana questionable. Ghana's journey so far, having now

attained lower-middle-income status required sustainable growth and development. One facet of growth and hence development, however hinges on domestic resources mobilization capacity for capital formation in the nation. Capital formation entails sustainable savings particularly from the private sector of the economy.

The critical role that savings (via its effect on investment) plays in enhancing sustainable growth and hence development has gained academic attention and policy discussions. Mobilised domestic savings provide the path for financing domestic fixed capital formation, and this consecutively, promotes the growth potential of the economy. Domestic savings therefore cushions the nation against shocks in international capital flow. In periods where international capital are low, domestic savings are crucial in financing high capital formation which leads to increased productivity, sustained growth and development. (Luüs, 2005).

Considering World Development Indicators (2015), in terms of economic growth for some economies such as China (9.5%), USA (1.6%), UK (1.6%), and Ghana (14%), the World Bank projected Ghana to be the fastest growing economy in Sub-Saharan Africa (GNA) in 2011. Yet still, in terms of Gross savings (% of GDP), Ghana recorded (15.1%) in 2011 and (16.8%) in 2013, whiles USA had 182.4% (2011) and 192.1% (2013), China witnessed 124.1% (2011) and 135.4% (2013). Neighbouring developing African economies had low savings rates such as Benin (12%) in 2011 and (13%) in 2012, Nigeria (26%) in 2011 and (33%) in 2012, Cote d'Ivoire had (15%) in 2011 and (16%) in 2013, Botswana (37%) in 2011 and (41%) in 2013. From the reported statistics, it is unfortunate that domestic savings, which provide the path for financing domestic fixed capital formation to cushion the economy against shocks in international capital, is peculiarly low in Ghana.

1.1 Statement of the Problem

Ghana recently recorded one of the highest GDP growth rate (14% in 2011) in Sub-Saharan Africa, yet Ghana has never witnessed national savings rising above 20% of GDP. Gross Domestic savings (as a % of GDP) has been consistently low for Ghana as this has averaged around 6.4 percent from 1980s to 2000s. This study therefore aims to examine the determinants and pattern of household savings in Ghana by using evidence from GLSS round six household data-set in Ghana.

Although vast literature was found on savings-determinants analysis, these works were dominantly found to address the issue using macro-determinant approach such as in the works of Khan, Hassan and Malik (1992), Kim (2010) and Chaudhry *et. al.*, (2010).

One identified problem with the macro-analysis is the huge measurement errors of the dependent variable, national savings. This implies that, estimated saving from national accounts may be underestimated (Bovenberg and Evans, 1990; Asiedu and Stengos, 2014; Case and Deaton, 2003). Studies such as Harris, *et. al.*, (1999), Carpenter and Jensen, (2002) and Kulikov, *et. al.*, (2007), has undeniably directed the attention of addressing macroeconomic concerns via microeconomic information, and hence the emphasis of using household level data-analysis to address household-savings determinants in this study.

Indeed, empirical studies on determinants of savings in Ghana utilising micro-approach were found. For instance, Quartey and Blankson (2004) examined the Ghana living standard survey (GLSS) round three (GLSS-3) and GLSS-4, Michael (2013) analysed GLSS-5. However, they all used OLS technique. OLS method of estimation on household survey-data set has been criticised severally by Deaton (2005), Yoshida & Guariglia (2002), and Rogg (2006), to be biased and inefficient, especially when there are zero-values for the dependent variable. Hence

the likelihood is that all the previous works modelling the savings behaviour of Ghanaians may have run into obtaining biased results. The need is therefore required for further studies that employs a micro level of analysis to estimate the determinants of savings in Ghana and can still account for the non-normality distribution of survey data.

1.2 Objectives of the study

This study specifically aims to examining the determinants of household savings. The study sought to specifically;

- To examine the savings pattern of households in Ghana.
- To examine major factors that influence household savings in Ghana.
- To find out significant sources of savings in Ghanaian households.
- To come out with policy implications to guide and encourage household savings.

1.3 Research Questions

The study therefore seeks to address the following questions:

- What are the determinants of household savings in Ghana?
- What sources of income significantly affect household savings?
- What is the savings pattern in Ghanaian households?
- What are the policy alternatives for household savings?

1.4 Rationale for the study

In as much as the purpose of this study is to fill the knowledge gap identified in section 1.1, the outcome of the study will aid households, financial sector management and planning to draft marketing strategies in their deposit mobilization of uncashed money outside the banking sector

for economic growth and development. Mobilization of domestic savings is associated with ways of increasing investment, which results in the enhancement of economic growth via capital formation.

Therefore, the understanding of savings behaviour is crucial in policy designs geared towards savings and investment promotion. The study will also be relevant to policy makers at the formulating and regulatory level by having empowered knowledge from the outcomes of the study. This will aid the creation of a stable economic environment to ramping up savings and hence domestic capital base for the economy.

1.5 Scope of the Study

The study focus on Ghanaian households residing within the borders of the economy. Thus the geographical area of study is households Ghana, that were surveyed within the period of the Ghana Living Standard survey, since the GLSS (specifically the recent GLSS-6) survey is a nation-wide survey.

1.6 Organization of the study

The study has five chapters. Chapter one, introduction to the study comprises background to the study, statement of problem, research objectives, methodology and significance of the study. Chapter two reviews related literature and chapter three presents the methodology of the study. Chapter four estimates and analyses collected data for the study and finally, chapter five concludes the study and suggests policy recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The chapter is concerned with a review of literature on determinants on savings. It consists of concepts, theories, measurement, determinants and empirical works on the subject matter.

2.1 Theoretical review

The analysis of savings attitude in literature is generally of macroeconomic and microeconomic (household) perspectives. The study observed vast literature on macroeconomics perspectives of savings, while studies on micro-foundations to household savings was substantially few in literature. The study therefore focuses on the micro level aspects of household savings analysis. Hence, consequent discussion on theories, concepts, measurement and determinants of household savings will focus on household level.

2.1.1 Definition and concept of savings

From classical economics, Income (y) is the sum of one's consumption (C) and savings (S): $Y = C + S$, therefore $S = Y - C$. Hence, saving is the part of one's current income that is not consumed, thus postponed consumption (Deaton, 1992). In today's world, saving is generally the act of putting aside nominal currency for future use. Since cash stored in physical product such as land, car, etc., are less liquid.

According to Mansfield *et. al.*, (1977), one identified key issue of concern is the term "saving" and "savings". Saving is a flow concept. Its magnitude therefore is measured with reference to a particular time such as in a day, month, year, etc. Savings on the other hand, is a stock variable.

It refers to accumulated unspent-income that exists at a particular point in time. The rate at which people save is termed “Marginal propensity to save”. It is usually the coefficient of income variable in regression analysis. It shows how much savings rises with incremental unit of income. For clarification purpose, the definition of savings in this study considers “cash that is set aside”, a stock concept (Chakraborti and Chakrabarti, 2000).

2.1.2 Household savings theory

The study found that, relevant literature on household savings analysis at household level characteristics followed the life cycle theory as explained below;

2.1.2.1 The life cycle theory

The life-cycle theory assumes that households plan their consumption and savings attitudes over the course of their lifetime. Thus individuals even-out their consumption patterns over their lifetime, by accumulating savings during working age and then dis-saves when retired. The key assumption is, all individuals choose to maintain stable lifestyles (Deaton, 2005; Artus, 2002).

a) The basic life cycle hypothesis

The basic life cycle theory was presented by Modigliani and Brumberg (1954). According to them, households are assumed to amass assets during prime/working ages, and relies on them during retirement age. It is built on the premises that consumption and hence, saving in a specific point in time is determined by expectations about the individual’s lifetime income. They argued that, individuals save to serve as a cushion against unexpected income variations over one’s life cycle and also against any short-term income fluctuations and needs.

Modigliani and Brumberg (1954) basic life cycle model can be expressed as follows:

$$S_{h,t} = f(g_t^{yd}, W_t, Dr_t) \quad (2.4.1)$$

Where:

S_h = Household saving rate,

g^{yd} = Real household disposable income growth rate,

W = household's wealth to disposable income ratio

D = dependency ratio (population over 60 divided by working age population) And

t is a time

The simplified model, was highlighted under three basic assumptions in addition:

- no inherited assets at the beginning of one's life, thus household can only amass assets through one's own saving.
- saving is determined only by one's tastes.
- Zero interest rate assumption

b) Deriving the base life cycle hypothesis

Modigliani and Brumberg in the 1950s established a theory upon observation of people making their consumption decisions relied on available lifetime resources and that available at one's current life period. They observed accumulation of assets at early working stage, and then making use of stored assets when retired. In addition, people were observed not only to save for retirement, but also found to adjust their consumption paths at each stage of their lives, as follows.

Assuming that each person live for T-periods and at each period t , one faces a budget constraint similar to that of the two-period model as:

$$y_t + b_{t-1}(1 + r) = c_t + b_t \quad 2.4.2$$

Just like that of two-period case, the derived intertemporal budget constraint is:

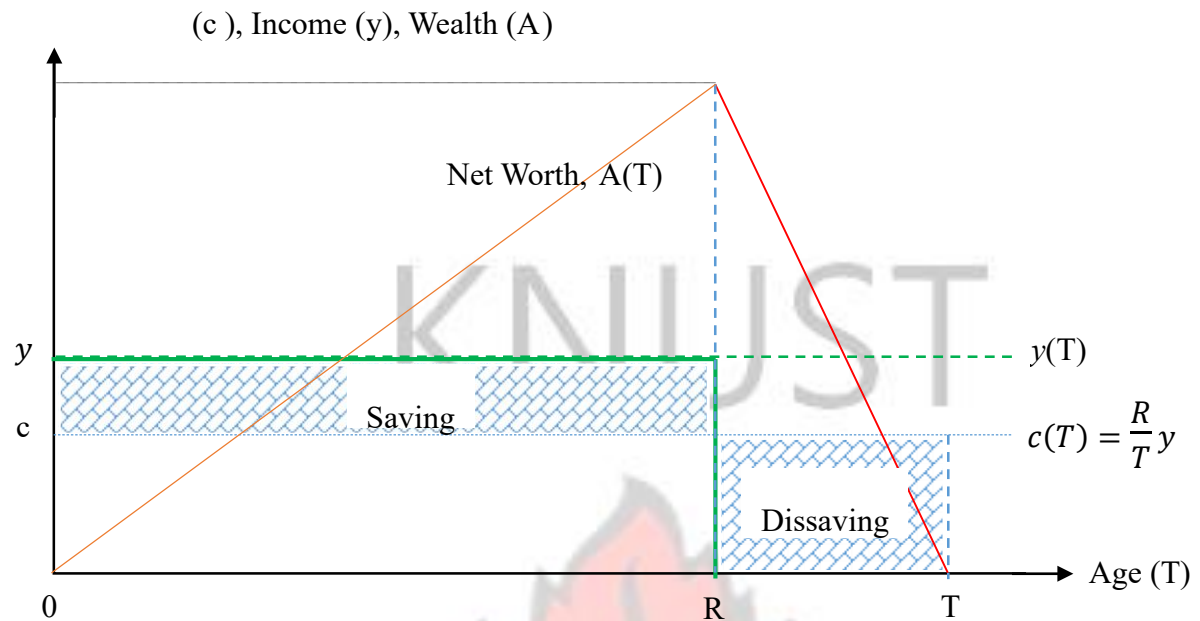
$$y_1 + \frac{y_2}{1+r} + \dots + \frac{y_T}{(1+r)^{T-1}} + b_0(1+r) = c_1 + \frac{c_2}{1+r} + \dots + \frac{c_T}{(1+r)^{T-1}} + \frac{b_T}{(1+r)^{T-1}} \quad 2.4.3$$

According to Doppelhofer (2009), equation 2.4.3 indicates that, the present lifetime earnings equates present value of lifetime consumption-spending, as with the two period models. Because each person having finite horizon does not have any bequest motive for the new generations, b_T is set to zero. More so, individuals are said to prefer a consumption pattern that is smoothened for over his lifetime period.

It is worth to mention that, concerning households “smoothening” their consumption pattern does not necessarily imply that, households keep consumption expenditures constant, but rather, households try to have the marginal utility of money constant over their lifespan.

Thus, they might incur some considerable variations in consumption expenditures. Doppelhofer (2009) presents its simply by, assuming the individual earns constant labour income of \bar{y} until retirement at age R , and doesn't work after retirement till ones expected lifetime T . Then the lifecycle consumption and assets path for an individual is shown in figure 2 below.

Figure 2. Lifecycle represented in diagram, looking at individual lifespan on x-axis.



Consumption Figure 2 above is the Modigliani's life cycle hypothesis expressed diagrammatically under simple assumption sets. The line $y(T)$ income (y) as a function of a person's age (T). Individuals are assumed to earn a constant income (\bar{y}), until retirement age (R). Likewise, the line $c(T)$ is consumption as a function of one's age but since one maintains marginal utility constant by spreading it evenly, it therefore has a constant rate of $\frac{R}{T} \bar{y}$. The vertical distance between $y(T)$ and $c(T)$ until retirement age (R) is individuals saving or dissaving.

The accumulated savings over time, Net worth (A), is also a function of age (T). This starts from the origin rises at a constant slope till it peaks at retirement age (R), then diminishes down to zero until lifespan age (T).

Unlike the two-period model where consumption in period-1 and 2 are used on the x-y axis. As shown in figure 2 above, there seem to be a growing trend in wealth accumulation with age. The life cycle therefore implicates that; consumption may have inelastic respond to temporary changes in income. In addition, Modigliani argues that, the marginal propensity to spend out of current income varies with age.

2.1.2.2 Friedman's permanent income Hypothesis (PIH)

Whereas the theory of **permanent income** (Friedman, 1957) states that, in certain contexts, the active population may be stimulated to increase their caution savings in order to compensate for a possible relative decrease of their income after retirement. The assumptions and mathematical derivations of these theories are explained in the next sub sections.

Here, we relax Modigliani's no bequest motive for the multi-period consumption-savings analysis, and assume that generations are interrelated such that elder generations do care not only about its own lifetime utility, but also cares about that of the new age group:

$$t = 1 : u(c_1) + \beta u(c_2)$$

$$t = 2 : u(c_2) + \beta u(c_3)$$

$$\vdots$$

$$t = \infty : (.)$$

Which can be summarized using the summation notation as:

$$U = \sum_{t=1}^T u(C_t) , \quad u'(\blacksquare) > 0 , u''(\blacksquare) < 0 \quad 2.5.1$$

Assuming that a person lives up to T periods with one's lifetime utility as:

$$\sum_{t=1}^T C_t = A_0 + \sum_{t=1}^T Y_t \quad 2.5.2$$

From equation 2.5.1, $u(\blacksquare)$ is the instantaneous utility function with C_t being consumption at time period t . Due to possible bequest motive, each person is assumed to have an initial wealth of A_0 , and earns income $Y_1, Y_2, Y_3, \dots, Y_T$ in ones T life-time periods. According to Romer (1996), a person can save or borrow at an interest rate taken exogenously but for simplicity, this is set to zero, thus each person's discount rate is also set to zero. Thus, one's budget constraint becomes equation 2.5.2, as marginal utility of consumption is assumed constant. Thus, the individual's optimisation problem is to maximize 2.5.1 subject to 2.5.2.

Setting up the Lagrangian yields:

$$L = \sum_{t=1}^T u(C_t) + \lambda \left[A_0 + \sum_{t=1}^T Y_t - \sum_{t=1}^T C_t \right] \quad 2.5.3$$

FOC for C_t :

$$u'(C_t) = \lambda \quad 2.5.4$$

Since equation 2.5.4 holds at each and every time t -period, where $u'(C_t)$ is the marginal utility of consumption (MUC), and it being equal to a constant λ , this means that consumption must therefore be constant. This implies that $C_1 = C_2 = \dots = C_T$. When this is substituted into 2.5.2, then the constraint 2.5.2 becomes:

$$C_t = \left[A_0 + \sum_{t=1}^T Y_t \right] \frac{1}{T} \quad \text{for all } t \text{ periods} \quad 2.5.5$$

Since equation 2.5.5 holds for each period, this implies each person divides his life-time resource equally among each t - period. Thus, consumption in period t , is less dependent on income in period t , but rather depends much one lifetime income. Friedman called the R.H.S of 2.5.5 as the permanent income, and the difference between that and current income he termed transitory income.

Romer (1996) explains that, if an individual should gain a windfall earnings Z in present period, this would raise current period's income by Z , but will raise permanent income by the ratio Z/T . hence, if the remaining period of such individual is fairly long, then Z/T would be very small, and consequently have little impact on current consumption. Romer further illustrates savings, the difference between income and consumption incorporating (2.5.5) as:

$$S_t = Y_t - C_t = Y_t - \left[A_0 + \sum_{t=1}^T Y_t \right] \frac{1}{T} \quad \Leftrightarrow \quad S_t = \left(Y_t - \frac{1}{T} \sum_{t=1}^T Y_t \right) - \frac{A_0}{T} \quad 2.5.6$$

From 2.5.6, Romer (1996) argues that, saving is greater when transitory (current) income is high above average, and savings goes negative when current income is far below its average. This asserts that, each person does saving/lending and borrowing so as to smoothen one's consumption path over one's life time. This is said to be the PIH of Friedman and Modigliani.

2.1.3 Measurement of household savings

As indicated, literature analysis of savings is either macroeconomic or microeconomic perspective. Thus there are two possible measurements of household savings. At the macro perspective, is the use of national accounts, and at the household level, using household selfreported savings from household surveys (Blades and Sturm, 1982; Friend, 1953; Asiedu and Stengos, 2014). Some micro-level analysis also calculates household savings out of national accounts. It is estimated as a residual by;

$$\text{saving} = \frac{\text{personal income} - (\text{consumption, tax deductions, interest payments})}{\text{population}} \quad 2.1$$

This makes saving as a residual from two large estimated figures of personal disposable income less personal outlays problematic (Bovenberg and Evans, 1990; Asiedu and Stengos, 2014).

One identified problem here is that, measurement errors in these two estimated elements may be possibly large owing to the huge calculations involved, and thus affecting the residual estimated saving figures. Another identified problem is that, in most developing economies such as Ghana, there are considerable number of individuals with income earned from the informal/underground activities that are all not captured in the national income measurement.

This implies that, estimates saving figure in national accounts may be underestimated (Houthakker, 1965; Bovenberg and Evans, 1990; Asiedu and Stengos, 2014; (Deaton and Zaidi, 1999; Case and Deaton, 2003; Deaton, 1997, 2005).

The direction to using household surveys by Deaton facilitated welfare economics from a theory founded on aggregate data towards that of empirical grounds established on thorough individual information (Deaton and Zaidi, 1999; Case and Deaton, 2003; Deaton, 1997, 2005). Recent researches such as Fischer (2008), Jappelli & Padula (2013), Chamon & Prasad (2013), Prina (2015), and Tanaka & Nguyen (2016), has undeniably directed the attention of addressing macroeconomic concerns via microeconomic information, and as such, the increasing availability and progress of microeconomic information's. Hence, the focus of using household level data-analysis in this study.

2.1.4 Forms of household savings.

If households do save, the question is “what form are they held?”. According to Aryeetey (2004), household savings could be in the form of physical asset such as land, livestock, stored harvest, etc., or in a form of cash that is set aside. The latter is more liquid and more related to financial investment. Hence savings in this study, considers those stored in the form of liquid “cash set aside”. This “cash set aside” could either be in (a) physical cash at one's home kept in a wall, under bed, etc., (b) in an interest bearing asset form, (c) in a bank or savings account form or (d) in a “susu” account form (Zeller *et. al.*, 1994).

2.1.5 Types of household savings

According to Aryeetey (2004) and Quartey and Blankson (2008), household savings are normally grouped as either formal or informal, regarding the financial institution involved. Formal financial institutions in Ghana are those incorporated under the Companies Code 1963 and licensed by the Bank of Ghana (BOG) under either the Banking Law 1989 or the Financial Institutions (Non-Banking) Law 1993 (NBFIL) to provide financial services under Bank of Ghana regulation. Those that fall outside the formal definition are termed informal. The

informal financial system covers a range of activities known as "susu", including individual savings collectors, rotating savings and credit associations, and savings and credit "clubs" run by an operator.

Savings in the form of cash but under (a) "cash at one's home kept under bed, etc.," although highly liquid, cannot end-up as investment when kept at home under bed or in wardrobe. Financial intermediators and policy makers and therefore places more emphasis on cash set aside in the form of (b) "interest bearing asset form", (c) "in a bank or savings account form" or (d) "in a "susu" account form", due to some reasons that (i) it directly provides lending fund and (ii) can be influenced by policy decision bodies (Zeller *et. al.*, 1997).

Household savings defined in this study, follow that of Zeller *et. al.*, (1997) as cash that is set aside in the form of interest bearing asset, bank or savings account, or in a "susu" account, for a given household, measured by the balance of a household's bank/savings/susu account, in the aggregate data of GLSS-6 data-set.

In addition to the form with which savings is stored, it can have sector classification. Sector classification regards incomes or monies that is available to economic agents (households, firms and corporate organisations, and the government) from which part can be put aside. This broadly groups savings as; household sector savings, private sector savings and public sector savings (Aryeetey and Udry, 2000; Goodwin-Groen, 2012).

According to Borsch-Supan (2003), household sector savings are savings accrued by individuals in a household. Private sector savings engulfs savings made by privately owned business institutions. Some private sector institutions are commercial banks and insurance companies working in private sector, non-banking financial companies in the private sector, co-operative banks, credit societies and non-credit societies, etc. Public sector savings are the

government savings and savings generated by the public sector undertakings in the form of internal resources.

2.1.6 Nature and Sources of household savings

It is generally believed that savings behaviour exhibits some form of expectations considering geographical locations, especially rural-urban perspective. Various sources of income, such as wage income, rental income, remittances, etc. have been identified as sources for which one could have money, from which one can save. Most rural dwellers who are into farming gain incomes from after harvest sales. Those engaged in non-farm enterprises do make some earnings from which they save, and others earn wage-income. It is generally believed that, urban incomes are higher than rural incomes on average (Michael, 2013; Quartey and Blankson, 2008).

The traditional argument goes that, rural people have low levels of income, due to primitive primary production (agrarian economy restrained to primitive methods), making them generally less productive, and thus, are generally and consistently poor. Rural income being perceived as low, according to the argument, makes them to not save, and hence constrained ability to acquire better methods of production (new technology). Thus rural individuals are trapped in vicious poverty cycle (Lamberte and Lim, 1987). This has contributed to the disregarding of rural savings mobilization by financial intermediation strategies, resulting in the increase autonomy of moneylenders at rural localities extorting high at interest rates.

On the contrary, Rodriguez (1988) argues that rural dwellers are heterogonous, thus not every rural person is poor. In addition, the non-poor rural can save longer periods as opposed to poor rural. In conclusion, rural people does have the capacity to save, and would respond positively

should such opportunities and incentive be available. Policymakers as well as commercial intermediaries in Ghana and some other low-income economies have mostly mistreated mobilization of rural savings in policy-making and rural development strategizing. The Government of Ghana provides subsidies to rural dwellers (mostly farmers) in the various forms such as subsidised fertilizers, seeds, etc., to help break vicious poverty cycle, raise their income and living standards.

One significant questions pertaining to rural savings mobilization that has remained unclear is “do rural households who are generally perceived to be poor, have significant capacity to save?” According to Attanasio and Banks (2001), discernment about the nature of household savings behaviour is significant in policy designs for household savings and hence, investment promote.

2.1.7 Household saving motives

Households save for numerous reasons ranging from house purchases, vacation, college education, etc., to retirement preparations. It is worth noting that, households with same features such as income may have different saving decisions. Motives of saving are as follows:

a) Precautionary saving motive

This is saving to safeguard against unanticipated negative shocks in life that could come from unforeseen unemployment, ill-health, accidents, etc., which would demand huge unexpected expenses or possible emergencies. Households with greater income uncertainty as well as risk averse persons will save more during “good times.” (Hubbard & Zeldes, 1994; Lusardi, 1998; Carroll, 1996; Carroll & Kimball, 2006).

b) Bequest saving motive

According to Dynan & Zeldes (2002), the bequest saving motive explains that people desire to have their offspring enjoy a much better life than they did, and hence save more to accumulate wealth for the younger generations. The aspiration to leave an endowment behind therefore explain why the elderly do not fully exhaust their wealth, even after retiring.

c) “big ticket” saving motive

This is a short-term saving done to accommodate current income and expenses gap during one’s life period. Here, individuals save for ‘big-ticket’ expenses such as cars and other durable consumer items. Whereas some individuals save in advance due to borrowing constraint, others save in order to avoid borrowing completely. Unlike precautionary where one saves for unforeseen shocks, ‘big-ticket’ saving is done for specific target (Xiao & Fan, 2002).

d) The speculative saving motive

Mankiw (2000), and Bryant & Zick (2005), explains that from the saving motive identified by Keynes, household consumption and hence savings is not influenced by disposable income alone but other influential reasons come into play. It is argued that, higher interest rates are incentive for saving present consumption in the form of interest bearing assets.

2.1.8 Theoretical determinants of household savings

Review of relevant literature points out that, determinants for household savings can be analysed from macroeconomic perspective as well as microeconomic. The macroeconomic aspects measure household savings, as equation 2.1 above. This macroeconomic methodology concerns itself with the influence of economic indicators such as GDP growth rate, rate of inflation, money supply, interest rate, etc., on the saving rate in an economy.

At the micro level, individual saving and consumption attitudes, particularly households, have a particular relevance for financial stability of the economy. Poor savings attitudes induce financial disequilibrium as the functions of financial intermediation becomes difficult to realise (Modigliani & Brumberg, 1954; Nwachukwu & Odigie, 2011).

Since this study focuses its attention to household level analysis, household factors that therefore affects household savings decisions are discussed. These household variables are generally classified into economic and demographic factors as follows.

Household economic factors

At the household level, economic factors that are usually considered are incomes of individuals/households, wealth, consumption/expenditure and social security system.

a) Income:

Two popular theories that shows the relationship between income and household savings are, the concept of absolute income hypothesis versus the relative income hypothesis.

Absolute income hypothesis (AIH), is from Keynes (1936) “fundamental psychological law” of consumption, which explains that, as one’s income increases, consumption rises but by a lesser amount. This marginal consumption (MPC) out of increased income is between zero and one. Hence MPC and APC falls as income rises. Keynes implied that, the rich saves a higher fraction of their income than the non-rich.

Relative income hypothesis (RIH) by Duesenberry (1949) argues that individuals makes their consumption and hence saving chosed not based on the absolute level of their income, but on

the relative position of their incomes in relation to the society they live in. Hence, one's consumption is inter-dependent on others in that society. This implies that, rich individuals exhibit low APC's since less portion of their income is needed to maintain their consumption behaviour. Non-rich individuals on the contrary will exhibit high APC so as to keep up with societal consumption standards. These two concepts generally agree to the fact that; income has a positive impact on savings.

b) Wealth:

Unlike income, a flow concept, which is the money value earned from engaging in economic activity usually received weekly or monthly. Wealth on the other hand is a stock concept. It is the accumulated value of one's total net assets be it in physical form such as television, house, land or as a financial investment in company or bonds. Wealth is another factor of household savings. Since it was difficult to get data on wealth, asset ownership is used as proxy for wealth. Its impact is same as that of income. But due to measurement issues of wealth, most studies do not include it as savings determinant. Review of literature shows that, spending out of one's wealth is usually spread over one's entire life. This makes the effect of wealth on one's savings to be a negligible factor (Salotti, 2010; De Serres & Pelgrin, 2003).

c) Consumption / Expenditure:

When households consume out of their income, they spend. Thus, expenditures that households accrue are usually used to measure consumption. Theory shows that, expenditures and savings are inversely related (recall equation 2.1).

Most studies do not include household expenditures in determining savings for households for various reasons. It is quite undeniable that, there could be other expenditures that can be analysed, one of which is transport expenses and house fuel expenses. There are different sources of fuel such as gas, charcoal, kerosene, firewood etc., used at various homes, and are in a way, substitutes. Thus, less expenditure consuming house fuels, would imply positive chance of releasing some monies, which might end up being saved.

d) Pension and Social security systems:

Certain governmental “benevolent” transfers as well as the coverage and kindness of the economies welfare structures and social security systems can influence individuals saving decisions. The availability of unemployment benefit which cushions persons from income loss of being unemployed, health benefits which cushions one from income loss due to health expenditures, etc., may reduce one’s need to save for on precautionary measures.

Pension benefits may serve as substitute for own savings decisions, as long as present discounted expected benefit from net contribution has a positive value. Thus, pension schemes could affect household savings behaviour negatively, called the wealth effect. If households are aware and has an early retirement, this would boost savings, the retirement effect.

Demographic factors

Demographic factors such as gender, location, educational status, etc., have shown significant important influence on one’s savings (Lopez-Mejia *et al*, 1998; Ayadi *et al.*, 2009). Household demographic factors that serves as household savings determinants are therefore discussed;

a) Home Ownership:

Financial literature also emphasizes on the difference in savings between owners and renters. Those who rent will usually save down for future rent expenditure, also those who own house could save monies that would have been spent on rent, and may possibly earn rental income if they rent a part of the house.

b) Household size:

Household size is another way of evaluating number of dependents in a family. The introduction of the household size effects in the life-cycle model are theorised that that larger family size impacts on household savings negatively (Davies, 1981; Orbeta Jr.,2006).

c) Age:

From the theory of life-cycle model suggests that there exists a relationship between age and savings, called the age-savings profile. As individuals grow, they save for future consumption, and after retirement they dis-save. Age, has a positive impact on savings, but as savings rise with age, it attains a peak, and then falls. This implies a non-linear relationship with age and savings in. Most studies access this relationship by adding the square of age, as an additional variable.

d) Dependency Ratio:

The dependency ratio is defined in the literature as the percentage of the population aged 14 and below plus the percentage of the population aged 65 and above living in a household, as these groups adds to household consumption but contributes nothing towards production.

Dependency ratio is alternative form of household size.

e) Gender:

Gender has an impact on the willingness to save, but as to which sex type save more than the other is country, regional and community specific. Thus, there is no unanimous in the direction of impact from gender on savings.

f) Marital status:

Theoretically, when individuals are married, they care more about their wealth and savings. Thus, it is expected to find a person who is married to save more than one who is not married. But the interaction of marital status by other variables can show interesting expectations. For instance, among the married, one may expect married male to save more than married females. On the contrary, married males may save less since they are the bread winners of the households in traditional perspectives, thus taking on the responsibilities of other household members. Thus being a married male implies having a female companion who may also be a dependent, as well as children. Thus increasing one's dependents resulting in less savings as opposed to the single male.

g) Educational status:

The variable educational status is included to estimate the impact of one's educational status of household. Illiterates are expected to save less than literates, since they are less informed on formal savings. But this does not necessarily mean that, higher levels of education must necessarily result to more savings. Each person at each level of education, has choices and community standards of living, etc., that may influence one differently from the other.

h) Geographical location:

It is generally believed that, rural individuals have low incomes and are not attractive for savings mobilization relative to urban individuals. In addition, educational level disparities in developing economics creates the general perception that more rural individuals are less literate/educated than urban. Thus, would expect that, urban dwellers who are more education, with more job opportunities, and higher income levels to save more than those at rural areas.

2.2 Empirical determinants of household savings

There is a vast literature on the macroeconomic determinants of saving behaviour both on individual country as well as across nations. The study therefore highlights few empirical findings on determinants of household savings after which it discusses empirical works of household level analysis.

2.2.1 Empirical macroeconomic determinants of household savings

As already noted, this study acknowledges the existence of large empirical works on macroeconomic analysis on savings. Since the study does not focus in the macroeconomic sphere of analysis, this study presents the findings of few of them as follows:

Khan, Hassan and Malik (1992), using aggregate savings as regressand, and per capita income, dependency ratio, rate of interest, inflows of foreign capital and foreign aid, terms of trade and openness of economy as regressors to evaluate Pakistan savings. Their results found positive significant coefficients for per capita income and real interest rate. However, dependency ratio and capital inflow were found to be negative. The study concluded that, savings rate in Pakistan was very low.

Chaudhry *et. al.*, (2010), studied national savings rate for Pakistan during 1972 to 2008 using time-series data in an Error Correction model. The findings showed negative long run relationship between public loans and savings rate. On the other hand, the variables of consumer price index, exports, interest rates, worker's remittance and government spending had significant positive influence on national saving. But short run results showed that interest rate and workers remittance were positive to saving.

Kim (2010) examined the USA's personal saving using both internal and external factors during 1950 to 2007. The results showed saving to be greatly influenced by personal income, tax, credit outstanding and employment status. Other factors such as dependency ratio, real estate loan, real interest rate, and economic performance were insignificant. The study concluded that personal savings were much influenced by internal factors than external.

Osei (2011) investigated the functional relationships between financial savings and macroeconomic variables in Ghana. The study has revealed that the level of investment has positive and significant impact on savings in Ghana. It further revealed that deposit rate has significant effect on savings mobilization in Ghana due to the impacts of the financial reforms which brought innovation and competition into the banking sector, and urged banks to raise the deposit rates a bit above the current prevailing rates in order to serve as an incentive to attract deposits since current deposit rates offered by the various commercial banks are not competitive enough in order to promote savings in the country.

2.2.2 Empirical micro-level determinants of household savings

Besides the numerous literature on macro-determinants of household savings, relatively few studies were found to examine household savings at individual level. This was due to

insufficient available household data. This problem of insufficiency, less periodic, and unavailability of household level information for household level analysis is keen in developing economies. The study continuous by presenting some of the empirical findings of relevant works that had employed household level information in analysing household savings behaviour.

Bhalla (1978) investigated the effects of sources of income and investment opportunities on the saving behaviour of farm households in India. He used the survey data collected by National Council of Applied Economic Research (NCAER) during the three years starting from the year 1968-1969 and found that the propensity to save out of non-agricultural income was higher than the propensity to save out of agricultural income. The permanent income hypothesis (PIH) offers an explanation for this difference in propensity. He also found that investment opportunities increase saving, *ceteris paribus*, for the subsistence group of household and had a negative effect for the non-subsistence group.

Repetto and Shah, (1975) studied the demographic and other influences on long term saving behaviour in India. The data for the study was collected from surveys conducted in the Kaira district of Maharashtra in 1930 and 1965. They found that large family size had a depressing effect on long term household saving rate. They also found that sons in rural India served as substitute assets in households and fulfil some of the demand for wealth and that the long term saving rate responds positively to a higher rate of return on saving and positively to higher-level of permanent income. However, Shultz (2005) analysed the demographic determinants of savings in Asia and found no significant relationship between savings and age composition.

Alma and Richard (1988) in their attempt to examine the saving behaviour of Filipino rural households regressed current income on saving. They concluded that a large potential for

voluntary saving can be found in the rural households of the Philippines and other less developed countries. They have substantial evidence to argue that there is no reason to believe that mobilization of voluntary rural household saving cannot be perused. Their findings further indicate that income is the most important economic variable affecting rural savings.

Carpenter and Jensen (2002) and Kulikov, et al. (2007) identify how household characteristics affect saving behaviour, in Pakistan and Estonia respectively. Carpenter and Jensen (2002) focus on the role of institutions which collect saving and stress on the role of formal (banks) and informal institutions (savings committees). They found that “increased income leads to a greater desire to participate in some form of savings institutions but as income increases more individuals shift to the formal sector”. They also found evidence that the urban rural differences in bank use is negligible which suggests that formal finance is not primarily restricted to urban households in Pakistan.

Harris, Loundes and Webster (1999) used unique survey of consumers to examine the determinants of household savings in Australia. The data used in the estimation were driven from the pooled results of quarterly surveys conducted over the period August 1994 to February 1999. Results of the study support the observation that income is an important determinants of household saving. Demographics and householders level of economic optimism were also found to be contributing much towards household savings.

Fasoranti (2007), focused on the influence of rural saving in mobilization on economic development of rural dwellers in Nigeria. Data was collected through a questionnaire to 100 respondents from 5 villages. Results of the Ordinary Least Square estimation technique indicate that income, human capital, investment and assets positively contribute to total savings.

IPC (1988) studied rural finance in northern Ghana showed that only 20 percent of household assets were held in financial assets, and that this was divided as follows: 12 percent informal savings and 8 percent formal savings. In a recent survey in southern Ghana, Aryeetey and Udry (1999) found that only 19 percent of farming households had any financial assets with formal institutions and these were valued at only 4 percent of the total value of assets exclusive of the value of land.

Aidoo (2011) examined the determinants of personal savings in Ghana, using Cape Coast Metropolis as a case study. He used a cross sectional data from 250 individual household members in the Cape Coast Metropolis in the Central Region of Ghana were collected and analysed using econometric techniques. The estimation technique used in the analysis is the instrumental variable (IV) method. The result of the study showed a significant positive relationship between personal savings and disposable income; personal savings and financial literacy; and personal savings and marital status. A statistically significant negative relationship was also found between savings and personal assets; personal savings and loan commitments. He concluded that indeed the level of personal savings is low.

Michael (2013), examined the savings habit among households, using Probit and OLS method on GLSS 5 data as well as self-administered questionnaires to 200 respondents in the Ga-East municipality of Ghana. His study revealed a positive relationship between level of savings with age and a significant non-linear relationship between age and savings. Household size was found to adversely affect level of savings and that, married persons saved more than the non-married individuals. With regards to employment sector, formal sector employees saved higher than non-formal sector workers. Income and level of savings was also found positive.

From the above empirical findings, it is undeniable that income is a significant determinant of savings at both macro level (Khan *et. al.*, 1992; Kim, 2008) and household level (Alma and Richard, 1988; Harris, *et. al.*, 1999; Carpenter and Jensen, 2002). Their findings support the theoretical positive-sign expectation for income-savings relationship. This study hence, includes household income as a key determinant in the analysis of household savings in Ghana.

Still on the subject of income, individual households engage in different forms of economic activities from which income is earned. Considering income-sources and savings relationship, Bhalla (1978) found that households in non-agricultural income saved more out of their incomes than those engaged in agricultural economic activities. This suggested that, households engaged in different form of economic activities have dissimilar savings propensity. This study therefore incorporates income-sources regarding households with incomes from self-employed agricultural activities, self-employed non-agricultural activities, and wage non-agricultural activities, in its household savings analysis for the case of Ghana.

Households are not homogeneous, this highlights that the pattern of savings can be skewed regarding differing household characteristics. Although there is the traditional view that, household's in rural localities are generally poor with low income and hence do not save, Alma and Richard (1988) found that, rural households in Filipino can save. Fasoranti (2007) and IPC (1988) found similar results for household's in Nigeria and Ghana respectively.

Carpenter and Jensen (2002) and Kulikov, et al. (2007) came out that, urban-rural savings differences was negligible, and that formal finance need not be restricted to urban. These spot-lights that, there could be savings differences (having a pattern) among households with regards to demographic factors such as location, etc. The study therefore examines the pattern of household savings considering household demographic factors such as locality, region, sex,

etc.

Dependency ratio expressed as number of dependents (those below 14 years and above retirement age) over working population was found by Khan *et. al.*, (1992) to adversely affect savings at macro level analysis. At household level, Repetto and Shah, (1975) and Michael (2013), using family size and household size respectively, were found to adversely affect household savings.

Most household level analysis examined a linear relationship between household size and household savings, and expect a negative outcome. This means, the impact of an extra household size is assumed constant. But there is the possibility that household's will demand dependent/children (Becker and Tomes, 1976; Schultz, 1994), and an additional issue is the demand for child labour (Brown and stern, 2002).

This study considers a construct where household may want a certain household size/member/children, and thus positively-savings relationship. This is seen in modern savings packaging schemes such as “me ba daakye” account, “kiddie savers account” etc.

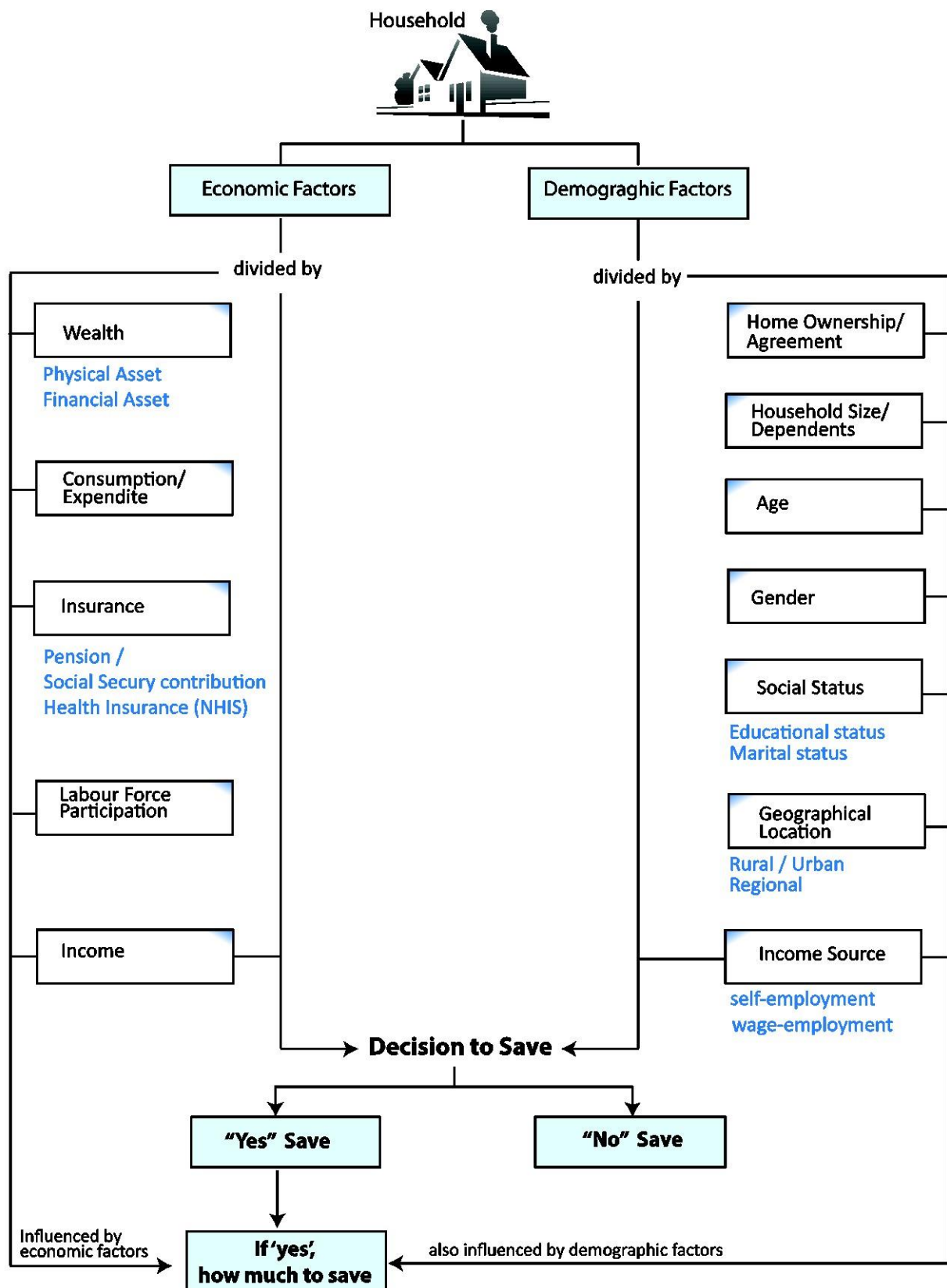
Thus, household may save extra money for unforeseen issues of dependents/members, but as the dependents increase given income constraint, the impact diminishes, and hence a nonlinear (non-constant) relationship. The study will thus, include the square of household size, so as to examine non-linear household-savings relationship. According to the life-cycle hypothesis, savings and household age has a non-linear relationship, called the age-savings profile. Michael (2013), using OLS methodology, examined non-linear household age– savings relations and came out that, the age-savings profile for Ghana was non-linear. This study, will incorporate the age-savings profile by adding the square of age in its savings analysis.

2.3 Conceptual framework

The study has so far presented some of the various household factors that can affect household savings from both theory and empirical literature. The same factors that affects household's decision to save, also affects how much they save, if they should save. This is summarized in the conceptual framework presented in figure 3.1 below.

Figure 3.1 Conceptual framework of savings decision process and level of savings





2.4 Savings in Ghana

The performance of savings in sub-Saharan Africa (SSA) is extremely lower than that of other developing regions (Aryeetey and Udry, 2000). During the period 1980 to 1996, the economies

of Angola and Gabon experienced an average savings rate of 28% and 38%, this has been attributed to their large oil-export oriented economies. Except for these two economies, the rest in SSA including Ghana was observed to have had savings rates not above 20% (Elbadawi and Mwega 2000). In the face of economic reforms that many economies in the sub-regions have attempted had tiny effect on savings in these economies (World Bank 1994).

During the same 1980-96 era, Ghana enacted comprehensive reforms such as the ERP in 1983, GPRS-I in 2003, GPRS-II in 2006, etc. Though such reforms were applauded to have had some significance impact on GDP, economic growth and poverty, they did face a couple challenges and costs. Yet, Ghana experienced a very low domestic saving-rate of 5 % on average of GDP during the same era. Indeed. It then increased from 4 % to 7 % after a decade of reforms (Aryeetey and Udry, 2000).

Ghana under series of reforms for accelerated growth to transform the economy to a middleincome status, aimed to achieve a growth rate of 8% annually which required 25% investment-to-GDP ratio. This therefore needed domestic savings to GDP ratio to be above 20%, but was obviously challenged, and much progress seems lacking in this regard (Asiama & Osei, 2007).

Ghana's saving rate (% of GDP) of 16.8% in 2013 is still below the needed rate for sustainable growth and development. This poor savings in Ghana is attributed to low personal savings, coming from exceeding expenditure against income for households. For instance, GLSS 5 (2005 to 2006) reported average annual income for surveyed households to be GH¢1.2 (thousand) against average annual expenditure of GH¢1.9(thousand). The study proceeds to elaborate forms of savings in Ghana.

So far, Ghana has had six household surveys GLS (1) to (6) by Ghana statistical service, in addition to Ghana's household population census. The low conducted number of household surveys in developing economics makes it difficult to examine and to distinguish saving patterns by households and to discern the various demographic and compositional analysis. Though there are several classification of savings considering time-length, term structure of deposits, savings instruments, flexibility of associated saving contracts, etc. In assessing the patterns and associated households saving behaviours, the types of saving identified in literature are generally formal saving and informal saving (Deaton 1997; Steel, 2006).

Though this issues matters, the low published surveys of household in Ghana makes decomposition of households forms of savings difficult to distinguish, such as the rural finance study in the north by IPC (1988) reporting of the 20% held household financial assets, 12% were formal with 8% being informal. What rather seems easy to evaluate is the volume or magnitude of formal savings (Aryeetey & Udry, 2000).

2.4.1 Formal Saving in Ghana

According to Steel (2006), households that saves with institutions such as Commercial banks, Development banks, Rural banks, Savings and loan companies, and Deposit-taking microfinance banks are classified as formal saving. Those that operates with savings collectors "susu" that is not legally registered at national level (though they may belong to a registered association), Rotating Savings and Credit Associations are classified as informal savings.

A third branch that Steel (2006) identified was credit unions and microfinance NGOs that are legally registered but not licensed as financial institutions by bank of Ghana are classified as "Semi-formal". (Steel, 2006; Aryeetey, 2008). Formal financial institutions offer various bank's

account packages for their customers. They are generally classified as either being savings account, demand deposits or time /fixed deposit account.

With the savings account, the formal financial institution pays some interest on the person's account, and the individual normally has some limited withdrawals that can be made within a certain period. This account type cannot indirectly serve as a medium of exchange by issuing cheques.

Demand deposit also referred to as chequeable account, is an account type where one has no restriction on customer's withdrawal (except volume of withdrawal when large, must preinform bank of such huge withdrawal intentions). Demand deposits dominates other account forms in especially commercial banks. The writing of cheque allows this type of account to serve indirectly as a medium of exchange.

Fixed deposit is in one way an investment account, and in other ways, a type of savings account. Here, one makes deposits into the account for an agreed time-period, and receives an appreciable interest rate return, but can withdraw cash from the account only after the agreed date. Changes to the terms and conditions such as withdrawal before set date are possible but at a cost.

Bank services have evolved over time to include services of ATM, online banking, credit cards, e-switch cards, etc. These days, most banks offer savings account that also allows the writing of cheques. Ghana's formal financial sector is mostly dominated by commercial banks, development banks and rural banks.

The demand for savings services from formal institutions is such that, one generally expects to have a return on the account either in the form of regular savings-interest receipt or other benefit

forms. Although there are costs involved in such provision, the structure of demand for formal saving facilities is very crucial. Aryeetey and Gockel (1991), examined transaction cost and the demand for formal savings facilities in Ghana.

In their survey, they identified that travel cost and travel time was less influential on urban savers/depositors as banks (formal saving institutions) were everywhere within a kilometre radius reach. But strikingly, though on average, the nearest bank was 0.7 km away, more people saved with banks that were averagely over 4 km away. The study showed that, time spent at banks was the major transaction cost to savers at banks. The time-length spent at banks has been increasing over the years, especially from the onset the government policy of salary payment via banks onwards, making banks now being over-crowded.

Nevertheless, it is undeniable that, opening a new savings account with formal saving institutions in the country is quite an arduous task. Aryeetey and Gockel (1991), attributed this as one of the reasons for the slow growth of new opened-accounts for the past decade. It thus confirmed IPC (1988) findings of savings-facility demand being sensitive to price.

Though it was a normal perception that saving with formal institutions was a safe guarantee, public confidence in formal savings swayed down and has become difficult to revive since Mentioning a few are, the freezing of deposit accounts that were in excess of fifty thousand old Ghana cedis and its being confiscated by the then government in 1982. The forceful cheque payments law for transaction amounts above one thousand old Ghana Cedis (Debrah, 2009; Ghanaian Chronicle, 1997:1; Aryeetey and Gockel, 1991).

The current issue of public concern is the new “Value Added Tax” law, Act 870 in 2013. This sets obligatory payment of 17.5 % VAT for use of any banking service, be it transactions of deposit, loan acquisition or payment, insurance scheme provision, money transfer, any money

currency dealing be it domestic or foreign, for which the bank charges the customer since such transactions are the core-motives for which banks exist.

According to Daily Graphic (10th October, 2014), though the VAT is said to not apply to dealings of savings, deposit, cheque withdrawal and payment, people express their dissatisfaction as they do get charged. This is because, in the banks records, all such charges are deducted from the person's account, and hence the VAT increases these transactions cost and are thus passed on to customers. This implies that, anytime one draws a check, make physical cash withdrawal from over-the-counter, received cash in one's account, transfers cash from one's account to the other, etc., the individual will pay 17.5% of that transaction charges and not on the transaction itself.

The relative size of formal financial sector can be reasonable gauged using the ratio of money-deposits to money-supply ratio. This ratio gives a degree of banking development of the money market from the view point of liability, and hence highlights the strength and size of the operational practices and formal financial management (Wai, 1956).

Aryeetey and Gockel (1991), examined this ratio in Ghana for the period of 1977 to 1986, and found that the ratio of total deposit money to money supply(M2) fell from 65% in 1977, to 56% in 1980 and gradually rose to 63% by 1986. A future analysis of this ration using Bank of Ghana's publication for the period of 1990 to 2006 shows a trending down nature around 3% and later rising to 33.5% by 2006. This declining ratio over time highlights the relative falling strength and size of the formal sector and alternately a rise of the informal financial sectors.

2.4.2 Informal Saving in Ghana

The informal saving organisations and credit facilities prevails in Ghana's financial market. The term "informal financial sector" by definition, is the exact opposite of the "formal financial system" in Ghana. Since the "formal" embraces all financial bodies roofed by government financial regulations, the informal financial sector therefore engages all other financial dealings that is not covered by the "formal" (Aryeetey and Gockel, 1991). Thus, informal savings comprise savings schemes such as rotatory savings, credit clubs, "susu" collector schemes, money-lending and to some credit unions. (Bortei-Doku & Aryeetey, 1996).

Most individuals in the informal sector stores their monies either at home or with Rotating Savings and Credit Associations (ROSCAs) and "susu" collectors. In Ghana, though ROSCA and "Susu" Collecting schemes (SSs) are different, the term "susu" is indigenously used for most informal savings including ROSCA. The key purpose of ROSCA in simple term is pooling scarce money resources (Aborgah, 2007; Joseph, 2011).

According to Joseph (2011), rotating savings and credit associations (ROSCA) and "susu" collector scheme (SSs) all basically pertain to pooling savings from members, they differ in terms of membership relation and mode of contribution. ROSCA are organised associations with social recognition of each member. Thus, they have some form of member relation that can be of friendship, family, neighbourhood relationship, etc. Thus members know much about other members. With SSs, it involves personal arrangement with the "susu" collector. Thus the dominating linking agent is the 'susu' collector, with each member having no knowledge of possible other existing members (Aryeetey and Udry, 2000). Whereas SSs members receives their savings contributions at the agreed time, ROSCA members receive their savings contribution in point rotations, with each person receiving a lump-sum.

According to Bortei-Doku and Aryeetey (1995), the 1993 Financial Institutions (Non-Banking) Law of 1993 made it possible for the operation of nine new license classification of financial organisations in Ghana which involved the savings and loan companies (S&Ls) and credit union. Here, “susu” collectors became acknowledged under this law, and were urged to unite under the Ghana Co-operative Susu Collectors Association (GCSCA).

2.5 Conclusion

The chapter has presented a review of literature on savings, explored some theories on savings and its determinants. It finally presented some study works on savings in Ghana. This study is different from previous works done by others, as it examines the determinants of savings in Ghana using a recent national survey data GLSS 6, to assess the quantitative importance of these determinants. In addition to employing extra relevant variables that were not used in previous studies for Ghana, this study uses a methodology that appraised as better than OLS methods (which is criticised to be biased and give inconsistent estimates in survey data) which was used on previous household surveys done on Ghana.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter discusses the way this study was conducted. It tackles the types and sources of data, model specification variables employed under the study, priori expectations on the signs of the coefficients to be estimated as well as the model estimation technique.

3.1 Profile of the study area

Ghana, an English driven official language economy, is located in coast of West Africa sharing borders with Burkina Faso, Côte d'Ivoire, Togo, and the south Atlantic Ocean. The total land areas of Ghana covers about 238,533 square kilometres. According to Ghana's 2010 Census, the total population was about 24.65 million people with about 48.766% males and the remaining being females. The most densely populated geographical area is the Greater Accra region, followed by Central region, with Northern region remaining as the most sparsely populated region. As at 2010, the total counted households were 5,467,136, which showed a 47.7 % increase over that of 2000 census.

The 2010 results showed that Ghana's population is youthful, with those less than 15 years and those above 64 years, being 38.3% and 4.7% respective. This implies a working population of 57%. Out of the total population, about 51% were urban dwellers with the majority coming from Greater Accra, followed by Ashanti region. The other eight (8) regions were described mainly as rural. The literacy rate in Ghana to be 74.1%, with 78.3% males and 65.3% females, thus a notable gap. Ghana is ranked as the 46th nation, out of a total of 148 nations in terms of the quality of education system, in World Economic Forum 2013 to 2014 report. Considering

education indicators in Ghana by Ghana statistical service, there is still a significant gender gap, gaps in rural and urban regions, as well as considering south and north areas of the economy.

Although World Bank report unemployment rate in Ghana to be 4.6% in 2010, 1.8% in 2013 rising to 2.4% in 2014, there are more people unemployed or underemployed in the economy. According to the 2010 census results, out of the 21.25 million economically active age-group population, 54 % were economically active as either employed and underemployed. The current situation was heightened by the ban by government on public sector employment, as government is the biggest employer in the economy. Most Ghanaian (41.5%) are engaged in the agricultural sector, forestry and fishery labours. Those engaged in service sector were 21%. The remaining 37% are engaged in manufacturing sector. Yet the share of agricultural contribution to GDP in 2013 was lowest, 22%. The very few engaged in service had the largest GDP contribution of 49.8%, with industry contributing 28.6% to GDP.

Ghana although it has universal health care system called the National Health Insurance Scheme (NHIS), has a lot of challenges with regards to health care provision in the economy. According the World Health Organization, some of most common illnesses in the economy are cholera, malaria, typhoid, etc., and some commonly treated illnesses include malaria, dysentery, river blindness, etc.

3.2 The GLSS-6 sampling method

The Ghana Living Standards Survey round six (GLSS6), provides both nationally and regional representative indicators. It applied sampling methods and questionnaires covering broad of issues of education, health, employment, housing, etc.

To provide nationally representative statistics, the number of primary sampling units and households were increased to 18,000, which is a 107% increase over the previous GLSS5. The GLSS-6 employed a two-stage stratified sampling design where 1,200 enumeration areas were selected to form the primary sampling units at the first stage. These primary sampling units were allocated into the various ten regions using probability proportional to population size. The enumeration areas were further divided into urban and rural localities of residence. At the second stage, fifteen (15) households from each primary sampling units were selected systematically resulting to a total sample size of 18,000 households nationwide. Of this number, 16,772 were successfully enumerated leading to a response rate of 93.2 %.

The data was gathered from 18th October 2012 to 17th October 2013 with the use of structured household questionnaires. Detailed information collected on demographic characteristics of households, education, health, employment, migration and tourism, housing conditions, household agriculture, household expenditure, income and their components, etc. Out of the total 18,000 households that participated, some gave responses that ended up as incomplete interviews due to break-off, and some ending up as non-interviews (those that refused to participate). This resulted in 16,772 successfully counted response leading to a response rate of 93%. Thus a total of 16,772 captured responses in all administrative regions from the GLSS-6 survey is used in this study to analyse the savings behaviour of households in Ghana.

3.3 Types and sources of data

This study makes extensive use of the GLSS-6 primary sourced data that was done by the Ghana Statistical Service (GSS) during the one-year period of October 18th, 2012 to October 17th 2013. Main qualitative and quantitative socio-economic variables of interest related to households includes information on; education level, occupation, house size, income from

various sources, region, gender, house cooking fuel type, health (if person is registered/covered by the health insurance scheme, employment (if one is employed, sector of employment (agriculture, or a self-employed individual), marital status and age.

3.4 Estimation strategy

The data and its analysis will be done in two approaches; descriptive analysis and inferential analysis. The descriptive analysis summarises the data by employing tabular presentation to make comparisons, compare and contrast households with regards to desired features, while the inferential aspect employs the use of regression analysis.

With regards to savings decisions, the analysis was done in two parts. The first part entails the decision whether to save or not to save, and the second part pertains on condition that, a given household does save, the decision of the level / amount to save.

The study realises that, most household savings regression that were done using households survey data were analysed via simple OLS estimation technique such as the works of Aidoo (2011), Quartey and Blankson (2008), and Michael (2013), except Teshome *et. al.*, (2013), Mirach and Hailu (2014).

According to Deaton (2005) and Yoshida & Guariglia (2002), Rogg (2006), OLS has associated problems with survey data when there are significant zero dependent variable values and therefore a suitable econometric technique is needed to be employed to lessen or overcome such problems found in microdata-set.

3.4.1 Model Specification

An inspection in the household data shows that, about 35% of households in Ghana either have savings account or are a part of some saving scheme. This means that, there will be about 65% of the remaining households that did not save. The econometric framework employed in this study with regards to the decision to save, is explained in the next section.

3.4.2 The econometric framework of the Probit model

The probit model is one of the methods that can be used in estimating models where the dependent variable has a binary outcome, the decision to save or not to save. It usually takes on two values, a zero (0) if a given household actually does not save, or a one (1) if a given household does save, as follows:

$$Savings = \begin{cases} 1, & \text{if yes} \\ 0, & \text{if no} \end{cases} \quad 3.3$$

Here, instead of estimating the values of one and zeroes, the model estimated the probability(p) that savings = 1 as a function of the explanatory variables. If we represent savings by “S” then,

$$p = \Pr (S = 1 | X) = F (X' \beta) \quad 3.4$$

Thus the probability of savings = 0, that is ‘no’ is derived as $1 - p$.

Where $F(X'\beta)$ is a cumulative distribution function of the standard normal distribution as

$$F(X'\beta) = \int_{-\infty}^{X'\beta} \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{1}{2\sigma^2}z^2} dz \quad 3.5$$

As, a result, the predicted probabilities are within the values of zero (0) and one (1). The probit model is estimated by Maximum Likelihood Estimation, and its errors (disturbances)

are assumed to follow the standard normal distribution, $\phi(\cdot) = \frac{1}{\sqrt{2\pi}} e^{-\frac{\cdot^2}{2}}$ with variance of 1.

The marginal effect for the probit model is derived as:

$$\frac{\partial \pi_i}{\partial X_i} = \phi(X_i' \beta) \beta_i \quad (3.6)$$

The marginal effect at the mean, is estimated for the average person in the sample as

$$\frac{\partial \pi_i}{\partial X_i} = \phi(X_i' \beta) \beta_i \quad (3.7)$$

Since, it is less likely to find individuals at the mean, the average marginal effect is estimated as the average of the individual marginal effects expressed as:

$$\frac{1}{n} \sum_{i=1}^n \phi(X_i' \beta) \beta_i \quad (3.8)$$

The two marginal effect 3.7 and 3.8 yields identical result in most cases.

To evaluate the goodness of fit for the probit model, the approach of percent correctly predicted values can be employed. This is similar to the R^2 of OLS. The approach is that, is a predicted probability to save is more than 0.5, it is assumed $S=1$, otherwise it is assumed $S=0$.

This therefore results in four possible outcomes as presented in the Table 3.1 below.

Table 3.1 : Goodness of fit measure: four probit prediction outcomes

Classified	Actual $S = 1$	Actual $S = 0$
Predicted $\hat{S}=1$	A (True)	B (false)
Predicted $\hat{S}=0$	C (false)	D (True)

Here, there are four cases in which the values of 0 or 1 predicted may yield are as follows:

- If the individual actually does save ($S=1$), and the predicted probability, $p>0.5$, result with $\hat{S}=1$, then the result is a true case (region A).
- If the individual actually don not save ($S=0$), and the predicted probability yields $p>0.5$. This will result in $\hat{S}=1$, this result therefore is a false case (region B).
- If the individual actually does save($S=1$), and the predicted probability ($p\leq 0.5$) result with is $\hat{S}=0$, then the result is also a false case (region C).
- If the individual actually do not save, and the predicted probability ($p\leq 0.5$) result with is $\hat{S}=0$, then this result is a true case (region D).

The ratio of correct/true prediction (region A + region B) to total predictions gives the percent correctly predicted values.

To estimate the household variables and probability to save relationship, the study follows the probit model specification of Annim, *et. al.* (2015) as follows:

$$Pr (S_i = 1|x_i) = f(Age, income, Hhsize, Dep, Gender, Region, Location, B_{power}) \quad 3.1$$

Where,

Age = Age of household head

Income = Household income

Location = Urban/rural dummy

Hhsize = Household size

Dep = Dependents (<18 + >60)

B_Power = Woman's bargaining power relative to man

Region = Regional dummy

The study modifies the explanatory variables as follows. The variable B_Power defined according to Annim, *et. al.* (2015) as the relative ability for one party to exert influence over the other in negotiation although significant variable, Lundberg and Ward-Batts (2000) argues that, it has no clear definition and is difficult to measure. In addition, they argue that, though the use of some proxy such as age-gap or educational gap between husband and wife are employed, these proxies have flaws and setbacks. In addition, not all households are husband and wife, while others are polygamous. Thus, age-gap incorrectly reflect all such factors. These proxies are insufficient reflections. Based on the above arguments, the variable BPower is not included in this study. In addition, the variable Dep and HHsize are highly collinear. Since it is difficult to compute Dependent members in the GLSS-6, the variable HHsize is used, and Dep is dropped.

The study in addition, adds additional household variables of marital status, educational level, NHIS status, dwelling ownership, employment status, cooking fuel and income sources that are also likely to influence household savings decision. Thus the probit model for this study is:

$$\Pr(S_i = 1 | X_i) = f(\beta_0 + \beta_1 \text{Age} + \beta_2 \text{income} + \beta_3 \text{Hhsize} + \beta_4 \text{Gender} + \beta_5 \text{Region} + \beta_6 \text{Location} + \beta_7 \text{marital status} + \beta_8 \text{educational level} + \beta_9 \text{NHIS status} + \beta_{10} \text{dwelling ownership} + \beta_{11} \text{employment status} + \beta_{12} \text{cooking fuel} + \beta_{13} \text{income sources}) \quad (3.2)$$

Where description of variables is presented in Table 3.2. It can be noted that, apart from the variable income, Hhsize and age, the remaining variables are all categorical variables. The study

employs dummy variable approach to incorporate the categorical variables in the regression estimations.

3.4.3 Definition of Variables and their expected signs

This section presents the dependent and the independent variables, their description, and expected signs

Table 3.2 : A prior expectation of variables that affects household savings

Variable	Variable description	Expected Sign	Expected signs based on the works of.....
Savings	Households savings Balance		
Age	Age of household head	+	Deaton (1992)
Age ²		-	Attanasio (1998)
Gender	Sex of household head (female = 0)	-	Sierminska <i>et. al.</i> , (2008) Quartey & Blankson (2008)
Marital Status	Marital Status of household head (never married =0)	+	Nayak, S. (2013).
Educational level	education level of household head	+	Solmon (1975),
Location	Location of household either in urban or rural locality (urban = 0)	-	Curley & Grinstein (2003)
Income	Gross annual household income	+	Nayak, S. (2013).
Household size	Number of household members	+	Mirach & Hailu
NHIS Status	Health Insurance registration status (Not registered = 0)	+	Kotlikoff (1989)
(Household size) ²		-	Author's own construct
Dwelling Ownership	(Own House =0)		

Employment Status	Employment status of household head (not working = 0)	+	Quartey & Blankson (2008)
Cooking Fuel	House cooking fuel type used (Gas=0)		
region	Region of household (Accra =0)	+	Author's own construct
Income Sources	income source of households (self-employed agric= 0)	+	Author's own construct

3.4.4 Interpretation of probit coefficients

As indicated earlier, some household savings regressors are categorical and others are ratio variables. The probit coefficient are interpreted with regards to sign and significance of coefficient, but not the magnitude.

For those that are ratio variable, a positive sign for the ratio variable such as income, indicates that households are more likely to save as household income increases. If the income coefficient turns out to be negative, then it would be interpreted as households are less likely to save as household income increases.

Considering categorical variables, the dummy approach of incorporating the categorical regressors is done with reference to a base/reference group. For instance, the variable gender is an indicator variable where a household head is either a male or a female. The study employs the dummy approach where a subcategory such as female, expressed as “female=0”, is used to indicate the reference group (this means that, females is the reference group with which other subcategories of the variable gender, males, will be compared to). Here the estimation is done considering whether other subcategories are more or less likely to save compared to the

reference group, females, and also examine if the difference between the dummy and the reference group is statistically significant.

The interpretation is done with regards to the sign and significance of the dummy variable. A negative sign for a dummy coefficient indicates that, that dummy is less likely to save compared to the reference group, and a positive coefficient indicates more likely to save than the reference group. If a dummy coefficient is found insignificant, then it means that, the probability that, that dummy group would save in comparison to the reference group is not statistically different

When estimating the probit model, it is also necessary to assess how a given unit change in a regressors (such as a GH¢1 increase in income) would affect the probability of savings being yes ($\Pr(S) = 1$). There are two estimated marginal effects namely (1) marginal effect at the mean and (2) average marginal effect. The study will estimate both effects, but will focus its discussions on (2) since, it is rare to have households at the mean. The average marginal effect is estimated as the average of the individuals' marginal effects. It is worth noting that, the two estimated marginal effects most of the time yields identical results.

3.4.5 Determinants of the level of household savings

The study then proceeds to estimating the level of savings for households on condition that the households is a part of some savings or “susu” scheme. In estimating the level of household savings, it is realised that, although not common, some households who do save, reported having zero amount of money in their savings account or “susu” balance. Zero account balance is not surprising due to the following reasons.

- Not all savings or susu scheme operates under the strict reserve requirement of Bank of Ghana, thus individual may withdraw all amount, due to circumstance.
- Also, even if one has a savings account but with minim deposit amount left in the amount, modern banks allow ATM, VISA, SMS notification, etc., services on savings accounts. Thus bank charges on the account for such services may possibly reduce the balance to a zero, if the individual has not made continual deposits.

Employing OLS on the whole sample (both savers with zero and positive values) observations will result in underestimated intercept and wrong slopes. Applying OLS on only the positive savers (savings > 0 , truncated sample) is associated exogenous sampling bias. In addition, the intercept is over-estimated and gives wrongly estimates the slope). The degree of bias in both increases as the number of observations that take on the value of zero increases. Using a straightforward linear regression to analyse such savings micro data will tend bias and inconsistent. The OLS as it seeks to minimise the errors, and in this case, OLS will not have a zero mean (see Heckman, 1979; Gujarati, 2007).

It can be seen that, only part of the dependent variable will be reported zero or missing, but their respective incomes, and other relevant independent variables are available. Using the truncation will throw away such useful information. Hence the study will apply a censoring from below zero method of estimation.

A sample has been censored if no observations have been systematically excluded but some of the information contained in them has been suppressed. Davidson and MacKinnon (1993) provides an example where truncation results in more inconsistency than censoring., with tobit yielding better results. The framework of the tobit model is explained below.

3.4.6 The econometric framework of the Tobit model

Let a latent variable, S^* , denote one's level of savings (S). In literature savings can take both positive and negative values. Let us see how 'S' will take on the value of zero (0), the region of zero savings. This comes about when;

- a) The individual understood the question correctly and gave an honest correct answer.
- b) The individual regards him/herself as not having put any money in account, and thus bank charges have eroded all possible amount left as at time of interview
- c) The individual was actually not comfortable to release his savings information, and thus, answered zero, so as to evade or cover his amount.

Thus the sample selection issue here is; $S_i = 0$, if cases (a) to (d) holds. This means that, the threshold value for the tobit model is 0.

Also, S is observed if $S_i > 0$, otherwise S_i is not observed if $S_i \leq 0$. Therefore the observed S_i is equation 3.1 above. The parameters are estimated following Tobit likelihood maximization following (Gujarati, 2007; Maddala, 2005). Since there are two observation sets:

- i. Where there are positive S-values, it has a standard normal distribution as

$$(S_i - X_i\beta)/\sigma$$

Since u^i/σ has a ii. Where there are zero S-values, $S_i^* \leq 0$ or $(X_i\beta - \mu_i)$ it is known that .

standard normal distribution, is can be expressed as $u^i/\sigma \leq -(X_i\beta)/\sigma$, and the probability for this can be expressed as $F[-(X_i\beta)/\sigma]$, with $F(z)$ being the cumulative distribution function of the standard normal.

If one denote $f(\cdot)$ and $F(\cdot)$ as the density function of the standard normal, and cumulative distribution function. Then;

$$f(t) = \frac{1}{\sigma\sqrt{2\pi}} \exp\left[-\frac{1}{2}\left(\frac{t}{\sigma}\right)^2\right] \quad (3.5)$$

and

$$f(z) = \int_{-\infty}^z f(t) dt \quad (3.6)$$

Maddala (2005) shows that, the likelihood function for the Tobit model is as follows

$$L = \prod_{i=1}^n \left[\frac{1}{\sigma} f\left(\frac{y_i}{\sigma}\right) \right]^{y_i > 0} \left[\frac{1}{\sigma} F\left(\frac{y_i}{\sigma}\right) \right]^{y_i = 0} \quad (3.7)$$

Teshome *et. al.*, (2013), decomposed the effects of independent variables on household savings probability as:

Change in probability of gain in explanatory X_i as;

$$\frac{\partial F(z)}{\partial X_i} = \frac{\partial}{\partial X_i} \int_{-\infty}^z f(t) dt \quad (3.8)$$

Marginal effect of explanatory variable on expected savings as;

$$\frac{\partial E(S_i)}{\partial X_i} = f(z) \cdot \frac{\partial z}{\partial X_i} \quad \text{Where } z = (X_i \beta) / \sigma \quad 3.9$$

Change in intensity of dependent variable, savings, with regards to variations in explanatory variable among those with $S > 0$, the savers, as;

$$\frac{\partial E(S_i / S_i^* > 0)}{\partial X_i} = \frac{\partial f(z)}{\partial X_i} = \frac{\partial f(z)}{\partial z} \cdot \frac{\partial z}{\partial X_i} = \frac{f'(z) \cdot \beta}{\sigma} \quad 3.10$$

Saving comes in different forms and the motives behind the decision to save are complex. Unfortunately, GLSS-6 did not probe further into various reasons why households save, but was able to probe into why others said they do not save.

Review of literature found that, at household levels, most studies concentrated on household determinants of savings regarding a few variables, thus ignoring the possible impact of some other variables. This paper in addition added variables that may potentially influence household savings.

Therefore, to examine household savings determinants, the study follows the model specification of Tobit (1958) as cited in the works of Teshome *et. all.*, (2013) as follows:

$$S_i^* = X_i \beta + \mu_i \quad \text{for } i = 1, 2, 3, \dots, n \quad 3.1$$

$$S_i = S_i^* \quad \text{if } S_i^* > 0 \quad 3.2$$

$$S_i = 0 \quad \text{if } S_i^* \leq 0$$

$$u_i \sim \text{IN}(0, \sigma^2)$$

Where S_i is the level of households savings that is observable,

S_i^* is the unobserved latent variable.

β is a vector of parameters unknown.

X_i is vector of explanatory variable that affects household savings behaviour. These are household head characteristics of gender, age, education level, income source of households, annual income, dependency ratio, land holdings, livestock ownership, credit access, annual expenditure, annual investment, distance to the nearest formal financial institutions, training participation, contacts with development agents, media access, and saving motives.

This study retains the first four explanatory variables, and in addition dependency ratio was substitutes with household size. The remaining unused variables were not used since they were mostly not available in GLSS-6 data. Land holdings and livestock evaluates wealth which has measurement issues, and in addition, income is highly correlated with wealth. Thus they were not included.

The study further modifies the model specification by including the variables of region, location (urban-rural), house cooking energy-fuel, NHIS registration status, dwelling place agreement, employment status, marital status, age square, and household size squared.

3.4.7 Interpretation of tobit regression coefficients

The estimated tobit coefficients are the marginal effects of explanatory variable on the unobserved latent variable (S^*). The study deems such interpretations as non-interesting as the interest is how the explanatory variable impacts on the observable Savings (S) and not the latent (S^*). Thus, the study focusses its discussion with regards to tobit marginal impacts on positive savers and not on tobit coefficients for the latent savings (S^*), although all are presented.

There are two tobit marginal effects, namely; (1) marginal effect for censored sample (S) which includes both the zero balance savers and the positive balance savers, and (2) marginal effect for truncated sample ($S|S>0$), those with positive savings/susu balance. The tobit marginal coefficient are interpreted with regards to sign, magnitude and significance.

The coefficients are explained just as is done in ordinary least square (OLS). The same dummy methodology is applied in interpreting categorical variables. Here, the consideration is how much more or less savings is than by a dummy in comparison to the base dummy reference variable.

The variables that affects household's probability of saving are the same variables that influence the level of household savings. Thus the expected sign coefficients in the tobit model are the same as those presented in the probit model in Table 3.2.

CHAPTER FOUR

EMPIRICAL RESULTS AND ANALYSIS

4.0 Introduction

This chapter presents the GLSS-6 data with regards to variables from theory and empirical that serves as household savings determinant. The estimated empirical results are also presented here. The data and empirical result analysis presented in this chapter are guided on the study objectives and research questions.

4.1 The data

The study first gives a descriptive analysis of variables of interest. Here, summary is done by percent-frequency on categorical variables. Summary on ratio variables are presented in range, means and standard deviations where necessary. Afterwards a trend/pattern analysis of focus variables in this study.

The survey covered a nationally representative sample of 18,000 households in 1,200 enumeration areas. Of the 18,000 households, 16,772 were successfully enumerated leading to a response rate of 93.2 percent.

Detailed information was collected on the demographic characteristics of households, education, health, employment, housing conditions, household agriculture, income and their components. A summary of the main findings from the survey are presented below.

Table 4.1A: Profile of household heads in GLSS-6 survey data

Demographic variable	No. of households reported	Percent to total
AGE Group		
< 31 years	3,096	18.46%
31-40 yrs	4,274	25.48%
41-50 yrs	3,611	21.53%
51-60 yrs	2,680	15.98%
> 60 yrs	3,111	18.55%
Sex		
Female	4,729	28.2%
Male	12,043	71.8%
Dwelling Agreement		
Owning	8,867	52.87%
Renting	3,630	21.64%
Rent-free	4,222	25.17%

Perching	36	0.21%
Squatting	17	0.1%
Main Cooking Fuel		
Gas	2,827	16.86
Kerosene	29	0.17
Charcoal	4,532	27.02
Electricity	45	0.27
Firewood	8,602	51.29
Other	702	4.19
Educational level of head		
None	8,507	50.72%
BECE	2,300	13.71%
MSLC	2,814	16.78%
SSS/Secondary	1,424	8.49%
Voc/Tech/Teacher	779	4.64%
Tertiary	948	5.65%
Engaged in economic activity		
Yes	15,024	89.58%
No	1,748	10.42%
NHIS registration status		
Yes, registered	1,896	14.21%
Yes, covered	8,563	64.18%
Not on NHIS	2,881	21.59%

The summary of household variables in the GLSS- 6 data presented in Table 4.1A above shows that, about 81% of the household heads were in the active population age group, out of which 89% are engaged in an economic activity. The proportion of household heads was skewed towards the males (71%). This emanates from customs demanding males as heads/ruler-ship over females. About half of the household heads (50%) did not have any form of education, 30% have had up to basic education level, with very few (5.6%) attaining university education. Majority of the household heads having no education may affect their savings decisions, but this is yet to be statistically examined.

It was also observed from the data that, more than half (53%) of the household heads owned their respective dwelling place, with 21.6% and 25% of the household heads renting and rentfree dwelling agreement respectively. In addition to dwelling ownership, most households (51%) used firewood as the energy source for house cooking fuel, 27% use charcoal and about 17% use LPG gas as cooking fuel.

More so, most household heads (64%) reported as NHIS registered and covered, with about 14% registered but not covered from reasons of renewal and card replacement. Although NHIS plans to cover the entire population, household heads not enrolled constitute 22%. In all, about 36% of the household heads are not benefit from the scheme since they are not covered by the scheme.

Table 4.1B: Household heads engaged in economic activity by location

location	Engaged in activity		Total
	yes	no	
Urban	6,493 (38.7%)	952 (5.7%)	7,445 (44.4%)
Rural	8,531 (50.9%)	796 (4.7%)	9,327 (55.6%)
Total	15,024 (89.6%)	1,748 (10.4%)	16,772 (100%)

Table 4.1B is a cross-tabulation of household heads employment status by location. There are more households in rural (55.6%) than urban. About 50.9% of household heads in rural areas, are economically active compared to 4.7% non-economically active rural household heads. The same pattern is described for the rural. Here, about 38% of total households were engaged in economic activities in urban areas, with 5.7% of urban household heads having no jobs.

Table 4.1C: Household income by quintile

Quintile	Mean annual household income (GH¢)	Mean annual per capital income (GH¢)	Mean household size	Percentage (of annual income
1st (Lowest)	6,571.8	1,153.3	6.1	5.3%
2nd	10,698.0	2,160.7	5.0	10.3%
3rd	14,823.5	3,357.8	4.4	16.4%
4th	16,909.7	4,841.1	3.6	22.4%
5th (Highest)	25,200.9	10,492.6	2.6	45.6%
Ghana	16,644.6	5,346.9	4.0	100%

Table 4.1C shows that households in annual terms, has average income as GH¢16,645 and average per capita income to be GH¢5,347. The highest quintile has an average annual gross income of GH¢25,200.9 and for the lowest quintile the corresponding gross income is GH¢6,571.8. This highlights that, household in the highest quintile group has about four times that of those in lowest quintile.

The annual income per capita for household being GH¢5,347 implying that an average person lives on an average gross income of GH¢14.65 per day. The study continued by expanding the quantile income distribution to regional cross-tabulation analysis, with the result presented in Table 4.1D below.

Table 4.1D: Households income by region

Region	Percent Quintile						Mean annual Income	
	1st	2nd	3rd	4th	5th	Total	household	per capita
Western	11.6%	16.4%	17.9%	25.2%	28.9%	100%	22,599.1	7,730.7
Central	10.1%	19.8%	23.6%	21.4%	25.1%	100%	12,004.0	3,975.7
Greater Accra	3.0%	5.7%	11.9%	23.2%	56.2%	100%	16,580.8	5,428.5

Volta	19.0%	21.4%	18.0%	20.8%	20.8%	100%	15,451.1	4,382.2
Eastern	11.7%	18.8%	23.0%	24.4%	22.1%	100%	13,074.3	3,919.1
Ashanti	7.1%	15.0%	19.1%	25.3%	33.6%	100%	23,119.5	8,205.4
Brong-Ahafo	16.4%	20.0%	21.9%	20.9%	20.7%	100%	14,167.8	3,949.1
Northern	34.2%	22.7%	18.7%	14.2%	10.2%	100%	12,281.4	3,023.5
Upper East	32.5%	21.3%	17.7%	15.9%	12.7%	100%	7,240.5	1,801.9
Upper West	56.1%	16.6%	10.5%	6.3%	10.6%	100%	11,977.5	3,015.7
Ghana	13.3%	16.1%	18.4%	22.1%	30.1%	100%	16,644.60	5,346.90

Table 4.1D further discloses that Greater Accra region has more than half of its households in the highest quintile, with less than 5% of its households within the lowest quintile. Ashanti region follows with about 30% and 7% of its households in the highest and lowest quintiles respectively.

Household's in relatively more developed regions have small fractions in 1st quantile. On the other hand, Northern, Upper East and Upper West regions have more of its households in the lowest quintile. This indicates very high incidence of poverty in the northern parts of the country.

Table 4.1E: Sources of household income by location

Locality	Mean annual per capita income (GHC)	income per day (GHC)	total annual income (Million GHC)	Percentage (of total annual income)
Urban	7,019.72	19.499	74,893.45	69.2%
Rural	3,302.83	9.173	33,406.63	30.8%
Total	5,346.91	14.85	108,300.07	100%

Table 4.1E above shows that urban mean household income is twice that of the rural. Urban household per capita annual income of GHC7,019, and mean annual income of GH¢74,893 which representing about 69% of total household national income while the rural persons contributes about 31%. In addition, when the mean annual income per capita is divided among the days in a year, it is estimated that, average income per rural person per day is GH¢9 while the urban estimate was GH¢19.

Table 4.1F: Main sources of household income.

Source of income	Mean annual household income	Mean annual per capita income	total annual income	Percentage (of total annual income)
Wage income	7,814.10	2,622.59	39,324.86	36.3%
Agriculture income	3,342.23	855.22	10,967.51	10.1%
Non-farm selfemployment	18,217.20	5,871.02	52,289.47	48.3%
Rental income	628.69	178.94	3,138.35	2.9%
Remittances	848.49	375.61	1,803.88	1.7%
Others	2,868.30	894.66	776.01	0.7%
TOTAL	16,644.59	5,346.91	108,300.07	100 %

Table 4.1F reveals main sources of household income. Almost half (48%) of household income is from non-farm self-employment, with wages from employment as the second major contributor contributing about 36% of household income sources. Agriculture contributes about 10% of household income.

TABLE 4.1H: Households with savings bank account or contributing to a savings scheme

part of some savings Or susu scheme?	Gender (% of yes savings)	Location (% of yes savings)
yes	35.40%	Male 58.66%
		Female 41.34%
		urban 55.20%
		rural 44.80%

About 35% of households have savings accounts or are contributing to a savings scheme. These implies that, only small portion of households are captured by these financial institution, thus more effort is needed to mobilise the many 65% households have no savings accounts and are not contributing to a saving scheme. Among those with savings accounts or contributing to a savings scheme, males (58.6%) were higher in proportion than females (41.3%).

Table 4.1i : Reasons for being a non-saver

Reason for not saving	Locality (% of total non-savers)		
	urban	rural	overall total non-savers
Not necessary /interested	21.7%	18.4%	19.9%
Not aware of one	2.3%	2.6%	2.4%
Process cumbersome	0.7%	0.8%	0.8%
Financial institution too far away	0.4%	2.0%	1.3%
Don't have enough money or income	41.9%	45.4%	43.8%
Don't have regular income	29.0%	29.2%	29.4%
Other	3.5%	1.6%	2.4%
Total	100.0%	100.0%	100.0%

For household in the rural, 45% of rural households gave reasons of not having enough money, and 29% said their income was not regular, as why they don't have savings account. The same patterns are found for household in urban localities. Most urban households gave reasons of not enough monies (41%) and irregular incomes (29%) as why no savings accounts or not contributing to a savings scheme.

4.2 Empirical result

As explained in the preceding chapter, with regards to savings decisions, the analysis was done in two parts. The first part entails the decision whether to save or not to save, and the second part pertains on condition that, a given household does save, the decision of the level / amount to save. The empirical household savings determinants results are discussed in the subsections.

Table 4.2 : Binary outcome probit result : Probability that a given household will save

Prob (Savings) = 1 (yes)	probit coefficients	Probit Marginal effect at means	probit average marginal effect
Constant	-5,578.40		
Region (Greater Accra = 0)			
Western	0.0996 **	0.0396 **	0.0342 **
Central	-0.2973 ***	-0.1140 ***	-0.0989 ***
Volta	-0.1157 **	-0.0454 **	-0.0392 **
Eastern	-0.2552 ***	-0.0985 ***	-0.0853 ***
Ashanti	0.2273 ***	0.0905 ***	0.0782 ***
Brong-Ahafo	0.2686 ***	0.1068 ***	0.0924 ***
Northern	-0.3192 ***	-0.1220 ***	-0.1059 ***
Upper East	-0.2007 ***	-0.0780 ***	-0.0675 ***
Upper West	0.1102 **	0.0439 **	0.0379 **

Prob(Savings) = 1 (yes)	probit coefficients	Probit Marginal effect at means	probit average marginal effect
Location(Urban = 0)			
Rural	-0.1436 ***	-0.0566 ***	-0.0482 ***

Gender (female = 0)				
Male	0.1740 ***	0.0679 ***	0.0572 ***	
FUELCOOK(Gas = 0)				
Kerosene	-0.5328 **	-0.2090 **	-0.1841 **	
Charcoal	-0.2702 ***	-0.1074 ***	-0.0944 ***	
Electricity	-0.3326	-0.1321	-0.1161	
Firewood	-0.4549 ***	-0.1796 ***	-0.1579 ***	
Other	-0.3802 ***	-0.1507 ***	-0.1325 ***	
NHIS Status (Not registered = 0)				
Yes, registered	0.1904 ***	0.0745 ***	0.0633 ***	
Yes, covered	0.2531 ***	0.0995 ***	0.0844 ***	
Dwelling (owner of dwelling = 0)				
Renting	0.0654 **	0.0259 **	0.0218 **	
Rent-free	-0.0400	-0.0157	-0.0132	
Perching	-0.0870	-0.0340	-0.0286	
Squatting	-0.1527	-0.0591	-0.0499	
Employment status (working = 0)	-0.0309	-0.0121	-0.0102	
Not working (= 0)				
Educational Level (No education				
BECE	0.2601 ***	0.1007 ***	0.0902 ***	
MSLC	0.3504 ***	0.1367 ***	0.1223 ***	
SSS/Secondary	0.4688 ***	0.1838 ***	0.1643 ***	
Voc/Tech/Teacher	0.6916 ***	0.2704 ***	0.2421 ***	
Tertiary	0.6500 ***	0.2546 ***	0.2278 ***	

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Prob(Savings) = 1 (yes)	probit coefficients	Probit Marginal effect at means	probit average marginal effect
Marital Status (Never married = 0)			
Married monogamous	-0.0741	-0.0294	-0.0247
Married polygamous	-0.1918 **	-0.0753 **	-0.0634 **
Common law/ living together	-0.0858	-0.0340	-0.0286
Divorced/ separated	-0.2018 ***	-0.0792 ***	-0.0667 ***
Widowed	-0.1037	-0.0410 *	-0.0345 *
Age Profile			
Age	0.0034 -	0.0013	0.0011
Age ²	0.0001	0.0000	0.0000
House size Profile			
(house size)	0.1109 - ***	0.0436 - ***	0.0036001 ***
(house size) ²	0.0030 ***	0.0012 ***	0.000254 ***
Sectorial Income Sources (Self-employed Agric Income=0)			
Self-employed non-Agric	0.3975 ***	0.3975 ***	0.1367 ***
wage Non-Agric	0.3079 ***	0.3079 ***	0.1055 ***
Household Income	0.000002 ***	0.0000028 ***	0.0000009

Number of obs = 16,162

LR chi2(41)=3449.59

Pseudo R²= 0.1554

Log likelihood = -9374.2487

Prob > chi2 = 0.000

Note: *** = significant at 1%, ** = significant at 5% and * = significant at 10%.

Table 4.2 above shows the probit result of the probability of a given households to save with respect to household variables. The probit coefficients are interpreted with regards to significance and sign of the coefficient. One does not take the magnitude of coefficients into consideration, as explained in previous chapter. The discussion of the probit results in Table 4.2 above, is presented as follows.

With regards to regional location of households, the study used Greater Accra as the reference dummy for comparison and contrast. The probit result shows that, household in the Western region, Ashanti Region, Brong-Ahafo Region and Upper West are more likely to save than those in Greater Accra region. This relationship was significant at 5% critical for Western and upper west, but was strongly significant at 1% critical level for Ashanti and Brong-Ahafo region.

Still on the subject of location, with reference to households in Urban locality, it was found that, those in the rural localities are less likely to save. This was highly significant at 1% critical level. With regards to the average marginal effect, those in western, Ashanti, BrongAhafo region are 3.4% ,7.8% and 9.2% more likely to save than those in Greater Accra region respectively. Those in Nothern, Central, and Volta region are 10.59%, 9.89% and 3.9% less likely to save than those in Greater Accra region respectively. These affirms the fact that, households in relatively deprived areas in terms of development are less likely to save compared to those in relatively developed areas.

As explained in the works of Michael (2013), Quartey and Blankson (2008) in their study argued that, males are expected to save more than females, and in addition, males are more likely to save than females. The result of this study was no different. The probit result in Table 4.2 highlights that, at 1% critical level, male household heads are more likely to save than female household heads. This might be due to gender discrimination in job's and positions, which have drawn women empowerment initiatives. Also, this is possible due to the relatively

few female household heads in the economy. It can be seen that, on average marginal effects, males are 5.7% more likely to save than females.

Considering the issue of household expenditure patterns, it was found that, households that use other forms of cooking fuel such as charcoal. Kerosene and firewood are less likely to save with reference to those that use gas as house cooking fuel. Those who use such traditional methods of charcoal, kerosene and firewood are mostly poor households, thus less likely to save. Also, households that are NHIS insured and covered are more likely to save than those who are not registered on the scheme. These relationships were significant at 1% critical. Household that use kerosene, charcoal and firewood are 18.4%, 9.4% and 15.79% less likely to save than those that use gas respectively, on average.

Dwelling on subject of expenditure pattern, the study analysed how dwelling agreement/ownership affects household decision to save. The result showed that, households that are renting, are more likely to save than those that owns the house. This was consistent with the findings of Michael (2013).

Although employment status is expected to have significant impact on household decision to save, the result showed that, the probability to save for those working and those who are not working, are statistically indifferent. Educational level on the other hand, was found to impact savings decision. The study found that, those with educational backgrounds are more likely to save than household heads with no educational backgrounds, and this was significant at 1 per cent critical. Households heads that have Middle School Leaving Certificate (MSLC), secondary and higher education such as university education are 12%, 16% and 22% more likely to save than those with no education respectively.

In assessing determinants of household probability to save with respect to marital status, the result revealed that, households that are married polygamous, as well as those divorced/separated are less likely to save than those that have never married. This was found statistically significant at 5% and 1% critical levels respectively.

The study found no significant relationship with age and household decision to save. Household size and savings decisions was on the contrary highly significant at critical 1% level. As households size increase, household heads are more likely to save, but as the size increases, the probability to save diminishes.

With regards to household income sources and decision to save, the study found that, households with self-employed non-agricultural income and wage non-agricultural income sources are more likely to save than those with self-employed agricultural income sources. This was significant at 1% critical. Those with self-employed non-agricultural income and wage non-agricultural income sources are 13.37% and 10.6% more likely to save than those with self-employed agricultural income sources respectively.

Though the probability of households to save with regards to income level was highly significant at 1 % critical, the marginal effect of income for households on average was almost zero. This was probably due to low income levels, as most cited irregular incomes or no incomes as reasons why they do not save.

Table 4.3 : Goodness of fit measure for the probit model

Classified	Actual S = 1	Actual S = 0	Total
Predicted s =1	4268 (True)	1904 (false)	6172
<u>Predicted s =0</u>	<u>2899 (false)</u>	<u>7091(True)</u>	<u>9990</u>

Total	7167	8995	16162
Correctly classified			70.28%

Table 4.3 shows the 0/1 predictions of the four scenario cases from the probit model. The percentage of the estimated probability values that were correct, as a proportion to total predictions shows that, 70.28% of the total prediction were correct.

After having examined household factors that affects household decision to save, the study proceeds to examine determinants of household level of savings. As explained, variable that affects household decision to save, are same decision variables that influence how much households save.

In theory, the base determinant of savings is income. The, study therefore estimates savings from the base model and then expands to include other relevant determinant, as discussed in the following sections.

The study therefore examines household characteristics and level of savings relationship, using the tobit method, since a significant number of households (217 in number) had zero balance in their savings or susu scheme. Here the variable “savings balance” is the total amount of money left in savings or “susu” scheme account, as at time of interview.

4.2.1 Income as base determinant of household level of savings

The study first estimated a base model derived from Keynes personal-savings theory. Here, savings is assumed to be a proportion of household income that is not spent but consumed.

The estimated Tobit result for households using is shown in Table 4.4 below.

Table 4.4 : Household savings balance and income relationship

Savings Balance	Tobit Coefficient (S*)	Marginal effect for censored sample (S)	Marginal effect for truncated sample (S S>0)
Constant	-3164.41 ***		
Income	0.0392 ***	0.0125 ***	0.0107 ***
Pseudo R ² =0.0022 n = 7,987			
F(1,7986)=10.61 Prob > F =0.0011 Log likelihood = -79281.084			

Note: *** = significant at 1%, ** = significant at 5% and * = significant at 10%.

Thus, study proceed to use the Tobit methodology to examine household savings behaviour analysis from this section onwards. One important issue to be considered here is that, the estimated tobit coefficients are the marginal effects of explanatory variable on the unobserved latent variable (S*). This is similar to that of a linear regression model, but this study deems such interpretations as non-interesting as the interest is how the explanatory variable impacts on the observable Savings (S). Thus, the study focusses its analysis with regards to tobit marginal impacts and not on tobit coefficients for the latent savings (S*) although all are presented.

The tobit result shows that, household income positively and significantly determines savings by households. The MPS for positive household savers was estimated as 0.0107 and is highly significant at 5%.

The GLS-6 data, had considerable variations in household income by quantile locations. This therefore suggest that, household savings decisions based on incomes can possibly be influenced by one's location in the income distribution, the relative income hypothesis. The

study proceeded by employing a dummy variable approach to examine how savings varies by households according to income quartile distribution, with results shown on Table 4.5 below.

Table 4.5: Savings propensity by income group

Savings Balance	Tobit Coefficient (S*)	Marginal effect for censored sample (S)	Marginal effect for truncated sample (S S>0)
Quintile Category			
1st (Lowest) = 0	-4385.23 ***		
2 nd	-1068.86 **	1516.10 **	1711.87 ***
3 rd	-584.81	1608.05 ***	1783.67 ***
4 th	971.88 *	1420.83 ***	1636.13 ***
5th (Highest)	3828.37 ***	2042.05 ***	2111.36 ***
Income interaction			
1st (Lowest) = 0	-0.675 **	-0.033 **	-0.093 ***
2 nd	1.148 ***	0.219	0.239 **
3 rd	1.117 ***	0.213 **	0.232 ***
4 th	0.864 ***	0.104 ***	0.150 ***
5th (Highest)	0.691 **	0.041 **	0.099 ***
Number of obs = 7,983 F(9,7974)=5.19 Prob > F = 0.0000 Log likelihood = -78,899.02 Pseudo R2 = 0.0070			

Note: *** = significant at 1%, ** = significant at 5% and * = significant at 10%.

The estimated household income-savings considering quintile income location from Table 4.5 shows that, autonomous savings grows with quintile income category.

For households with positive savings, those in the 2nd, 3rd, 4th and 5th (Highest) quintile save GHC 1,711, GHC 1,783, GHC 1,636 and GHC 2,111 respectively more than those in the first quintile. This is significant at 5% level.

Such dissimilarities were also found significant for MPC's of households by quintile location.

With reference to households in the 1st quantile income location, others in the 2nd, 3rd, 4th and 5th saved 0.24, 0.23, 0.15 and 0.10 proportion of their incomes more. This means, for instance, for every GHC 1.00 increment in household income for those in 3rd income quantile, household savings increase by GHC 0.17 pesewas more than those in the first income quantile.

Whereas autonomous savings was negatively significant but diminishes for households from the first to third quantile, those in the fourth and fifth quantile positions had positive. This shows that, more incomes above a certain threshold of living condition induces positive saving practices.

The MPC for 1st quantile households were found negative and strongly significant at 1%. This was probably due to the fact that, their income being insufficient to cater for basic needs. Such households could therefore rely on other family and relatives for livelihood support.

4.2.2 Demographic determinants of household savings

The prove of differing savings-income relationship by income-quantile location was not surprising since Ghana has developmental gap among regions and within regions. From the GLSS-6 data, there are more male heads (72%) than female heads (28%), NHIS (64%) covered, owns dwelling place (52%), those economically active (90%), and more rural dwellers (55.6%).

The study examined such demographic variable influence on household savings decisions. The study estimated savings as a function of household factors of location, home ownership,

employment status, house cooking fuel type, gender and NHIS registration status. In addition to and regional demographic variables of region and location(urban/rural). The estimated tobit result incorporating demographic factors that affects household savings are shown in Table 4.5.3 below:

Table 4.6: Household savings demographic determinants

Savings Balance	Tobit Coefficients (S*)	Marginal effect for censored sample (S)	Marginal effect for truncated sample (S S>0)
Constant	-881.91 ***		



Region (Greater Accra = 0)					-32.69	
Western	-115.30	***		***	-535.03	***
Central	-2,086.17	***		***	-248.04	***
Volta	-911.54	***		***	-387.81	***
Eastern	-1,465.84				111.84	
Ashanti	384.36				57.19	
Brong-Ahafo	198.46	***		***	-535.95	***
Northern	-2,090.14	***		***	-378.35	***
Upper East	-1,427.31 -				-106.49	
Upper West	380.85					
		***		***	-255.17	***
Location (Urban = 0)	-962.05					
rural		***		***	379.11	***
Gender (female = 0)	1,485.46					
Male		***		***	-1,001.91	***
		***		***	-667.54	***
FUELCOOK (Gas = 0)	-3,467.80				-462.83	
Kerosene	-2,166.68	***		***	-1,023.60 -	***
Charcoal	-1,448.95	***		***	955.33	***
Electricity	-3,558.56					
Firewood	-3,275.72					
Other		***		***	225.96	***
	red = 0)	***		***	327.91	***
	870.75					
NHIS Status (Not registe	1,239.24				251.66	
Yes, registered					371.84	
Yes, covered	ling = 0)	***		***	-33.69	***
	-126.69				-121.46	
	-464.71				-271.42	
Dwelling (owner of dwel	-1,071.07				-324.89	
Renting	-1,296.79					
Rent-free						
Perching						
Squatting	king = 0)					
Employment status (wor						
Not working	-1,037.71	***			-262.33	***
					-284.74	***

Total Income	0.0299 ***	0.0089 ***	0.0079 ***
Number of obs. =7,962	Sigma = 5,836.516	Log likelihood = -78332.703	
F(25,7937) = 4.93	Prob > F = 0 .000	Pseudo R2 = 0.0129	

Note: *** = significant at 1%, ** = significant at 5% and * = significant at 10%.

Demographic factors such gender, employment status, national health insurance (NHIS) registration status, house cooking fuel type and ownership of dwelling place influence on the decision of level of savings on condition that, the household save were examined. Their influence over household savings are discussed as follows:

It must be noted that, unlike other indicator variables such as quintile income location where a person can switch from one sub-group to the other via increased income, gender indicator category on the other hand is different. Once an individual is born as a male, he remains male. Males and females have different savings attitudes due to differences in perceived risks, interest, and other external-gender factors that affect their savings. From Table 4.6, the result shows that, for the whole households, males on average saves GHC 415 more than females, and for households with positive savings, males save GHC 379 more than females, and this is highly significant at 1% level. Same results were found in the works of Sierminska et al., (2008) and Mirach and Hailu (2014), that men headed households save more than female headed households.

Households who are not economically active for varying reasons acts as dependents on their relatives and other households. They are therefore expected to save less than those that are economically engaged. The findings of this study was consistent with this expectation. Households heads not working dissaves GHC 262 on average relative to those working. Considering unforeseen health shocks, people may save for precautionary health motives. But these saved monies would probably be cash set aside in one's easy reach, and not at banks accounts where individual will spend time to withdraw or financial assets form.

Health insurance may complement savings or act as rival. When individuals who are health insured, reduces their savings owing to no precautionary health savings motive since insured, then, it's a rival. NHIS premiums are less than what individuals would have saved for such precautionary motives. Thereby releasing more money for other consumption-savings decisions at bank deposits etc., thus complementary. National health insurance cushions one from health shocks that drains incomes due to health expenditure incurred from health service/treatment. Though health insurance is empirical found to be positive to savings (Kotlikoff, 1989). This study also found same results, as shown in Table 4.6. Individuals who are registered and covered under the NHIS on average save GHC 328 more than those not on the scheme. It is obvious that, NHIS is complementary for the case of households heads in Ghana.

Household cooking fuel is one vibrant component of most household expenditure in Ghana. Most households (51%) in Ghana uses firewood, followed by charcoal (27%) and gas (16.8 %) as cooking fuel source. Each fuel type has its peculiar pros and cons, but all serve the same purpose, cooking fuel. In addition, households make expenses on these fuels which affects their incomes and hence consumption. The study sought to find cooking-fuel-type and savings relationship among households in Ghana. This is relevant in the sense that, fuel types that involve lesser expenditures may free some incomes for household savings-consumption choices, which was not found in any of the reviewed empirical works.

From Table 4.6, the result indicated that, for the total household sample that saved, those that use kerosene firewood and charcoal as cooking fuel sources recorded average savings that was far lower than gas cooking fuel households. For those that had positive savings, the figure was GHC1,000 less than gas cooking fuel households. Charcoal user recorded GHC 848 less for overall samples, but this figure reduced to GHC 667 for positive savers. Although use of electricity as cooking fuel was found negative, it was insignificant.

The most expensive cooking fuel was firewood, kerosene and charcoal in descending order. Since households mostly buy charcoal on daily basis, such daily expenditures seem too small, but when aggregated, takes junk of income. Thus, households switching from such traditional methods of charcoal, firewood and kerosene to gas will save from GHC 800 to GHC 1200 on average.

Quartey and Blankson (2006) using OLS on GLSS-3 found that those in rented place of dwelling saved more than those who own dwelling place. Same outcome was reported by Michael (2013) also using OLS methodology on GLSS-5. This study using the Tobit methodology found dissimilar outcome using the recent GLSS-6. From the tobit results shown in Table 4.6, those that own dwelling place and those that rent dwelling place, and “perchers” does not have any statistical difference. Rather, those “rent-free” were found to statistically save GHC 121 less than those who own dwelling place. Renters and “perchers” does big ticket savings, as they save for future rent purposes.

The geographical determinants of household savings were analysed using the region as well as location being either urban or rural. In order to compare how average savings, differ across the ten regions of Ghana, the study used dummies with Greater Accra region as the reference region. The result showed that, average savings for households in Ashanti region were higher than those in Greater Accra region, but this was not significant. Same can be said of households in Western Region and Brong-Ahafo region. The remaining regions of Central, Volta, Eastern, Northern and Upper East had had average savings that was less than households in Greater Accra, and this was highly Significant at 1% level. This implies that, most household savings in Ghana emanates from the capital region. This is so because, Greater Accra have witnessed more developmental projects and budgetary plans relatively than the other nine regions.

The results also showed that, for those who had positive savings, rural households had average savings that was GHC 255.17 less than urban households. This was statistically significant at 1% level. This was consistent with the findings of Curley & Grinstein-Weis (2003), Quartey and Blankson (2006), and Michael (2013).

4.2.3 Further determinants analysis of demographics and income sources

Lusardi (2008) found that literacy affects savings positively. Same outcome was by Michael (2013) using GLSS-5 data. Aidoo (2011) found married people to save more than nonmarried, so did Michael (2013). The study therefore includes these demographic variables of marital status and educational level, income sources, as well as the variables of age and household size to examine the age-savings profile and house size – savings profile, in assessing the determinants of household savings using the GLSS-6 data under tobit methodology.

Table 4.7 : Household savings determinants with income sources and other variables

Savings Balance	Tobit coefficients (S*)	Marginal effect for censored sample (S)	Marginal effect for truncated sample (S S>0)
Constant	-5,578.4		
Region (Greater Accra = 0)			
Western	-41.94	-13.88	-11.70
Central	-1,812.58 ***	-504.38 ***	-461.48 ***
Volta	-883.91 ***	-269.76 ***	-235.96 ***
Eastern	-1,369.49 ***	-398.38 ***	-356.60 ***
Ashanti	485.67	168.90	139.28
Brong Ahafo	497.85 *	173.33 *	142.86 *
Northern	-1,901.63 ***	-524.43 ***	-481.99 ***
Upper East	-1,374.34 ***	-399.59 ***	-357.77 ***

Upper West	-217.88	-70.92	-60.21
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Savings Balance	Tobit coefficients (S*)	Marginal effect for censored sample (S)	Marginal effect for truncated sample (S S>0)
Location (Urban = 0)			
Rural	-519.97 ***	-153.71 ***	-136.51 ***
Gender (female = 0)			
Male	820.13 ***	231.77 ***	210.41 ***
FUELCOOK (Gas = 0)			
Kerosene	-2,831.14 ***	-858.13 ***	-753.55 ***
Charcoal	-1,304.50 ***	-455.43 ***	-375.03 ***
Electricity	-191.35	-73.68	-58.28
Firewood	-2,147.53 ***	-694.03 ***	-591.48 **
Other	-1,547.03 ***	-528.36 ***	-439.26 ***
NHIS Status (Not registered = 0)			
Yes, registered	888.48 ***	258.35 ***	231.29 ***
Yes, covered	979.87 ***	287.62 ***	256.32 ***
Dwelling (owner of dwelling = 0)			
Renting	-26.20	-7.78	-6.89
Rent-free	-257.75 **	-74.77 **	-67.01 **
Perching	-278.66	-80.66	-72.37
Squatting	-956.46	-258.19	-239.84
Employment status (working = 0)			
Not working	35.25	10.38 ***	9.23
Educational Level (No education = 0)			
BECE	954.70 ***	263.20 ***	241.92 ***
MSLC	1,248.09 ***	354.93 ***	321.24 ***
SSS/Secondary	1,656.83 ***	491.66 ***	435.92 ***

Voc/Tech/Teacher	2,324.72 ***	738.19 ***	634.22 ***
Tertiary	3,623.21 ***	1,302.93 ***	1,061.90 ***

Savings Balance	Tobit coefficients (S*)	Marginal effect for censored sample (S)	Marginal effect for truncated sample (S S>0)
Marital Status (Never married = 0)			
Married monogamous -11.24		-3.36	-2.97
Married polygamous -218.16		-63.81	-56.96
Common law/ living together -249.99		-72.88	-65.16
Divorced/ separated -635.55 **		-178.14 **	-162.38 **
Widowed 95.66		28.88	25.39
Savings Age Profile			
Age 48.21 **		14.15 **	12.61 **
Age ² -0.51 ***		-0.15 ***	-0.13 ***
Savings House size Profile			
(house size) 429.69 ***		126.09 ***	112.37 ***
(house size) ² -14.06 ***		-4.13 ***	-3.68 ***
Income Sources (Self-employed Agric Income=0)			
Self-employed non-Agric Income	1091.28 ***	404.87 ***	356.99 ***
wage Non-Agric income	967.23 ***	294.71 ***	264.17 ***
Income source and Interaction			
(Self-employed Agric Income=0)	0.0174 ***	0.0045 ***	0.0043 ***
Self-employed non-Agric Income	0.0313	0.0121	0.0095
wage Non-Agric income	0.0059	0.0029	0.0021
Number of obs = 7,852	F(43,7809) = 4.52	Pseudo R ² = 0.0163	
Log likelihood = -76,014.651	Prob > F = 0.000		

Note: *** = significant at 1%, ** = significant at 5% and * = significant at 10%.

The study estimated the savings behaviour of households employing further demographic (socio-economic) determinants in addition. The result from Table 4.7 are discussed on the following sections.

From Table 4.7, most of the already used variables did not change in sign and significance. As explained earlier, the study went further by adding extra socio-economic variables that are found to be significant determinants in some of the empirical review. These were the variables of educational level, marital status and income sources

From Table 4.7 above, average savings for household head with highest education at B.E.C.E levels had GHC 263 more than those with no education at all. Those with Middle School Leaving Certificate (MSLC) had GHC 354 more than the reference group, those with no education. The next higher qualification after MSLC, was estimated at GHC 491, GHC 738 and GHC 1302 for Secondary (SSS), Vocational/Technical/Teacher, and Tertiary educational levels respectively. From the trend, it is observed that, as the educational level later goes up, the estimated savings gets larger. According to Solmon (1975), education and savings has a positive linear relationship. The findings of this study was no different. The result confirms that savings increases with higher levels of education.

Other studies where those that were married saved more than those not married. In Ghana, the two dominant religion are Islam and Christianity, and some other traditional. Thus, the practice of monogamy and polygamy is not uncommon. In addition, there are those who have not yet gone through the due process of traditional marriage but stay together as “living together”. This study thus indicated these categories and in addition, used those that were divorced/separated and those widowed, to analyse how savings among these various marital groups differed from those that are single (never married). The result showed that, those divorced/separated saved

less than “never married” groups. The other categories under marital status were no statistically different from the “never married” group.

From the GLSS-6 questionnaire, income sources were put into three mainly grouped namely, those who earn monies from self-employed agricultural income, self-employed nonagricultural income, and wage non-agricultural incomes. The study used dummies with those whit self-employed agricultural income as the reference group.

From Table 4.7, considering positive saver, the propensity to save out of income for the “selfemployed agricultural income” reference group was estimated as 0.43% and this was positive as expected and significant at 1% critical. This means that, for every GHC 1.00 increment for self-employed agricultural income source, GHC 0.0043 pesewas gets saved.

It was found out that, income sources for self-employed non-agricultural income sources saved extra 0.95% of income more than the reference group, but this extra savings propensity was not significant. Also, households with wage non-agricultural income sources were found to save 0.21% more than the reference group. This was also not significant. This implies that, propensity to save out of income sources were no different from self-employed nonagricultural income.

In order to examine the non-linear age savings profile from the life cycle theory, the variable age and its squared was included in the regression estimation. From the tobit result in Table 4.7, it can be seen that, the variable age was positive and significant at 5% level. The squared age variable was found negative and this was also significant at 1% level. This implies that, savings increases with age, attains a peak and then starts falling, confirming the humpedshaped age-

savings profile for households in Ghana. Thus, the non-linear relationship, which is quadratic (maxima) in this case, was found to be statistically significant.

Most reviewed relevant literature that included household size into their regression estimation, expected a negative linear relationship between household size and savings. This implied that, as household size increases, savings falls, most recommended that households size should be reduced, which this study deems a bit outrageous and questionable. It is agreeable that, for every household, the demand for children is inevitable.

Households based on their capacity and characteristics may save in advance for their child, a dependant. Thus, there is a possibility that, household size can have a positive impact on savings. But for such rational actions, exist the issue of capacity and limitation. Thus, for each household, as dependents increase, they may save more but up to a level, after which additional dependent may impact savings negatively. Thus a non-linear relationship. This study therefore sought to examine the possibility household size and savings being of humped-shape nature. It therefore included household size and its squared in the tobit estimation.

The tobit result in Table 4.7 showed that, household size has a positive significant impact on savings. For households with positive savings, an extra household size increases savings by GHC.112. As the household size increases, savings increases. The squared household size was found to be negative (-GHC 0.13 for those with positive savings) and significant. This implies that, as household size increases, savings increases but at a decreasing rate. Savings increases with household size, attains maximum and then falls (dissavings).

CHAPTER FIVE

SUMMARY AND CONCLUSION

5.0 Introduction

This chapter concludes the study. It presents a summary of the main findings, offers policy alternatives/recommendations based on the regression results obtained.

5.1 Summary of findings

This study examined the determinants of household savings using GLSS-6 data. with regards to savings decisions, the analysis was done in two parts. The first part entails the decision whether to save or not to save, and the second part pertains on condition that, a given household does save, the decision of the level / amount to save. To estimate probability that a given household would save given household variable relationship, the study follows the probit model specification of Annim, *et. al.* (2015).

The probit result showed that, demographic factors of region, quantile income distribution, location, gender, age, educational level and house size were found as significant determinants. The relative income hypothesis was not rejected since there was differences in marginal propensity to save out of household income (MPS) by income quintile and income sources. Also socio-cultural barriers to savings were identified from house cooking fuel. Gas as cooking fuel is found to be cost efficient and releases monies for household income-savings decisions.

The pattern of savings was found skewed towards urban, developed regions such as Greater Accra and those with wage non-agricultural income sources. Household with higher education were more likely to save than those with no education. Urban localities had a higher probability to save than their rural counterparts. With respect to income sources, household with self-

employed non-agricultural incomes and wage non-agricultural incomes were more likely to save than those with self-employed agricultural incomes

The study proceeded to examine the level of household savings conditioned that the household saved. Since the dependent variable, level of household savings measured by household savings balance had some observations with zero value, the study employed censoring from below, with lower limit of zero following the model specification of Tobit (1958) as cited in the works of Teshome *et. al.*, (2013).

The study first estimated a base model from Keynes personal-savings theory where savings is assumed to be a proportion of household income that is not spent but consumed. The estimated tobit result for household savings income for households shows that, marginal propensity to save out of household income (MPS) for positive household savers was estimated as 0.0107 and is highly significant. Since, the study found large variation in household income by quantile locations. The study examined how savings varies by households according to income quantile distribution. For households with positive savings, the study found significant difference in MPC's of households by quintile location. With reference to households in the 1st quantile income location, others in the 2nd, 3rd, 4th and 5th saved 0.24, 0.23, 0.15 and 0.10 proportion of their incomes more. This means, for instance, for every GH¢ 1.00 increment in household income for those in 3rd income quantile, household savings increase by GH¢ 0.17 pesewas more than those in the first income quantile.

The study then analysed demographic determinants of household savings. The demographic determinants were socio-economic and locational/geographical factors; this was done for analysis purpose with regards to household savings pattern.

Under socio-economic determinants, the results showed that the males, those employed, those on NHIS scheme, saved more. In addition, the use of gas as cooking fuel, is more cost efficient than the use of firewood and charcoal. Grouping dwelling ownership into those renting, owning, rent-free, perching. It was found that, those who are rent-free saved less than those owning.

Regarding the geographical determinants of household savings, it was found that, with reference to the Greater Accra region, savings was lower in the other nine regions, except for Ashanti and Brong-Ahafo region. The result showing that Brong-Ahafo households save more than the capital region was weakly significant. More so, rural households saved less than urban counterparts. This was as expected. Regions that lag behind in terms of development (less developed regions) have low incomes and saved less, relative to more developed regions.

The study further, added more variables that can influence household savings, these were extra demographic variables of marital status and educational level, income sources, as well as the variables of age and household size to examine the age-savings profile and house size – savings profile, in assessing the determinants of household savings.

The result confirms that savings increases with higher levels of education. In terms of marital status of household head, those divorced/separated saved less than “never married” groups. The other categories under marital status were not statistically different from the “never married” group. In analysing household propensity to save by income sources, those with wage non-agricultural incomes save more out of their incomes than others.

In examining the age-savings profile, the variable age, the variable age was positive, and its squared was negative. They were all significant at 5% level. This implies that, savings increases

with age, attains a peak and then starts falling, confirming the humped-shaped agesavings profile for households in Ghana.

Most reviewed relevant literature that included household size into their regression estimation, expected a negative linear relationship between household size and savings. This implied that, as household size increases, savings falls, even with first child. It is agreeable that, for every household (married), the demand for a child is inevitable, and may save for child future. Thus a possible non-linear relationship. This study therefore sought to examine the possibility household size and savings being of humped-shape nature. It therefore included households size and its squared in the tobit estimation. The result showed that, household size was positively significant and its square was significantly negative. This implies that, as household size increases, savings increases but at a decreasing rate. Savings increases with household size, attains maximum and then falls (dissavings).

With regards to income-sources and savings relationship, the study found that, marginal propensity to save out of self-employed non-agricultural income was no different for those with self-employed non-agricultural income and wage non-agricultural income sources. The findings were different from the findings of Bhalla (1978) that households with nonagricultural income saved more out of their incomes than those engaged in agricultural economic activities.

5.2 Policy implications

Since savers were found to exist in both urban and rural, but more rural do not save than urban. Yet still, greater proportions almost half urban localities do not participate in any savings/susu scheme. The study suggests a policy-wise effort to mass-up both rural and urban non-savers, encourage them to save irrespective of their incomes level.

In addition, the idea of low savings has been found to be an issue of one's literacy status. Savings increases with educational level, and yet still about half of household heads had no education. These means that, the low savings by households is a financial literacy phenomenon. So far as most households continue to have no or low financial literacy, household savings will continue to remain low. Thus, financial literacy educational reforms on savings should be planned by national policy decision bodies. It can be spread through social media such as radio and television, community discussion (especially, rural localities).

One crucial question that needs attending is that, since these savers save in some form of savings or susu scheme, financial intermediaries should take up the task to underpin why their clients have lower savings. They can have a panel assessment of their clients over time so as to have an in-depth/follow-ups on the salient issue.

The findings of gas as home cooking fuel being cost savings, should be encouraged. Households should be educated on the use of gas and its safety precautions, and be made aware of how much monies they would save on average (GH¢ 700 to GH¢1000) on average should they switch from cultural firewood and charcoal. These will reduce the demand for charcoal, and help save forest being illegally destroyed for charcoal-firewood production. Measures should also be put in place to lessen / resolve the acute problem of gas shortage at various filling stations. Policy makers may consider subsidising gas especially for rural localities if possible.

Income/poverty alleviation policy objectives can be drafted and implemented. This will remove the no/low income or irregular income barriers of the non-savers into savers. These objectives should be drafted with regards to community-specific and not generally national. It should focus on key issues pertaining to poverty at each locality, so as to address each unique poverty driven problems.

5.3 Conclusion

The study examined national household factors that affects their level of savings. The study realised the problem of low incomes as most were households were within the 1st to 3rd quartile income distribution. Theory argues income as a key determinant for savings, but given the low incomes by most households, their propensity to save was low. Unavailability of regular income and presence of low monies/incomes was cited as the most reasons why 65% of the households do not have savings account or being a part of a savings/susu scheme.

The theoretical argument of relative income hypothesis was significant by geographical, locational and educational levels of societies. The descriptive statics showed that average daily income of the urban was twice that of rural. These might not be meaningful given the economic such as cost of living conditions that are dissimilar, usually high in urban than living.

Also socio-cultural barriers to savings were identified from house cooking fuel. Most households use the firewood, charcoal and kerosene as fuel energy. These have been found to be expensive at aggregated relative to gas. Since households buy gas in higher price, but buys such cultural fuel sources on daily basis at minimal cost, they do not foresee the large aggregate annual expense accrued to that. Gas as cooking fuel is found to be cost efficient and would release monies for household income-savings decisions.

The pattern of savings was found skewed towards urban, developed regions such as Greater Accra and those with wage non-agricultural income sources. The rich (those in higher income quantiles) saved more than the poor (lowest income quantile).

The age-savings profile, as well as the house size – savings profile was examined and found to be statistically significant. Households do plan and make savings decision for the child, but as house size/members increases, it impacts savings negatively.

With regards to income-sources and savings relationship, marginal propensity to save out of self-employed non-agricultural income was no different for those with self-employed nonagricultural incomes and wage non-agricultural incomes.



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