DETERMINANTS OF RURAL HOUSEHOLD SAVINGS IN BUNGOMA COUNTY-KENYA

Wafula Mukhongo

A Research Paper Submitted to the School of Economics in Partial Fulfillment for the Degree of Master of Arts in Economics of Kenyatta University

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DECLARATION

I, the undersigned do declare that this is my own work and has never been presented for a degree award in any university. All information from other sources are duly cited and acknowledged. I accept to take full responsibility of the errors of omission, commission, and principle should they be found therein.

Signature  Date 29-11-2013
Wafula Mukhongo (BA, PGD(Ed))

C50/CE/11236/2007

We confirm that the work reported in this thesis was carried out by the student under our supervision.

Signature  Date 29-11-2013
Dr. Susan Okeri

Department of Econometrics and Statistics

Signature  Date 29-11-2013
Dr. George Kosimbei

Department of Economic Theory

School of Economics
DEDICATION
This work is dedicated to my dear wife Helen and our beloved children: Steadfast, Modeling and Hope to whom I'm profoundly indebted for their unqualified inspiration.
AKNOWLEDGEMENT

I would like to acknowledge the following parties for their contribution to the success of this work: first and foremost, my supervisors Dr. Susan Okeri and Dr. George Kosimbei for their helpful comments on earlier drafts. Their commitment to this course was overwhelming despite their teaching and administrative engagements. Second, the teaching staff at Kenyatta University’s School of Economics for grounding me in economic theory, research procedures and analytical tools and for their constructive criticism during the defense. Third, Kenyatta University (KU) for giving me a chance to pursue my dream of becoming a scholar. Indeed KU is a world class centre of intellectualism. Its reservoir of both human and capital resources and serene environment has no parallel in Africa. Fourth, Mr. Batoya, for his technical assistance in computer system administration during typesetting. Fifth, Prof. Dankit K. Nassiuma, Dr Bernard Sango and Dr Kangogo for their foundational work in hypotheses testing, sampling theory and elementary econometrics respectively during my undergraduate course at Egerton University. Sixth, my pastor Dr. Charles Okuku Okuku for his prayers and encouragement. Seventh, my rural peasant parents who through informal savings funded my foundational studies at Friends School Kamusinga. Indeed it is against this back drop that the topic of this study was born. Lastly, my wife and children for their prayer, inspiration and time trade-off.
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### ABBREVIATIONS AND ACRONYMS

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<tr>
<td>ANOVA</td>
<td>Analysis of Variance</td>
</tr>
<tr>
<td>APS</td>
<td>Average propensity to save</td>
</tr>
<tr>
<td>KCB</td>
<td>Kenya Commercial Bank</td>
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<tr>
<td>CPI</td>
<td>Consumer Price Index</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GDS</td>
<td>Gross Domestic Saving</td>
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<tr>
<td>GLS</td>
<td>Generalized Least Square</td>
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<tr>
<td>Ha</td>
<td>Alternative Hypothesis</td>
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<tr>
<td>Ho</td>
<td>Null Hypothesis</td>
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<tr>
<td>IID</td>
<td>Identically independent Distribution</td>
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<tr>
<td>HH</td>
<td>Household Head</td>
</tr>
<tr>
<td>KNBS</td>
<td>Kenya National Bureau of Statistics</td>
</tr>
<tr>
<td>LDCs</td>
<td>Less Developed Countries</td>
</tr>
<tr>
<td>OECD</td>
<td>Organization for Economic Cooperation and development</td>
</tr>
<tr>
<td>OLS</td>
<td>Ordinary Least Squares</td>
</tr>
<tr>
<td>SACCOS</td>
<td>Savings and Credit Co-operative Society</td>
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OPERATIONAL DEFINITION OF TERMS

A household: A household refers to a family or a group of related persons either through blood, marriage and adoption. A household can be a single person or can be a group of two or more persons.

A household Head: Refers to the family's chief bread winner.

Rural household saving: Refers to formal and informal savings either at a financial institution or at home by rural household heads.

Formal savings: Refer to current account balance, saving account balances, time deposits, cash (in hand and Mpesa) and loan receivables.

Non-formal savings: Refer to land, equipment and machinery, residential houses, livestock and poultry.
ABSTRACT

The continued estimation of rural household savings using formal savings despite surveys showing that informal saving grew in popularity in a number of African countries (Kenya included) is puzzling. The study examined the rural household saving situation in Bungoma County with the ultimate goal of providing a tenable answer to the principal policy question of what are the determinants of rural household saving in Bungoma County. The study was organized around three specific objectives: to investigate the determinants of rural household saving in Bungoma County; to establish the relative impact of rural household saving determinants in Bungoma County; draw policy implications and propose recommendations consistent with the Kenya Vision 2030’s explicit concern for rural sector participation in mobilizing savings for investment. The framework for analysis involved the estimation of an extended saving model derived from the Permanent Income Hypothesis (Friedman, 1957). The study results indicate that permanent income, education level and wealth significantly contribute to rural household saving in Bungoma County. However, expenditure on children education and landholding significantly lead to negative rural household saving. Policies to promote income growth, literacy and wealth creation were recommended.
CHAPTER ONE

INTRODUCTION

This chapter provides the study's contextual framework by highlighting the background issues, the problem, research questions, objectives, justification, the scope and the limitations of the study.

1.1 Background to the study

Keynes (1936) defined saving as the amount left over when the cost of consumer expenditure is subtracted from the disposable income that he or she earns in a given period of time. This definition has been echoed by a number of contemporary economists including Claton et al (1983), Smith (1991), Railly (1992), Smyth (1993), Miller et al (2001), Ahmed (2002) and Mediyamere (2009) who defined saving as a residual in the household budget. For the purpose of this study, saving is defined as the balancing figure of the household's statement of affairs.

Household saving can either be formal or non-formal (Blime et al, 2011). According to Deaton (1989), non-formal saving is intended to smooth consumption over relatively short periods. Hence, availability of stored crops can show the capability of a household to cope with unexpected food crisis situation.
It can also serve as an indicator of food security at the household level (Haddad, et al., 1994). Field surveys by Larson et al (1994) and Aryeetey (1995) suggest that informal saving grew in popularity in a number of African countries (Kenya included) even as they underwent financial sector reforms. Aryeetey (1995) attributed the growth to a low level of confidence in the formal sector as well as the relatively high transaction costs associated with formal saving.

However, there is a debate among economists as to whether rural households do really save. This has bit the supporters of the traditional view against supporters of the modern view. The supporters of the traditional view argue that rural households especially in Africa can not save because they are poor (Robinson, 1994). To them, rural saving mobilization effort is futile and useless. Lamberte et al (1986) summarize this view as:

“....they have low incomes because they have low productivity; they have low productivity because they are confined to the traditional methods of farming because they do not have any savings that could be used to acquire new technology; they do not have savings because their income is low; and so on ....”

On the other hand, the modern view suggests that rural households have the capacity and the desire to save and would respond to saving opportunities and
incentives (Meyer, 1985). Meyer (1985) gives a number of reasons for substantial potential for savings in the rural areas: one, households save automatically between harvests and or sell a portion of their crops to pay off debts or to increase consumption; two, rural households are heterogeneous – rich and poor. Rich households can always save over long and or short periods while poor households can save only over short periods; and three, more modern methods of farming allow farmers to increase income and therefore savings. Meyer's argument has been supported by a lot of empirical evidences (see Ong et al. 1976 and Hyun et al., 1979 for instance).

Proponents of household savings believe that in the absence of efficient credit and insurance markets, household saving is a critical determinant of welfare in developing countries (Attanasio et al, 2001). They argue that without savings, households have few mechanisms to smooth unexpected variations in their income. Agyei (2000) asserts that raising savings is important for breaking the vicious cycle of poverty in the less developed countries. In developed countries, where saving ratios are at a constant 15 to 20 per cent, the household sector constitutes between 10 to 15 per cent (World Bank, 2003). According to Kraay (2000), household saving represents one-fourth or one-half of gross national
saving depending on data source. On the other hand, the Reconstruction Bank’s report says that in Asian countries where domestic saving ratios are at the level of between 25 to 30 per cent, the sector constitutes between 20 to 25 per cent.

From a household level perspective, there are several socio-economic reasons why families will want to put aside part of what is earned today for use in the future. Olson et al (2000) argues that the most important reason why families save is to ‘prepare for the possibility of financial crisis, accidents, illness, pregnancy, job loss, divorce and many other crisis and or financial gains. The above argument was also advanced by Ahmed (2002) and Landburg et al (1976). Udry (1993) submits that households use their assets as buffer stocks against the receipt of idiosyncratic shocks. In accordance with his model, it is saving in the form of grain stocks (rather than livestock) which is reduced when households are affected by adverse shocks. Smith (1991) adds the accumulation of funds for planned major expenditure and to defray expensive costs as the reasons why families save money. Another reason why families may want to save money is to enable them to access credit facilities from the institutions that they save with.
In the dynamic model of Harrod-Domar, the growth rate of the country is jointly determined by saving rate and incremental capital output rate. The role of saving is very critical in capital accumulation and economic development as appreciated in the "two gaps" and classical growth models. Neoclassical growth models of Harrod (1939), Domer (1946) and Solow (1956) indicate that increases in savings translate into high investment which in turn stimulates economic growth. Nalo et al (1991) found the savings gap to be the binding constraint to economic growth in Kenya in their two-gap model.

Nevertheless, the World Bank Report for 2003 revealed that Kenya’s gross domestic saving as a percentage of GDP is relatively low. The Bank’s report submitted that Kenya’s GDS compared quite poorly with her African contemporaries-averaging 13.9 per cent between 1980 and 2001, while the corresponding figures were 37.4 per cent for Botswana, 21.4 per cent for Cameroon and 21.6 per cent for Nigeria. According to the World Bank Report for 2012, Kenya’s domestic savings is low and constrains physical capital formation. The report says that while the ratio of investment to GDP have increased since 2000, savings ratios have remained largely stagnant, which has resulted in widening current account deficits. Besides, gross national savings, have remained
at around 15 percent of GDP in the 2000s, and have been sustained by net foreign transfers, mainly in the form of official development assistance, which remain at around 4 percent of GDP. Consequently, since 2008, Kenya’s average GDP has only been 4 percent, lower than Sub-Saharan Africa (excluding South Africa), which grew close to 5 percent and substantially lower than its East African neighbors Uganda, Tanzania, and Rwanda, which together grew at an average of 6.8 percent (World Bank, 2012). In order to grow our real GDP from 6.1 per cent achieved in 2006 to 10 per cent by 2012/13, the Kenya Vision 2030 perspective plan proposes among others to grow gross national savings (GNS) from 15.6 per cent of GDP in 2006/07 to about 26 per cent by 2012/13 and to 29 per cent of GDP by 2030. To attain the GNS targets, public savings are expected to rise from 1.6 per cent of GDP in 2006/07 to about 3 per cent by 2013/13 and to 3.8 per cent by 2030. Private savings are targeted to rise from 14 per cent of GDP in 2007/08 to 23 per cent in 2012/13 and to 25.5 per cent of GDP in 2030 (Republic of Kenya, 2008). From the analysis of the perspective plan, it is clear that the bulk of the expected increase in GNS shall come from the private sector. While growing private saving by 25.5 per cent of GDP by 2030 is one of the biggest challenges facing the Government of Kenya, failure by the perspective plan to mainstream
the roadmap to be followed by key drivers of private savings like rural households in meeting this multistakeholders goal is a challenge that this study ponders.

Source: Annual Reports of KCB, Equity and Cooperative Banks and Kenya National Bureau of Statistics

Figure 1.1: The Evolution of Private Saving in Bungoma County and Gross Domestic Saving in Kenya (2000-2009)

Locally, saving in Bungoma county have not been performing well either. Figure 1.1 above compares private saving performance of three major commercial banking institutions (Kenya Commercial Bank, Equity Bank and Cooperative Bank) in Bungoma County and Kenya’s GDS for the period between 2000 and 2009. It reveals that both private saving for the County and GDS have been quite uneven in their chronological evolution. After the 6.7 per cent registered in 2000, the GDS rate dropped to 4.4 per cent in 2001. It further dropped to 4.0 per cent in
2002 before spurring to 4.8 in 2003. It remained on the growth path up to 2006 when it posted 7.2 per cent growth before declining to 5.8 per cent in 2007. It then rose to 7.9 per cent in 2008 before declining to 4.2 in 2009. On the other hand, after posting an average growth of 9.63 per cent in 2003 up from 5.57 per cent in 2002 the private saving rate slumped in subsequent years to hit the 3.87 per cent mark in 2009. These rates compare quite poorly with the Gross Domestic saving rates. KNBS (2008) attributes the low private saving rates in the county to poor rural household saving.

![Chart showing saving accounts holders for rural and urban areas, 2010.](image)

Source: Toywa Baseline Survey

Figure 1.2: Saving Accounts Holders for Rural and Urban areas, 2010.

Figure 1.2 above shows a baseline survey of account holders for both rural and urban areas of Bungoma County by Toywa Baseline Survey (2010). In 2010, 35
per cent of the total private accounts holding by KCB in Bungoma County were by rural individuals while 65 per cent of the accounts were held by urban individuals. During the same year, 44 per cent of total private accounts holdings by Co-operative Bank in the county were by rural individuals with the urban individuals taking 56 per cent. Similar patterns were recorded by Equity Bank in the same period. Out of the total of private saving account holdings, the lion’s share of 71 per cent went to urban individuals with their rural counterparts making on only 29 per cent. While these results seem to confirm the Kenya National Bureau of Statistics (2008) hypothesis that the poor private saving in Bungoma County is as a result of poor rural household saving, the trend presents a behavioral puzzle since conventionally, rural dwellers are known to be relatively higher savers as compared to their urban counterparts.

In view of the foregoing empirical caveat and given the implicit adverse effects of low rural savings on rural development, a study of rural household saving behavior at present provides a critical springboard for accelerating saving for investment that will ensure Bungoma County rides in the fast lane of the growth process.
1.2 Statement of the Problem
There is a close link between rural saving mobilization and the process of economic development. According to Rodriguez et al (1988), rural savings are critical in growing the investment fund in countries where agricultural sector plays a key role in the overall economy. Following the footsteps of Rodriguez work, Attanasio et al (2001) recognized that in the absence of efficient credit and insurance markets, household saving is a critical determinant of welfare in developing countries. However, studies that provide evidence on saving capacity of rural households (the main constituent of the rural sector) are relatively few. Moreover, these studies mainly estimate rural household savings using formal savings (see Amimo et al, 2003; Komla, 2012). This is despite surveys showing that informal saving grew in popularity in a number of African countries (Chandavarkar, 1989; Chipeta et al, 1991; Larson et al., 1994; Aryeetey, 1995). Efforts to estimate rural household saving using informal data suffered from a number of limitatios. For instance Blime et al (2011) limited himself to vegetable farmers in North West Cameroon. An attempt by Amu et al (2012) to study rural households saving behaviour in the Ho Municipality of the Volta Region of Ghana had no inferential findings since the researchers limited themselves to descriptive statistics. In Kenya, Lillydahl, (1976) limited himself to urban households while Oriaro’s (2003) study of rural household saving of Bondo
district and Kibet et al. (2009) study of teachers, businessmen and farmers in Nakuru district limited themselves to the use of formal data only. The recent revelation by Toywa’s (2010) survey of households saving in Bungoma County using formal saving data that rural households are relatively poor savers as compared to their urban counterparts in the county contradicts empirical findings and the paradox begs for an answer.

Subscribing to this analysis, the purpose of the study therefore is to investigate the effect of changes in the factors that explain rural households’ savings (formal and informal) in Bungoma County with a view of providing a tenable solution to the hitherto unresolved behavioral puzzle and policy relevant questions.

1.3 Research Questions
Explicitly the study aimed at answering the principal question: what are the determinants of rural household saving in Bungoma County? Specifically, the study was motivated largely by the need to empirically find solutions to the following policy questions:

(i) What are the important determinants of rural household savings in Bungoma County?
What are the impacts of the important determinants of rural household savings in Bungoma County?

Which policies have the greatest impact on rural household saving in Bungoma County, and which are unlikely to work?

The answers to these questions constitute the thrust of this study.

1.4 Objectives of the Study
Broadly, the primary concern of the study is to identify the determinants of rural household saving in Bungoma County. The specific objectives are to empirically:

(i) Investigate specific determinants of rural household saving in Bungoma County.

(ii) Determine partial impacts of the determinants of rural household saving in Bungoma County.

(iii) Draw policy implications and propose policy interventions consistent with the Kenya Vision 2030’s explicit concern for rural sector participation in raising savings for investment.

1.5 Justification of the study
This study contributes to the understanding of the evolution household saving behaviour in Bungoma County, while contributing to the empirical literature with respect to saving more generally and rural household saving dimension in
particular. The study may also generate policy implications by identifying factors that are associated with improving rural household saving in Bungoma County. In addition, the paradigm shift in the estimation process is inter alia expected to contribute to the twofold policy debates: one, should the criteria for the distribution of the Equalization Fund to counties under the new constitutional order of fiscal federalism be pegged on the county’s ability or lack of it to raise savings to meet its investment expenditure; and two, whether rural households do real save or not.

1.6 Scope of the Study
The rural household saving equation will be estimated using annual data for January, 2012 to December, 2012. The estimation period was determined largely by the availability of adequate data on all variables. The county scope represents a fundamental shift from the traditional locus of estimating saving with aggregate data.

1.7 Limitations of the Study
This study excluded financial variables of interest rate and inflation rate because of the cross sectional nature of data that was used.
1.8 Organization of the Study
In consonant with chapter one, the rest of the study was organized as follows: chapter two reviews relevant literature. The study’s methodology is presented in Chapter three. Analysis of empirical results is conducted by chapter four. Finally, chapter five concludes with a summary of the study and a substantive discussion of policy implications.
CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction
This chapter explores mainstream theories that explain the saving behavior of households and empirical literature with a view of establishing whether there exists any knowledge gap.

2.2 Theoretical Literature

2.2.1 The Keynesian Absolute Income Hypothesis
Keynes' (1936) analysis, generally referred to as the absolute income hypothesis (AIH) followed the traditional theory of demand in which savings was viewed as a luxury good. The motive behind savings was the desire by the rich to bequeath an estate. Keynes as referred to by Modigliani (1986) identifies eight motives of saving, which are: one, to build up a reserve against unforeseen contingencies; two, to provide for an anticipated future relationship between income and the needs of the individual; three, to receive interest and capital appreciation; four, to enjoy gradually increasing level of expenditure; five to enjoy a sense of independence and the power to do things, though without a clear idea or definite intention of specific action; six to secure a masse de maneuver to carry out speculative or business projects; seven to bequeath a fortune; eight to satisfy pure greed, that is, unreasonable but insistent inhibitions against acts of expenditure as
such (avarice). Browning and Lusardi (1996) in their research on household saving several decades later, added one more motive (down payment motive).

Keynes (1936) opines that savings are positive increasing function of disposable income. Mathematically, the relationship is stated as

$$S_t = \beta_0 + \beta_1 Y_t$$

(2.1)

Where $S_t$ and $Y_t$ are real personal saving and personal disposable income for the current period respectively. $\beta_0$ is the constant and $\beta_1$ is the marginal propensity to save.

The cardinal assumptions of Keynes' theory are: one, $\beta_0 < 0$ ($\beta_0$ is negative), and $0 < \beta_1 < 1$ ($\beta_1$ is positive), so that as the level of income rises, the average propensity to save will also increase (Mikesell et al, 2001:3); two, it is the absolute level of a household income that determines its saving. Although he acknowledged the existence of other factors such as interest rate, wealth, urbanization and changes in age structure of the population and the distribution of income he assumed them to be statistically insignificant.
According to Modigliani (1986), Keynes predicted that the average propensity to save of the average household would increase when they reach a higher income level.

2.2.2 The Relative Income Hypothesis (RIH)
Duesenberry (1949) postulated the relative income hypothesis (RIH) to challenge Keynes' (1936) absolute income hypothesis. In his first (RIH), he argues that in a community there exist consumption standards (social consumption norms). He says that one's consumption depends on his income relative to the rest of the population's average income. Accordingly, an individual maximizes utility subject to a weighted average of the population's saving. It postulates that the levels of these variables reached in previous periods will influence an individual's consumption and saving patterns. This hypothesis further states that at any point in time, the propensity to save by an individual is arising function of his percentile position in income distribution.

In his second Relative Income Hypothesis, Duesenberry contends that saving is a positive function of current income relative to the highest income previously attained. Formerly, the relationship can be stated as

\[ S_t = f\left(\frac{Y_t}{Y_{t-1}}\right) \]  

(2.2)
Where $S_t$ is current saving, $Y_t$ current income, $Y_{t-1}^{*}$ is previous peak income. Duesenberry argues that when there is a uniform current income distribution, previous income for the interest of saving and consumption is what matters. However if current income is not uniformly distributed, it influences saving distribution. Duesenberry argues further that households react by cutting down consumption during recession but not as much as the drop in income because they would like to maintain the standard of living. On the other hand, during the boom, households would consume less and save more once the previous peak income is reached.

2.2.3 The life-cycle hypothesis
The life-cycle theory of savings behavior was first formalized by Franco Modigliani and Richard Brumberg (1954) and Albert Ando and Modigliani in 1963. It forms part of the basis for post-Keynesian debate that contributed a lot to modern theories of household saving behavior. In its original formulation, the life-cycle hypothesis (LCH) presented a theory of saving behavior focusing on the individual. The LCH analyzed the saving behavior of individuals who spread their lifetime consumption over their lives by accumulating savings during earning years and maintaining consumption levels during retirement.
This theory assumes: one, that there are opportunities in which income is constant until retirement and zero with zero interest rates thereafter. Two, tastes or preferences to be constant over life, with no bequests.

The simplified assumptions of this model are illustrated in Figure 2.1 below. It is referred to as the basic or ‘Stripped – down’ version of the life-cycle model (Modigliani, 1986). The main motive or reason to save here is for retirement and to acquire wealth.

Source: Modigliani (1986:300)

Figure 2.1 Basic Model of the Life-Cycle Path of Saving and Wealth
Figure 2.1 presents a graphical illustration of the original LCH. It represents the age distribution of income (Y), consumption (C), savings and wealth (A), up to a constant number of people in each age interval (T). \[(L - N) \frac{N}{L} \] Y is the ratio of income-age at equilibrium levels of age N. C (T) = \[\frac{N}{L} \] ̇y is the consumption ratio at equilibrium where dissaving occurs. N and L indicate the age intervals. \( \Delta (T) \) is the upward sloping curve of the life-cycle of saving. Y (T) represents the age at which people save. Roy Harrod (1948) called it ‘hump-saving’. Aggregate wealth /income ratio (W/R) is given by the ratio of the total wealth held at each age (in the graph it is the area under the wealth path to the area under the income path). This can only be true in a stationary economy. But when the above analysis is applied to an open economy, the picture is different. According to Modigliani, the retirement span follows the earnings span, consumption smoothing leads to a humped-shaped age path of wealth.

Modigliani expanded the perspective of the hypothesis in a number of later articles. As said previously, this model has the basic assumption that most individuals are not prejudiced but rather take their expected lifetimes into account when deciding how much out of current income to save and how much to spend (Modigliani, 1986). According to him, most evidence on age-saving and/or age-
wealth profiles is based on a concept of disposable income that does not take into account the role of compulsory savings through pension schemes. Modigliani always explained that the LCH is a theory about individual and aggregate wealth, and that individual wealth and saving behave completely differently than the corresponding aggregate.

The life-cycle predicts that, in any given population, young people will save too little (because individuals initially earn relatively little and borrow to fulfill their high consumption needs). Middle-aged people with high earnings tend to save the most (because a typical individual’s income increases and he/she no longer needs to borrow and therefore saves more). The elderly tend to have a low, or even negative savings rate (because once the individual reaches the retirement age, income drops to a level below consumption and dissaving occurs). In other cases, the individual must dissave in order to maintain his consumption close to his needs, until death (Modigliani, 1986). Thus, the aggregate savings ratio will tend to vary for the young, the middle-aged and the elderly.

Years later, Masson (1988) and Deaton (1999) illustrated the life-cycle model in simple terms as shown in Figure 3 below.
Figure 2.2: Consumption and Income Age Profiles and Corresponding Savings over the household life-cycle

In this graph, it is assumed that consumption and earnings vary over the household's life-cycle so that income is not equal to the desired expenditure at any point in time in a perfect market. Figure 2.2 also illustrates the saving behavior of an individual during his lifetime. Savings increases as income increases, reach maturity and start to decline after a long period of working years. But, according to the life-cycle saving theory, there are means by which
households can shift income from time to time so that their consumption could be fulfilled (Deaton, 1989). That is why during times of high earnings relative to desired consumption, households save and during periods of low earnings relative to high consumption, households dissave. Therefore, incomes rise over the life-cycle until retirement. Retirement is therefore the main saving motive. One of the implications arising from of the LCH is that the higher the old age dependency ratio, the lower will be aggregate household savings, as these people dissave during retirement. Thus, aggregate savings at any point in time will depend on the savings ratio of working households as compared to the savings ratio of retired households.

There are several shortcomings of the LCH model. For instance the elderly do not seem to dis-save nearly as much as the model predicts (Coleman, 1998). Despite the shortcomings of the life-cycle model of saving behavior, it is still useful in providing a picture of the individual saving behavior (Japelli, 2005 and Attanasio, 1999).
2.2.4 Permanent Income Hypothesis
Building on Keynes' work, Friedman (1957) articulated the Permanent-Income Hypothesis (PIH). This hypothesis decomposes life-time income into permanent and transitory components. He defined permanent income in terms of long-term income expectations over a planned period and with a constant rate of consumption maintained over the lifetime given the present level of wealth (Muradoglu et al, 1996). According to Samuelson et al (1995) permanent income is the level of income that households receive when temporary influences such as the weather or a windfall gain or loss are removed. Transitory income is interpreted as unanticipated income which may either be positive, zero or negative. The size of marginal propensities to save out of the permanent and the transitory income as well as the effect of initial wealth on savings is relevant for empirical testing of the PIH. Nevertheless, changes in transitory income will automatically result in changes in the level of savings. The argument is that transitory income cannot generally be anticipated because it is a result of occurrences such as an inheritance (Rousseas, 1972).

According to Modigliani (1986), a major limitation of the PIH is that the systematic variation in income and needs (that is maturing and retirement and or changes in family size), which occurs over the life-cycle of a household, was not
specified. Another important drawback of the PIH relates to children and the bequest motives, which were omitted.

2.2.5 The Altruistic model
Barro (1974) came up with what he called Altruistic Model (AM). The model was developed out of the new household economy. In contrast to the previous theories, the economic agent is a household, not an individual. This theory is closer to reality, because the household is considered as an economic unit in the national economic politics. In Barro’s model, the function of the utility of consumption for a family consists of two parts: utility of consumption of the parents and of their children. According Barro (1974) and Becker (1974) the parents transfer their income to the children in order to enhance the consumption of the children. The model assumes parents to be altruistic and children to be selfish. It also assumes that Individuals are farsighted and their foresight is far greater than that in the life cycle model because they not only care about their own welfare but also about their children’s.
2.3 Empirical Literature
This section explores empirical literature specific to Kenya and other countries.

2.3.1 Empirical Literature from Other Countries
Cornia et al (1982) studied rural and urban saving behaviour of developed and developing countries Kenya included. Using ILO statistics, they found that household size contributes to savings only for middle income economies and does not have any significant impact in developing countries.

Rodriguez et al (1988) examined the saving behavior of 1,000 rural households using data gathered by the Agricultural Credit Policy Council (ACPC) of the Philippines in 1987. The authors found that factors such as income, household size and education of the household head, among others, play a critical and positive role in raising saving among rural households.

Schmidt-Hebel et al (1989) analyzed household saving in developing countries. Using data based on household saving and disposable income series for 10 economies for which at least 7 and as many as 13 consecutive annual observations were available during 1970-85, the empirical findings confirmed the critical role
of income and wealth among others in determining household savings in the developing countries.

Bautista et al (1990) explored comparative saving behavior of rural and urban households in the Philippine. Family Income and Expenditure Survey for 1985 was used as data source. A sample of 16971 respondents was selected from 12 regions of Philippines. In the Current Income model, income positively affects saving while dependency ratio negatively affects savings in all regions. The value of MPS ranged from 0.334 to 0.775. In the Permanent Income model for all regions of Philippines, permanent and transitory incomes induced saving rates. It was also concluded that the value of MPS for permanent income ranged from 0.218 to 0.548 and for transitory income, MPS ranged from 0.388 to 0.803.

Kraay (2000) explored household saving in China. The goal of the study was to identify the main determinants of household saving in China. Using the life cycle hypothesis, the OLS results for the primary data found expectations of future income growth, as well as income levels higher than subsistence consumption (proxied by the share of food consumption) to play a significant role in the observed evolution of saving, although they account for only a small portion of
the observed variation in household saving. In contrast, the study found that demographic factors or income uncertainty have no effect on saving.

Amimo et al (2003) examined the potential for financial savings in rural Mozambican households by looking at the determinants of savings behavior. An econometric model for a household’s saving behavior was estimated using data from 113 rural households from Nampula province in Mozambique. Results indicated that income, physical wealth, household size, and years of schooling affect a household’s savings behavior. The study also found that Mozambican rural households use their own grassroots associations for many financial services due to the lack of access to formal financial intermediaries.

Orbeta (2006) examined relationship between household savings, family size and number of children in the house. Cross Sectional data was collected from Annual Poverty Indicator Survey (APIS) in 2002. At aggregate level, number of children and male household head contributed to the reduction in saving rates. Per Capita Income, Age of household head, Population per banking unit, Proportion of barangays with access to national highways, and urban dummy were significantly inducing saving rates.
Fasoranti (2007) evaluated influence of rural saving mobilization on economic development of rural dwellers. Primary data through questionnaire were collected from 100 respondents from 5 villages of Nigeria. Ordinary Least Square (OLS) results showed that income, human capital, investment and assets were positively contributing to total savings. It was also suggested that rural dwellers should be properly mobilized to join co-operative societies.

Newman et al. (2008) investigated the determinants of household savings in rural Vietnam. Cross Sectional data of 2324 households from 12 provinces of Vietnam were taken by Vietnam Access to Resources Household Survey (VARHS) in 2006. Percentage analysis showed that wealthier households were more likely to save; negative effects of the age of household head were found; no education effects were found; financial savings were low and the share of formal savings were relatively small in rural Vietnam. It was suggested that the Government should improve savings institutional framework.
Khalek et al. (2009) contributed to the literature on household savings as their study was based on 2 samples depending on household home place. The authors collected observations of 300 households in March-April 2007. Major findings from the study revealed that overall, saving rates were dependent positively on household income and interaction term (Income × Gender). Household size, number of unemployed and gender negatively affected savings. Empirical results suggested no statistically significant effects of age, and the square of age on household savings. It was also suggested that the self-financing of rural household activities might be due to lack of access to formal financial intermediaries.

Abid et al (2010) assessed the Household saving Pattern of Urban and Rural Households in Muzaffarabad District of Pakistan. OLS regression results of cross-sectional data showed that income and locality have positive effect on saving behavior of household whereas education and family size have negative effect on saving of the household in District Muzaffarabad. From the results, the study concluded that the Government could increase saving in the study area by providing free educational facilities and creating job opportunities to the educated persons of the rural areas of District Muzaffarabad.
Rehman et al (2010) studied household savings in Pakistan. The study aimed at investigating the determinants of households' saving in Multan district of Pakistan. Data of 293 respondents were drawn through field survey in 2009-2010 by adopting stratified random sampling technique. Household heads were asked questions about their education level, family status, age, region of residence, assets and income. Drawing on the Life Cycle hypothesis postulated by Ando and Modigliani (1963), the Ordinary Least Square results revealed that Spouse participation, total dependency rate, total income of household and size of landholdings significantly raise household savings. Education of the household head, children's educational expenditures, family size, liabilities to be paid, marital status dummy and the value of the house significantly reduce the saving level of households. The study also supported the existence of the life cycle hypothesis.

2.3.2 Empirical Literature Specific to Kenya
Lillydahl (1976) studied economic and demographic influences on household savings in urban Kenya. The variables of the study were income, wealth, household size, family structure, tribal affiliation, education and the number of income earners in the family. Using annual data for 1968/69 Kenya Urban Household Budget Survey, the study's findings revealed that income was the most
important determinant of urban household savings. Household saving was an increasing non-linear function of income. The extended family institution was found to inversely influence household saving. Household size, education of the income earner, and the number of children were found to be insignificant.

The Rural Household Budget Survey of 1981/82 found that rural households' savings have an APS of 36.6 per cent which varied from district to district (Republic of Kenya, 1982). The APS was found to significantly increase with income (as per the economic theory). Using a semi-log regression model, the survey found that a 10 per cent increase in income was associated with a 3.34 per cent increase in the APS.

A report of 1998/99 Labor Force Survey on household expenditure revealed expenditure differentials between male- headed and female-headed households. Mean monthly expenditure for female-headed households in rural areas was Kshs 2,986 significantly below the monthly expenditure of Kshs 4,620 for male-headed households. Similarly, mean expenditure for male-headed households in urban areas was almost twice that of female-headed households (Republic of Kenya, 1999).
Oriaro (2003) analyzed rural household saving in Bondo district of Kenya. The primary intention of the study was to establish the determinants of rural household saving among the population of study. The study variables were age, bank distance, dependency, education level, employment status, income, interest rate and wealth. Using a sample of 120 households and the interview method, both descriptive and regression results found income, dependency, age and education level to be significant determinants of rural household saving.

According to the Kenya Integrated Household Budget Survey of 2005/6, poor and non-poor households in rural Kenya spend 57 per cent and 44 per cent respectively of their budget on food. A survey conducted by Tegemeo Institute (Muyanga et al, 1995) showed that staples were an important constituent of household’s food basket and hence a rise in their prices increases family expenditure-conversely reducing savings.

Kibet et al. (2009) adopted a microeconomic approach in investigating the factors that influence savings among teachers, entrepreneurs and farmers. Cross sectional primary data of 359 households for 2008 were collected through multistage
sampling technique. The study concluded that income had positive effect on savings of teachers, businessmen and farmers. Credit access, age, and dependency ratio were found to have negative impact on saving of all household. MPS were 0.1577, 0.0605, 0.2558 and 0.1936 for all households, teachers, businessmen and farmers respectively.

In 2009 Urban Household survey, the households were divided into five quintiles based on their total expenditures with the first quintile having the lowest expenditure whilst the fifth quintile had the highest expenditure. The households in the highest quintile were older families with a majority having 4 adults. The number of children ranged from zero to three or more. The households are headed by relatively young adults with the higher quintile having the oldest heads (46 years) and the lowest quintile having the youngest head (34 years). Households in lower quintile have the highest percentage of household heads with just primary school education whilst households in the highest quintile have highest number of household heads with above secondary level education. The average household size was 4.2 persons. Household expenditure was found to increase with the household size.
2.4 Summary of the Literature
Theoretical models stressing location as a possible explanation of household savings behaviour were not found in the literature. However, few empirical studies attempted to appreciate the impact of locational differentials on saving (Khalek et al, 2009 and Abid et al, 2010). In the review of household saving, studies were frequently based on four main stream income hypotheses: Absolute Income, Relative Income, Permanent Income and Life Cycle Hypotheses. In addition, some studies attempted to test the significance of demographic variables albeit without theoretical underpinnings. An examination of conclusions reveals that household saving is determined by both policy and non-policy variables. It was also noted that available statistical evidence on rural saving behaviour refers mainly to Asia, although some results exist for other countries. Interestingly, a juxtaposition of reviewed theoretical postulates and empirical findings reveals a striking consensus concerning income as an important determinant of household saving. The growing body of empirical research, using different statistical procedures and data sets produces remarkably consistent results about income’s positive contribution to saving. Nevertheless, despite these breakthroughs, some major gaps in knowledge still remain. First is that they focused on developed countries yet the determinants of savings in developing countries may be different from those of developed countries as revealed in Mason et al (1998). Secondly,
the elderly do not seem to di-save nearly as much as the LCH model predicts (Coleman, 1998). Lastly, there is some controversy (in terms of the direction of some impact multipliers) among some empirical evidence concerning the results for other variables apart from income. For instance, Rodriguez et al (1988) found the impact of education level of household head on household saving to be positive and significant. Ten years later, Abid et al (2010) and Rehman et al (2010) found the education level of the household head to significantly reduce household saving. The study sought to fill these gaps.
CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction
The methodology for this study consisted of research designing, mounting a theoretical framework, study area and target population profiling, sampling of the study area, and designing of questionnaires.

3.2 Research Design
The study engaged a Non Experimental Research Design (NERD). This is a design that does not involve manipulation of the study’s variables. The choice of the NERD was informed by insufficient longitudinal data on some variables of study.

3.3 Theoretical Framework
According to mainstream development theories, the rural sector was considered to have a limited capacity to generate savings. Subsequent investigation has shown the fallacy of such a thesis, demonstrating that the rate of savings in rural areas is higher than frequently assumed. Hyun et al. (1979) for instance, showed that rural households in Korea saved a remarkably large part of their incomes; during the late 1960s their savings were, at the margin, about one-fifth of permanent incomes and about four-fifths of transitory incomes. Similar results were found by Ong et al (1976) for Taiwan and by other authors for other developing countries. Given
extremely variable income streams in rural areas of poor countries as observed by Udry (1993), the theoretical framework for the study was underpinned by the permanent Income Hypothesis (Friedman, 1957) mutatis mutandis. According to the permanent income hypothesis, households smooth their consumption over a given time horizon. When realized income exceeds expected income, households save. When realized income is below expected income, households either borrow from banks, families or friends, or withdraw money from previous savings to finance current consumption. Empirical tests of the permanent income hypothesis are mainly concerned with the effect of initial wealth on savings as well as the marginal propensities to save out of permanent and transitory components of income.

3.3.1 Theoretical Model
Rural household savings for the study was modeled after Friedman’s (1957) hypothesis. Friedman (1957) hypothesized that household saving is a linear function of its permanent income or expected income and transitory income, which is the difference between realized and expected income. In its most simple form, Friedman’s model is mathematically stated as

\[ S_t = \alpha_0 + \alpha_1 YP_t + \alpha_2 YT_t \]

Where: \( S_t \) = Household saving in year t;
\( \alpha_1 = \) constant marginal propensity to save;

\( YP_t = \) permanent income and

\( YT_t = \) transitory income in year \( t \).

Friedman explained that at \( \alpha_1 \), the individual consumes nearly no transitory income where marginal propensity to save on this transitory income will be unity (\( \text{MPSt} = 1 \)).

### 3.3.2 Model Specification

Apart from economic variables of permanent income and transitory income other variables related to household saving such as household size and composition also affect saving (Friedman, 1957; Bhalla, 1980; Paxson, 1992). To capture the peculiarities of a typical household, the study augmented model (3.1) by introducing more economic variables identified in the reviewed literature like household expenditure on food, expenditure on children’s education, landholding and wealth. In addition, demographic variables like family size, age, sex, education level, marital status, spouse participation and dependence ratio were also included in order to create a multivariate causality framework. Thus the derived hybrid saving function for the empirical analysis was specified following Abid et al (2010) as:
\[ S = f(PIN, TIN, FS, AG, SX, DR, EDL, MS, SP, EFD, ECE, LND, WE) \] \hspace{1cm} (3.2)

Where: 
- **S** denotes dependent variable which is household saving in the study;
- **PIN** represents permanent income;
- **TIN** stands for transitory income,
- **FS** signifies Family Size;
- **AG** denotes Age of household head;
- **SX** is Sex of household head;
- **DR** abbreviation of Dependence Ratio;
- **EDL** is the short form for Education Level of household head;
- **MS** is the abbreviation marital status of the household head;
- **SP** stands for spouse participation;
- **EFD** represents household expenditure on staple food;
- **ECE** denotes expenditure on household education;
- **LND** is land size;
- **WE** denotes wealth.

### 3.3.3 Estimation Procedure

Both linear and non-linear specifications of the functional relationship in equation (3.2) were estimated using cross-sectional data for 2012. The linear specification performed better than the log-linear specification. The research adopted the linear
specification. The parsimonious model for empirical analysis was econometrically specified using matrix algebra as follows

\[ S_i = X_{ij} \beta_j + e_{ij}, \quad \text{.........................}(3.3) \]

Where: \( S_i \): Saving by household \( i \);
\( \beta_j \): are vectors of coefficients that were estimated for \( j=0,1,\ldots, k \);
\( X_{ij} \): \( i \)th household with \( j \) characteristics; \( e_{ij} \) is the stochastic random term that is \( \sim N(0, 1) \), \( i = 1, 2, \ldots, n \), \( j = 1, 2, \ldots, k \).

3.4 Definition and Measurement of Variables

**Dependent Variable.** Denoted as \( S \), it refers to formal and informal savings either at a financial institution or at home. It was estimated by the balancing figure of a household's statement of affairs as used by Wilson (1989).

**Dependent Variables:**

**Permanent Income.** Denoted as \( \text{PIN} \), it refers to income that does not change with socio-economic conditions. It was estimated by the weighted average of current and past incomes.

**Transitory Income.** Denoted as \( \text{TIN} \), it refers to the difference between permanent and current income.

**Family Size.** Denoted as \( \text{FS} \), it refers to children, spouse and other dependents of household head.
Age. Denoted as AG, it refers to the chronological maturity of the household head. It was estimated by the difference between current date and date of birth.

Sex. Denoted as SX, it refers to the female or male status of the household head. It was approximated by taking female = 1 and male = 0.

Dependency Ratio. Denoted as DR, it refers to the rate of dependents to family size. It was approximated by taking household members less the number of income earners divided by household size.

Education Level. Denoted as EDL, it refers to the highest education reached by household head. It was approximated by the number of years of formal education.

Marital Status. Denoted as MS, it refers to un-married and married status. It was approximated by taking married = 0, un-married = 1.

Spouse Participation. Denoted as SP, it refers to spouse financial partnership with the household head in meeting family obligations. It was approximated by taking dummy 1 for spouse participation and 0 for no participation.

Expenditure on Food. Denoted as EFD, it refers to expenditure on food proxied by expenditure on staple food.

Expenditure on Children’s Education. Denoted as ECE, it refers to expenditure on children’s education approximated by monthly fees of institutes, monthly pocket money, dues for tuition, and stationary charges.
**Land Holding.** Denoted as LND, it refers to land owned by the household in hectares.

**Wealth.** Denoted as WE, it refers to the monetary value of other household assets besides land.

### 3.5 Study Area Profile

Bungoma County (appendix E) is about 450 kilometers from Nairobi, the capital city of Kenya. It covers 3,593 square kilometers. It is located in Western Kenya along the boarder with Uganda and boarders Trans Nzoia County to the north, Busia County to the South west, Kagamega County to the south and Uasin Gishu to east. It has 13 commercial banks and 16 microfinance institutions. The main economic activities include sugarcane farming, livestock keeping and commercial businesses (trade, public transport, milling, housing, hotels/cafes, metal and wood workshops, and other small and microenterprises (SMEs)). The industries in the area include: Webuye Pan Paper Mills (defunct), Nzoia Sugar Factory and BAT and Mastermind in Malakisi. Classified as arid, Bungoma County is endowed with strong economic structures provided by its rich agricultural hinterland. This has made Chwele trading center’s supply volume of its agricultural products to be ranked third largest in Africa after Ibadan- Nigeria and Karatina- Kenya (KBS,
The agricultural products include sugar, coffee, maize, milk, tobacco, banana and sweet potatoes.

3.6 Target Population Profile
The pertinent population of study consists of 127,702 rural household heads in Bungoma County (Republic of Kenya, 2009). This constitutes 78.3 per cent of the county’s population, according to the commission of Revenue Allocation (CRA) report that was released in 2011.

3.6.1 Demographic Profile
According to the Kenya Integrated Household report of 2005, majority of households in Bungoma County consist of over seven members. The KIHBS (2005) report also revealed that 25.7 per cent, 18.5 per cent, and 10 per cent of the total count had family sizes of 5-6, 3-4, and 1-2 respectively. The average household size for the county was reported by the 2005 survey to be 6.4. According to the 2009 Census Report (Republic of Kenya, 2009), the size of the young population aged between zero to fourteen years and that of the elderly is 45.9 per cent and 2.3 per cent of the County population respectively. The report further revealed that the age dependency ratio and the population that live below absolute poverty line for Bungoma County stood at 93.8 per cent and 53 per cent respectively. The Commission for Revenue Allocation (CRA) 2011 report about
Bungoma County shows that 72.8 per cent and 11 per cent of the County’s population have primary and secondary education respectively. The CRA report observed that 48 per cent and 52 per cent of the county’s population are males and females respectively.

3.7 Sampling Design
Rural households in Bungoma county face varied income streams with those living in Mount Elgon and the former White Settlement Schemes of Tongaren and Naitiri experiencing relatively higher income streams as compared to those living in Ekitosi area (formerly paramount chief Sudi jurisdiction). Since the study population is assumed to be heterogeneous, the study population was stratified along income differential lines before selecting the sample using a simple random sampling technique. The strata were proxied by the Independent and Electoral Boundaries constituencies.

3.7.1 Sample Size
Israel’s (1978) method was used. This method is based on population size N and the level of precision e. Accordingly, the sample size n for statistically valid and reliable inferences about the population of interest was estimated by equation (3.4) below:

\[ n = \left( \frac{N}{1 + N(e)^2} \right) \]
Taking the total Bungoma County population to be 1630934 (CRA, 2009) and dividing it by the national average household size of 4.6 (NCPD, 2012), the total number of households in Bungoma County (rural plus urban households) was found to be 354550.87. Multiplying the county number of households by the rural share of 78.3 per cent (derived from, CRA, 2009), the total number of rural households for the study was estimated to be 277613.33. Substituting for the target population, \( N = 277,613.33 \) and \( e = 9 \) per cent precision, the sample size \( n \) for the study was approximated as follows:

\[
\begin{align*}
 n &= \left( \frac{277,613.33}{1 + 277,613.33(0.09)^2} \right) = 123.40191 \approx 123 \\
\end{align*}
\]

The sample was proportionately allocated to strata \( n_1, n_2, n_3, n_4, n_5, \) and \( n_6 \) such that

\[
\begin{align*}
 n_1 + n_2 + n_3 + n_4 + n_5 + n_6 &= n \tag{3.6}
\end{align*}
\]

where: \( n_1, n_2, n_3, n_4, n_5, \) and \( n_6 \) are strata samples for Mt Elgon, Sirisia-Kabuchai, Bumula, Kanduyi, Webuye-East and West, Kimilili-Tongaren constituencies respectively.

Specifically, each sample stratum was proportionately estimated as follows:
\[ n_1 = \left( \frac{50169}{354800} \times 123 \right) = 17.392 \approx 17 \quad (3.7) \]

\[ n_2 = \left( \frac{64434}{354800} \times 123 \right) = 22.337 \approx 22 \quad (3.8) \]

\[ n_3 = \left( \frac{52428}{354800} \times 123 \right) = 18.175 \approx 18 \quad (3.9) \]

\[ n_4 = \left( \frac{50629}{354800} \times 123 \right) = 17.551 \approx 18 \quad (3.10) \]

\[ n_5 = \left( \frac{63406}{354800} \times 123 \right) = 21.981 \approx 22 \quad (3.11) \]

\[ n_6 = \left( \frac{73734}{354800} \times 123 \right) = 25.261 \approx 26 \quad (3.12) \]

Using multi-stage cluster sampling technique, an independent, identically distributed (i.i.d) sample of \( n = n_1 + n_2 + n_3 + n_4 + n_5 + n_6 = 123 \) was thus selected.
3.8 Data Type and Source

3.8.1 Data Type
The study employed cross-sectional quantitative and qualitative household level data. Time series data for 2010, 2011 and 2012 were used to find weighted average for permanent income for 2012.

3.8.2 Data Source
This study utilized data from primary sources.

3.9 Research Instruments
To solicit answers to research questions, questionnaires (appendix A) were used.

3.10 Data Collection
Information on the study variables were fielded through structured questionnaires administered to household heads (appendix A).
4.1 Introduction
This chapter discusses diagnostic tests, econometric model and the interpretation of empirical results with regard to the study’s objectives.

4.2 Diagnostic Tests, Data Analysis, Interpretation and Discussion of Empirical Results
STATA, SPSS and EVIEWS econometric packages were used to analyze data.

4.2.1 Diagnostic Tests
For the estimated model to be acceptable, OLS assumptions must hold. It was therefore necessary to carry out diagnostic tests on the model to ensure that the results are non-spurious. The tests done included: one data and two residual tests. These were correlation matrix, Breusch-Pagan / Cook-Weisberg Test for Heteroskedasticity and normality tests.

4.2.1.1 Multicollinearity Test
To test for the extent of multicollinearity in the data, a correlation matrix was generated. Under multicollinearity OLS estimates are consistent, but standard errors are increased (estimates are less precise). Under severe multicollinearity (exact collinearity), the regressor matrix does not have full column rank and the OLS estimator breaks down.
Table 4.1: Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>PIN</th>
<th>AG</th>
<th>DR</th>
<th>EDL</th>
<th>MS</th>
<th>EFD</th>
<th>ECE</th>
<th>LND</th>
<th>WE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIN</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AG</td>
<td>0.1903</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DR</td>
<td>-0.0881</td>
<td>-0.162</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDL</td>
<td>0.3311</td>
<td>0.0125</td>
<td>-0.2015</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>0.0005</td>
<td>-0.2947</td>
<td>0.0043</td>
<td>-0.047</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EFD</td>
<td>0.2504</td>
<td>-0.035</td>
<td>-0.0558</td>
<td>0.0419</td>
<td>0.011</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECE</td>
<td>0.301</td>
<td>0.0089</td>
<td>-0.2341</td>
<td>0.2623</td>
<td>0.0101</td>
<td>0.3294</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LND</td>
<td>0.2657</td>
<td>-0.0001</td>
<td>-0.2155</td>
<td>0.3758</td>
<td>0.0819</td>
<td>0.1312</td>
<td>0.3769</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>WE</td>
<td>0.3604</td>
<td>0.0092</td>
<td>-0.2236</td>
<td>0.4441</td>
<td>0.052</td>
<td>0.1984</td>
<td>0.3989</td>
<td>0.7486</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: author

Where: PIN represents permanent income; AG denotes Age of household head; DR abbreviation of Dependence Ratio; EDL is the short form for Education Level of household head; MS is the abbreviation marital status of the household head; EFD represents household expenditure on staple food; ECE denotes expenditure on household education; LND is land size; WE denotes wealth.
It can be seen from table 4.1 above that first, there is weak correlation between the age of the household head (AG) and the permanent income (PIN) of 0.1903. The positive sign implies that as the head of the household ages, permanent income increases ceteris paribus and vice versa.

Second, it is also evident that there is an insignificant relationship between dependency ratio (DR) and permanent income (PIN) of -0.0881. The negative sign implies that as dependency ratio increases, permanent income decreases all else being the same.

Third, there is a weak correlation between the level of education of the household head (EDL) and the permanent income (PIN) of 0.3311. The positive sign suggests that furthering of education by the household head leads to increase in permanent income and vice versa all other conditions remaining unchanged.

Fourth, a 0.0005 correlation between marital status (MS) and permanent income (PIN) reveals a weak relationship between the two variables. The positive sign implies that the unmarried individuals enjoy higher permanent income than the married.
Fifth, Table 4.1 also shows that there is a weak positive relationship between household expenditure on food and permanent income of 0.2504. The positive slope shows that an increase in permanent income leads to an increase in expenditure on food and vice versa ceteris paribus.

Sixth, the matrix results also reveal that there exists a weak positive correlation between household expenditure on children’s education and permanent income of 0.301. It implies that as permanent income increases household expenditure on children’s education also increases all other things remaining constant and vice versa.

Seventh, the rather insignificant positive correlation of 0.265 between land size (LND) and permanent income (PIN) indicates that there is a direct relationship between permanent income (PIN) and the size of landholding by a household. That is, as permanent income increases landholding also increases ceteris paribus and vice versa.
Eighth, the relationship of 0.3604 between permanent income (PIN) and wealth (WE) was found to be rather not strong. The positive sign means that as a household’s wealth increases permanent income also increases and vice versa ceteris paribus.

Ninth, the study’s correlation matrix found an inverse relationship of 0.162 between dependency ratio (DR) and the age of the household head (AG). It means that as the household head ages, dependency level declines and vice versa all else remaining the same.

Tenth, the matrix results also show that there is a direct relationship between the highest levels of education (EDL) attained by the household head and the age of household albeit a weak 0.0125. These results point to the hypothesis that household heads advance their education with age all conditions remaining unchanged.

Eleventh, a weak inverse relationship between marital status (MS) and the age of the household head of 0.2947 implies that unmarried household heads get married as they chronologically mature ceteris paribus.
Twelfth, the correlation coefficient between the age of the household head and household expenditure on food (EFD) is a feeble -0.035. Moreover, the household expenditure on food is inversely related to the age of the household head.

Thirteenth, the correlation of 0.0089 between the household expenditure on children’s education and the age of the household head is not powerful. The positive sign indicates that the household’s expenditure on education increases with age all other conditions being held constant.

Fourteenth, there is a negative slope of a weak 0.0001 between landholding by the household head and his/her age. This implies that the household heads bequeath (or dispose off) their land with age and vice versa ceteris paribus.

Fifteenth, table 4.1 also gives a positive slope between the wealth accumulated by household (WE) and his/her age of 0.0092. This hypothesizes that household heads tend to become richer as they age and vice versa holding other factors constant.
Sixteenth, the correlation results also manifest a less sharp negative gradient between the highest level of education reached by the household head (EDL) and the degree of dependency. The negative sign pointing to a thesis that the more one acquires education the fewer the number of dependents (children) he/she has and vice versa ceteris paribus. This suggests that generally educated individuals tend to have fewer children.

Seventeenth, there was a very weak correlation between marital status (MS) and dependency ratio (DR) of 0.0043. The positive slope suggests that dependency level is high when one is unmarried and vice versa assuming all other conditions do not change. This is true from the African sociological perspective where the unmarried is a logo-parent to the extended family.

Eighteenth, the correlation matrix results did also find a feeble inverse relationship between the household expenditure on food (EFD) and the dependency ratio (DR). It implies that expenditure on food increases as the dependency ratio reduces. This can be attributed to the fact that children mature and gain financial independence at a time when their parents are self actualizing.
At this stage in life, most individuals prefer to eat high quality and expensive meals that makes them expensive.

Nineteenth, a 0.2341 correlation between household expenditure on its children’s education (ECE) and dependency ratio (DR) is not strong. The negative direction in the relationship implies that the higher the dependence ratio the lower the household expenditure on children’s education and vice versa ceteris paribus.

Twentieth, the correlation diagnosis found weak correlation between landholding (LND) and dependency ratio (DR) of 0.2155. The negative direction suggests that as dependency ratio increases landholding reduces and vice versa all else remaining steady.

Twenty first, table 4.1 correlation results do manifest a weak relationship between household wealth (WE) and the dependency ratio (DR) of -0.2236. The negative symbol hypothesizes that as dependency ratio increases household wealth reduces with the converse being equally true ceteris paribus.
Twenty second, the matrix output also revealed a weak causality between marital status (MS) and the highest level of education (EDL) attained by the household head of negative 0.047. The negative sign implies that unmarried household heads choose to remain unmarried the more educated they become.

Twenty third, expenditure on food (EFD) and the highest level of education (EDL) attained by the household head regressors were weakly joined by a coefficient of positive 0.0419. The positive slope attests that more educated individuals spend a lot on food and vice versa. This may be due to class identity pressure.

Twenty fourth, from table 4.1, it is also clear that a positive 0.2623 correlation between household expenditure on children’s education (ECE) and the highest level of education (EDL) attained by the household head is not strong. The symbol for the slope suggests that more educated individuals spend more on the education of their children ceteris paribus (could be because they want to retain the family status quo).
Twenty fifth, land size (LND) and the highest level of education (EDL) attained by the household head regressors posted a weak positive correlation coefficient of 0.3758. The direct relationship indicates that more educated individuals tend to own more land (possibly because they can afford) and vice versa all other conditions being held constant.

Twenty sixth, wealth (WE) and the highest level of education (EDL) attained by the household head regressors gave a weak positive correlation coefficient of 0.4441. The positive relationship shows that more educated individuals tend to have more wealth and vice versa all other factors remaining stable.

Twenty seventh, the matrix output also revealed a feeble positive correlation between marital status (MS) and household expenditure on food (EFD) of 0.011. The sign implies that unmarried household heads spend less on food than when they get married (possibly due to introduction of the child factor) and vice versa ceteris paribus.

Twenty eighth, there is a weak positive correlation between marital status (MS) and household expenditure on children’s education (ECE) of 0.0101. The sign
implies that unmarried household heads spend more on children’s education than when they get married (possibly due to the spouse participation in meeting children’s education budget out lay) and a reduction in the extended family dependency syndrome and vice versa ceteris paribus.

Twenty ninth, table 4.1 further shows that there is a weak positive correlation between marital status (MS) and household landholding (LND) of 0.0819. The positive sign implies that unmarried household heads tend to own more land than the married ones (since land acts as a security) and vice versa.

Thirtieth, table 4.1 also indicates a weak positive correlation between marital status (MS) and household wealth (WE) of 0.052. The positive sign implies that unmarried household heads tend have more wealth than the married ones (since wealth gives them the sense of security which they would otherwise find in their spouses) and vice versa.

Thirty first, the correlation between household expenditure on food (EFD) and children’s education (ECE) was reported to be positive 0.3294. This is weak nevertheless. The direct relationship suggests that the more a household head
spends on his/her children’s education the more he/she spends on their food and vice versa other conditions being constant. This is because generally educated children tend to prefer high quality and expensive food with the converse being equally true.

Thirty second, the correlation between household expenditure on food (EFD) and landholding (LND) was a weak positive 0.1312. The sign for the slope indicates that the more land one has the more he/she spends on food. This may be attributed to over commitment of land meant for food to the production of commercial crops like sugarcane and depending on market supplies to meet consumption needs.

Thirty third, the correlation matrix output showed a weak positive 0.1984 correlation between household expenditure on food (EFD) and Wealth (WE). It points to a thesis that the wealthier one becomes the more he/she spends on food and vice versa ceteris paribus. This could be due to preference for high quality and expensive food staffs that suit his/her social status.

Thirty fourth, from table 4.1 still, the correlation between household expenditure on children’s education (ECE) and landholding (LND) was a low positive 0.3769.
The sign for the coefficient indicates that the more landholding one has the more he/she spends on children’s education and vice versa holding other factors constant. This is because the extra income from land tilling gives him/her additional purchasing power.

Thirty fifth, the analysis of correlation between household expenditure on children’s education (ECE) and wealth (WE) was a low positive 0.3989. The positive sign for the coefficient indicates that the more wealth one has the more he/she spends on children’s education and vice versa ceteris paribus.

Lastly, there is a rather strong positive correlation between landholding (LND) and the amount of wealth (WE) owned by a household of 0.6486. this is because land is major source of wealth. However, according to Gujarati (1995), if the coefficient of correlation between \(X_1\) and \(X_2\) is not in excess of 0.80, it implies that there is no severe problem of multicollinearity. Thus, both land and wealth were retained since both are significant in explaining rural household saving.
4.2.1.2 Test for Heteroskedasticity
To test for heteroskedasticity, two methods were used: residual-versus-fitted plot and the Breusch-Pagan / Cook-Weisberg test. The diagnosis was important because under heteroskedasticity OLS estimators are unbiased and consistent, but no longer efficient, and the standard errors are biased. The Breusch-Pagan / Cook-Weisberg test reported the chi-square to be zero with the probability of the chi-square value being one. This was further confirmed by the vertically distributed residual-versus-fitted plot (appendix C, figure C-3). The study therefore failed to reject the null hypothesis of constant variance and concluded that there was no heteroskedasticity in the residuals and that the standard errors were Breusch-Pagan / Cook-Weisberg consistent.

4.2.1.3 Nonnormality Test
To test for nonnormality, two diagnostic tests were done: normal-probability plot of residuals and the histogram with a superimposed normal curve. Nonnormality renders significance tests invalid. The normal curve was found to be mesokurtic (mound-shaped) and reasonably symmetric (appendix C, figure C-1). This was confirmed by the normal probability plots (appendix C, figure C-2) in which the distribution of the residuals matches the normal distributions (straight line diagonal) rather well.
4.2.2 Descriptive Statistics

The characteristics of the distribution of continuous variables are presented in table 4.2 above. Jarque-Bera is a test statistic for testing whether the observations are normally distributed. The test statistic measures the difference of the skewness and kurtosis of observations with those from the normal distribution. Evidently, the Jarque-Bera statistic rejects the null hypotheses of normal distributions for permanent income (PIN), age (AG), dependency ratio (DR), level of education (EDL), expenditure on food (EFD), expenditure on children’s education (ECE), landholding ((LND) and wealth (WE). This was further confirmed by histograms with superimposed normal curves in appendix D (figure D-1 to figure D-8).
Kurtosis measures the peakedness or flatness of the distribution of observations. From 4.2 it is evident that the distributions for permanent income (PIN), age (AG), dependency ratio (DR), level of education (EDL), expenditure on food (EFD), expenditure on children’s education (ECE), size of land holding (LND) and wealth (WE) were all peaked (leptokurtic) relative to the normal. This was further confirmed by histograms with superimposed normal curves in appendix D (figure D-1 to figure D-8).

Skewness is a measure of asymmetry of the distribution of observations around its mean. The skewness of a symmetric distribution, such as the normal distribution, is zero. Positive skewness means that the distribution has a long right tail and negative skewness implies that the distribution has a long left tail. The statistics for skewness show that permanent income, age of household head, expenditure on food, expenditure on children’s education, landholding and wealth are positively skewed, implying that these distributions have long right tails (see appendix D, figures: D-1, D-2, D-5, D-6, D-7 and D-8). On the other hand, dependency ratio and the level of education of household are negatively skewed, meaning that these distributions have long left tails (see appendix D, figures: D-3 and D-4).
4.2.3 Regression Results, Interpretation and Discussion

To achieve the objectives of the study, both linear and log linear regressions were conducted. The linear regression had better results and hence adopted. The linear regression results are shown in the table below.

Table 4.3: Regression results of the impact of economic and demographic variables on rural household saving

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficients</th>
<th>t-Statistics</th>
<th>P-Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIN</td>
<td>0.2309714</td>
<td>5.61</td>
<td>0</td>
</tr>
<tr>
<td>AG</td>
<td>6417.499</td>
<td>1.06</td>
<td>0.289</td>
</tr>
<tr>
<td>DR</td>
<td>-3224.689</td>
<td>-1.4</td>
<td>0.163</td>
</tr>
<tr>
<td>EDL</td>
<td>33346.74</td>
<td>2.28</td>
<td>0.025</td>
</tr>
<tr>
<td>MS</td>
<td>457645.4</td>
<td>1.33</td>
<td>0.186</td>
</tr>
<tr>
<td>EFD</td>
<td>-2.475581</td>
<td>-1.74</td>
<td>0.084</td>
</tr>
<tr>
<td>ECE</td>
<td>-1.185838</td>
<td>-2.55</td>
<td>0.012</td>
</tr>
<tr>
<td>LND</td>
<td>-87320.41</td>
<td>-3.65</td>
<td>0</td>
</tr>
<tr>
<td>WE</td>
<td>0.2402097</td>
<td>4.98</td>
<td>0</td>
</tr>
<tr>
<td>Const</td>
<td>-472786.2</td>
<td>-1.14</td>
<td>0.258</td>
</tr>
</tbody>
</table>

ANOVA

F-statistic (9, 113) = 19.89  
Prob > F = 0.00000

R-squared = 0.6130  
Adj R-Squared = 0.5822

Source: Author

Table 4.3 above gives both model and parameter estimates. Analyzing model adequacy involves determining whether the regression model adequately fits the sample data. To achieve this goal, three statistics: R Squared ($R^2$) before and after adjusting for degrees of freedom, F-test and the p-value were reported. $R^2$ statistic measures the success of the regression in predicting the values of the endogenous
variable within the sample. It is the fraction of the dependent variable explained by the exogenous variables. The statistic will equal to one if the regression fits perfectly and zero if the regression fits no better than the simple mean of the endogenous variable. It can be negative if the regression does not have an intercept or constant. The F-statistic tests the hypothesis that all of the slope coefficients (excluding the intercept) in the regression are zero. The p-value, denoted as prob (F-statistic), is the marginal significance level of the F-test. From table 4.3 above, the adjusted $R^2$ was 0.582 up from 0.569 observed for thirteen variables. This implies that dropping retardant variables yielded a marginal contribution of 0.013. The study’s results show that 58.2 per cent of variations in rural household savings in Bungoma County are explained by the explanatory variables. Conversely, 41.8 per cent of unexplained variations in the dependent variable are taken care of by the random error term. The study’s results in table 4.3 report an F-statistic of 19.89 and the observed significance level (p-value) for the F-statistic of 0.000. The study found the p-value to be less than the significance level of $\alpha = 0.05$ for the two-tailed test. The study therefore failed to accept the null hypothesis that all slopes are equal to zero. This conclusion was cemented by the presence of non-zero coefficients in the coefficients column in table 4.3 above.
Parameter estimates were analyzed in order to determine the consistence of the signs of the slopes with economic theory and or a priori and the implication of explanatory variables on rural household saving. The t-statistic (column 2 of table 4.3) which is a ratio of an estimated coefficient to its standard error was used to test the hypothesis that a slope coefficient was equal to zero. The p-value, denoted as prob (t-statistic), is the marginal significance level of the t-test.

From the regression results in table 4.3 above, there is a strong positive influence of permanent income on a household's propensity to experience saving. Coefficient 0.2309714 for permanent income implies that ceteris paribus, a one shilling increase in permanent income yields 0.2309714 shillings increase in rural household savings. At 5 per cent level of significance, there is sufficient evidence that permanent income is an important determinant of rural household saving with a t-ratio of 5.61. The sign is consistent with economic theory. The Keynesian saving function and the Permanent Income Hypothesis of Friedman postulate a positive relationship between saving and income. Other empirical studies have confirmed the positive relationship postulated by Keynes and Friedman (Cornia et

Age of the household head, with a positive coefficient of 6417.499 failed to attain statistical significance despite having the correct sign. The same results were obtained by Khalek et al (2009). The failure of the age of the household head to achieve statistical significance (had a t-value of 1.06), unlike in the cases of Orbeta (2006), Newman et al (2008) and Oriaro (2003) can be due to acute unemployment problem facing Bungoma County. With reduced earning period, most of what is earned during this period is consumed-leaving barely nothing for consumption during old age.

The coefficient of dependency ratio was negative. This is consistent with the life-cycle model (Modigliani, 1954) predicts a negative relationship between an individual’s savings and the dependency ratio. A coefficient of -3224.689 implies that a one percentage point increase in the proportion of dependency reduces household saving by 3224.689 shillings. However, a t-value of -1.40, dependency ratio failed to achieve statistical significance at 1 per cent, 5 per cent and 10 per cent levels of significance. This implies that the life-cycle model motive for
saving to finance retirement is not important among Bungoma County rural households. Moreover, this could imply the dominance of the bequest motive among the elderly. According to the life-cycle hypothesis, an increase in the old-age dependency ratio may increase the individual's rate rather than reduce it (Bautisa et al, 1990; Oriaro, 2003 and Kibet et al, 2009).

The coefficient of education level of the household head had the a priori positive sign. A coefficient of 33346.74 implies that ceteris paribus, a one-unit increase in the level of education of the household head translates to 33346.74 shillings growth in rural household saving. Unlike in Lillydahl (1976), education level of household head was found to be a significant determinant of rural household saving with a t-ratio of 2.28. It was significant at 5 per cent level of significance. In a developing country like Kenya, such an annual increment from a further study of one year is practically not possible. The high savings might be attributed to the increase in efficiency in generating non-employment income. This finding is consistent with the findings of Rodríguez et al (1988), Oriaro (2003) and Amimo et al (2003).
The dummy variable for marital status had a coefficient of 457645.4. With a t-value of 1.33, the marital status dummy failed to attain statistical significance possibly due to unemployment problem. This is because during the single status period when one has few expenditure needs, some household heads happen to be unemployed. This implies that some household heads get employed when they are already married and with myriads of expenditure obligations to meet. This reduces their propensity to save. The same results were found by Rehman (2010).

Household expenditure on food (proxied by expenditure on staple food) was found to have a negative and insignificant coefficient. This is consistent with economic theory that higher marginal propensity to consume has a negative impact on saving via low income. Muyanga et al (1995) empirical findings support this thesis. A coefficient of -2.475581 suggests that ceteris paribus, a one shilling increase in the level of household expenditure on food leads to 2.475581 shillings reduction in rural household saving. At 5 per cent level of significance, household expenditure on food failed to attain statistical significance with a t-ratio of −1.74. The low expenditure on food can be associated with the high supply of agricultural products especially from Mount Elgon, Tongaren, Naitiri and Ndalu.
Settlement Schemes. This is confirmed by the Kenya Integrated Household Budget Survey of 2005/6 report.

Expenditure on children’s education had a negative and significant coefficient. A shilling increase in household expenditure on children’s’ education consequently reduces household savings by 1.1858338 shillings. The significant negative coefficient shows the high regard that Bungoma rural households have for investing in their children’s education in the fast growing education economy. The findings are in agreement with Rehman (2010) results.

The coefficient of the size of land holding was found to be -3.65. A coefficient of -3.65 suggests that ceteris paribus, a one shilling increase in the level of household expenditure on land acquisition leads to 3.65 shillings reduction in rural household saving. The negative and significant coefficient suggests that Bungoma rural households use part of their savings to acquire land which is a form of collateral for borrowing. This is in agreement with Fasoranti (2007) and Rehman (2010) findings.
The coefficient of wealth was found to be a significant 4.98. A coefficient of 4.98 suggests that ceteris paribus, a one shilling increase in the level of household expenditure on wealth acquisition leads to 4.98 shillings increase in rural household saving. The positive and significant coefficient suggests that for a given level of household saving, policies that increase wealth creation will have a positive impact on household saving. Interestingly, these findings contradict theory. Theoretically, wealth is expected to have a negative impact on savings through a reduction in savings from permanent income (Lillydahl, 1976; Schmidt-Hebel et al, 1989). The positive sign can be attributed to the culture of accumulating productive wealth among Bungoma rural households. It may also point to the existence of Granger causality between saving and wealth. Recent empirical studies have confirmed the findings (Amimo et al, 2003; Fasoranti, 2007; Newman et al, 2008 and Rehman, 2010).

Three variables failed to attain statistical significance. These were transitory income, family size and the sex dummy. The failure of transitory income to reach statistical importance despite having the right sign (positive), unlike in the case of Bautisa et al (1990) may be attributed to a stable supply side macroeconomic environment. With Bungoma rural being a largely agricultural based economy,
most households might have experienced stable income streams in the years that proceeded the study period.

Family size was found to be inversely related to household saving. Its failure to attain statistical importance unlike the findings of Cornia et al (1982) may be attributed to the Bungoma County’s rural community’s embracing of family planning techniques advocated by the Government of Kenya.

The failure of the sex dummy attain statistical significance contradicts the findings of the 1998/99 Labor Force Survey Report that said that female headed households spend less with the balance boosting savings. The failure of the sex dummy to significantly affect household saving in Bungoma County may be attributed to male chauvinism among the Bukusu people who are the predominant community in the area. Among the Bukusu community, it is a taboo for a household to be headed by a woman whose husband is still alive. Thus, this culture denies women a chance to play a leading role in the decision making process at household level.
The failure of spouse participation reach the significance threshold contradicts Rehman et al (2010) who found Spouse participation to significantly raise household saving in Pakistan. The insignificance may be attributed to the fact that most women in rural Bungoma are housewives or doing poorly capitalized businesses with bare subsistence income.

Finally, the constant had a negative coefficient of 1.14; implying that independent variables which were not included in the model have a negative net impact on the rural household saving.

Using Backward Elimination method for Stepwise regression, transitory income, family size composition, sex dummy and spouse participation were found to be retardant and consequently dropped. Their retardance was confirmed by the high statistical noise in their slopes evidenced by high standard errors.
CHAPTER FIVE

SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS

5.1 Introduction
This chapter summarizes the findings of the study. Besides, conclusions and implications of the findings for policy are discussed.

5.2 Summary and Conclusions
Literature review shows that most studies mainly estimate rural household saving using financial data. Ironically, surveys reveal a growing popularity of non-formal saving in a number of African countries, Kenya included. Using a synergy of both formal and informal data, the study identified permanent income, age, dependency ratio, education level, marital status, expenditure on food, expenditure on children’s education, landholding and wealth as the determinants of rural household saving in Bungoma County. Of these, permanent income, education level, expenditure on children’s education, landholding and wealth were identified to be more important. They were designated as policy variables. This implies that permanent income, education level, expenditure on children’s education, landholding and wealth have some significant relationship with rural household saving and therefore important for informing policy prescription. The study results indicate that permanent income, education level and wealth significantly contribute to rural household saving in Bungoma County. However,
expenditure on children education and landholding significantly lead to negative rural household saving. Policies to promote income growth, improve literacy and fast track wealth creation were recommended. Thus at 5 per cent level of significance the study failed to accept the null hypothesis that all coefficients of the model have no impact on rural household saving. On the other hand age, dependency ratio, marital status and expenditure on food were identified to be less important for policy designing but necessary for forecasting. They were designated as non-policy variables. They were retained in the model in order to avoid omitted variable bias in the remaining regression coefficients. The estimated regression model passed the goodness of fit test. It also passed the multicollinearity, normality and heteroskedasticity diagnostic tests. Interestingly, the study found Keynes’ motives for saving to hold but disapproved his assumption that income is the only important determinant of individual saving. Thus the study supported the existence of the life cycle hypothesis.

5.3 Policy Recommendations
Some major recommendations for policy can be prescribed from the results. First, the income policy. For Bungioma County to ride in the fast lane of the growth process, the focus of development policy by the Bungoma County Government should be to increase the productive base of the county’s economy. This will
promote income growth and reduce unemployment. For this to be achieved, a diversification of the county's resource base is imperative. The policy thrust should include the revival of the defunct industries like Pan Paper Mills in Webuye and Kitinda Dairy Factory in Bungoma Town. While many rural households in the County have embraced commercial agriculture, the County Government of Bungoma should undertake to protect them against exploitation from individuals and firms that are bent on making supernormal profits at the expense of the farmers' returns. The policy recommendation is informed by the fact that the agriculture sector is the mainstay of Bungoma County's economy. Additionally, regressive income tax policies should be abolished as an incentive for enhanced income and saving. They should be replaced with tax holidays and tax concessions to encourage rural investment.

Second, the literacy policy. To address the issue of access and to improve overall literacy levels, this study appreciates the Government of Kenya's strategic objectives of increasing Early Childhood Development Education (ECDE) by 50 per cent; raising the transition rate from primary to secondary level from 60 per cent to 75 per cent and raising the transition rate from secondary to university from 8 per cent to 15 per cent by 2012 on the basis of that of 2008 according to...
Kenya's Vision 2030. With the three goals having only been achieved partly by the end of 2012, the study's policy advice to the Government of Kenya is to review its implementation process against the revised timeline as it rolls out short term plans in order to minimize performance variances.

Third, education financing policy. In 2003, the NARC Government implemented the Free Primary Education (FPE), Free Day Secondary Education (FDSE) and Subsidized Boarding Secondary Education (SBSE) policy. Consequently, the Government's expenditure on education rose to above 7 per cent of the country's GDP. This translates to one of the highest expenditure levels per student out of the education GDP in Africa. Indeed this share of education out of the budget and commitment to education reflected in the percentage GDP dedicated to education is comparable only to that of a middle income country. Nevertheless, ten years down the line, the program is boggled with the implementation problems. Apart from schools flouting the fees guidelines and charging exorbitant sums of money, the Government has not revised the amount of allocations per child despite the increase in the cost of living since the policy objective was mooted in 2003. Thus to ensure effective implementation of the policy and affordability of education in Kenya, the Government of Kenya should tighten the monitoring and evaluation
mechanism. The Government should also ensure that the allocations are constantly reviewed to reflect the rising cost of living indices apart from creating a mechanism that will ensure that schools do not shift the burden to parents.

Fourth, land policy. In rural areas, land is a very crucial asset without which there would be no agricultural production. The study hails the government’s constitutionalization of the minimum land holding initiative. It also applauds the August House for abolishing the following repressive land laws: Land Control Act of 1967 whose mandate was to control transactions in agricultural land through Land Control Boards; Government Lands Act; Registration of Titles Act; Land Titles Act; Registered Land Act; Wayleaves Act and Land Acquisition Act. The study recommends that the Government of Kenya facilitates the effective application of the new land laws (The Land Act, Land Registration Act and the National Land Commission Act). The study also recommends for the inclusion of the Land Control Act on the list of repealed Acts by the Attorney General. This will ensure the application of the retrogressive Act is stopped. Besides, the Government should also put into place the necessary mechanism to facilitate the implementation of the minimum land holding policy. Further, the Government should depoliticize land as a productive asset.
Fifth, the wealth creation policy. The study recognizes the need for Bungoma County Government to adopt an asset building policy. This is because economic security throughout the life course is intrinsically linked to asset ownership. The majority of current social policies in Kenya focus primarily on income supports and social services. However, building assets can also help individuals, families and communities expand their economic horizons. An-asset based approach could compliment this traditional approach and could shift the focus to the long term development of individuals, families and communities. Asset-based policies may include policies that promote the accumulation and preservation of financial wealth and tangible non-financial assets. More specifically, these policies should target low-income households. This is because low-income individuals and households often do not participate in existing asset-based mechanisms. This is because this population is unlikely to own homes, investments or retirement accounts, where most asset-based policies are targeted.

Lastly, it is important for one to note that this study concentrated on Bungoma County and therefore its results may have limited relevance to other counties in
Kenya due to disparities in demographic structures and resource endowment differentials.

5.4 Direction on Further Research
Further work on the subject should one; examine the impact of liabilities on rural household saving. Two, research on the effect of the extended family on rural household saving might also be beneficial. Three, there is a particular need for research using low-incomes samples. Four, future studies on rural household saving in Bungoma County should also address informal savings known as Kumukanda. Through Kumukanda, households group themselves and form schemes where they contribute towards informal savings. The study found this to be a popular informal saving arrangement because of few legal and bureaucratic requirements for accessing credit from such schemes. Five, rural Bungoma County consists of two ethnic groups: Bukusus and Sabaots. The study failed to appreciate this ethnic diversity nevertheless. Thus future studies should consider assessing the impact of ethno-linguistic background on household saving. Six, at the empirical level, it would be interesting to investigate further the relation of income to the rest of the independent variables. Seven, dependency should be decomposed into young and old ratios. Lastly, future studies on rural household
saving in Bungoma County should consider using panel evidence so that saving behaviour is assessed across both households and time.
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APPENDICES

APPENDIX A: QUESTIONNAIRE

Preliminary Information

(a) Purpose of the questionnaire

The questionnaire intends to capture the necessary data that will assist the researcher to build an econometric model for estimating the impact of the factors that determine rural household saving in Bungoma County and their implication for policy.

(b) Confidentiality

The information volunteered by the respondent will be treated with at most confidentiality

2. How old are you? ----------------------------------~--------------------------------------

3. What is your sex? (Please the tick appropriate answer) Female ☐  Male ☐

4. (a) What level of education did reach? Primary ☐ Secondary ☐ tertiary ☐
    college ☐ University ☐

(b) If the answer in (a) above is primary, indicate the level attained:

    1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐

(c) If the answer in (a) above is secondary, indicate the form reached:

    1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐
(d) If the answer in (a) above is tertiary, how long did you take to complete the course?

1 year □  2 years □  3 years □  4 years □  5 □

(e) If the answer in (a) above is university, indicate the level attained:

Bachelor □  Master □  Doctorate □

5. What is your marital status? (Tick the appropriate answer)

Married □  □

Unmarried □ □

6. Family Size Information

(Please complete the table below)

<table>
<thead>
<tr>
<th>Age(years)</th>
<th>0-17</th>
<th>18-64</th>
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7. (a) Do you own some land? (Tick the appropriate answer).

Yes □ □

No □ □

(b) If the answer in (a) is yes, state the number of hectares. -------------------------
8. Assets and Liabilities as at this Date

(Please fill a appropriately)

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9. Income sources

(Please fill the table appropriately)

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<td>Business income (shop)</td>
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10. From the total in 6 above, how many family members don’t earn any income from the sources classified under 9 above?--------------------------
11. Does your spouse participate in financing the household budget? (Tick the appropriate answer)  Yes □ □  No □ □

12. Expenditure on staple Foods

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<th>Cost(Sh / Kg)</th>
<th>Expenditure(Sh pm)</th>
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13. Expenditure on Children’s Education in 2012

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<th>Approx Fees per Year</th>
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### APPENDIX B: RAW DATA

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| Source: Compiled by the author from questionnaires |
| NOTE: S denotes dependent variable which is household saving in the study; |
| PIN represents permanent income; |
| TIN stands for transitory income, |
| FS signifies Family Size; |
AG denotes Age of household head;
SX is Sex of household head;
DR abbreviation of Dependence Ratio;
EDL is the short form for Education Level of household head;
MS is the abbreviation marital status of the household head;
SP stands for spouse participation;
EFD represents household expenditure on staple food;
ECE denotes expenditure on household education;
LND is land size;
WE denotes wealth.
APPENDIX C: DIAGNOSTIC TESTS

Figure C-1: Histogram for Residuals with Superimposed Normal Curve

Regression Standardized Residual

Source: Author
Figure C-2: Normal P-P Plot of Regression Standardized Residual

Source: Author
Figure C-3: Fitted -Verses -Residual Plot

Source: Author
APPENDIX D: DISTRIBUTION PROFILE OF VARIABLES

Figure D-1: Histogram with Superimposed Normal Curve for Permanent Income

Source: Author
Figure D-2: Histogram with Superimposed Normal Curve for Age

Source: Author
Figure D-3: Histogram with Superimposed Normal Curve for Dependency Ratio

Source: Author
Figure D-4: Histogram with Superimposed Normal Curve for Level of Education

Source: Author
FigureD-5: Histogram with Superimposed Normal Curve for Expenditure on Food

Std. Dev = 31953.30
Mean = 39284.9
N = 123.00

Source: Author
Figure D-6: Histogram with Superimposed Normal Curve for Expenditure on Children’s Education

Source: Author
Figure D-7: Histogram with Superimposed Normal Curve for Land Holding

Source: Author
Figure D-8: Histogram with Superimposed Normal Curve for Wealth

Source: Author
APPENDIX E: LOCATION OF BUNGOMA COUNTY IN KENYA

Source: Commission for Revenue allocation, Kenya