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TRENDS AND DETERMINANTS OF HOUSEHOLD USE OF FINANCIAL SERVICES IN GHANA

BY

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DECLARATION

I, **Theodora Akweley Asiamah,** do hereby declare that with the exception of references to other people's work which has been duly acknowledged, this thesis is the result of my own research carried out at the Institute of Statistical, Social and Economic Research, University of Ghana. This work has never been presented either in whole or in part for the award of any academic degree in this University or any other institution.

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THEODORA AKWELEY ASIAMAH **DATE**

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We the undersigned supervisors certify that this is an original work we supervised the candidate to produce. We are convinced that this thesis meets the required standards set by the University of Ghana for the award of a Doctor of Philosophy Degree.

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DEDICATION

This thesis is dedicated first to the Glory of God, then to my husband, Knutsford Asiamah, and to my children, Alexander, Knutsford Junior and Johannes.

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LISTS OF ACRONYMS/ABBREVIATIONS

AFI	Alliance for Financial Inclusion
AME	Average Marginal Effects
ARB	Association of Rural Banks
ATM	Automated Teller Machine
BoG	Bank of Ghana
CUs	Credit Unions
DMBs	Deposit Money Banks
ERP	Economic Recovery Program
FINSAP I	Financial Sector Adjustment Programs I
FINSAP II	Financial Sector Adjustment Programs II
FINSSP I	Financial Sector Strategic Plan I
FINSSP II	Financial Sector Strategic Plan II
FIs	Financial Institutions
GDP	Gross Domestic Product
GHAMFIN	Ghana Microfinance Institutions Network
GLSS	Ghana Living Standards Survey
IAA	Independence of Irrelevant Alternatives
MFIs	Microfinance Institutions

MNL	Multinomial Logit
MPR	Monetary Policy Rate
NBFIs	Non-Bank Financial Institutions
NHIS	National Health Insurance Scheme
OECD	Organisation for Economic Co-operation and Development
RAFiP	Rural and Agricultural Finance Program
RCBs	Rural and Community Banks
RFSP	Rural Financial Services Project
ROSCAs	Rotating Savings and Credit Associations
S & Ls	Savings and Loans Companies
SAPs	Structural Adjustment Programs
SAT	Sinapi Aba Trust
VSLAs	Village Savings and Loans Associations
WWBG	Women's World Banking Ghana

ABSTRACT

Access to and use of formal financial services, namely savings, credit and insurance products, have far-reaching benefits for households and the economy at large. However, there is limited use of formal financial services and rather, a dependence on informal institutions of saving, borrowing and insurance in developing countries. In order to increase demand for formal financial services by households and micro enterprises, financial sector reforms were carried out extensively in the late 1980s and early 1990s in Ghana. Using the Ghana Living Standards Survey (GLSS) data and the Global Findex data, the study examined the trends in saving and borrowing by individuals from 1991 to 2014. Furthermore, using the Finscope Ghana 2010 data, the study employed Multinomial Logit regression in examining the factors that influence individuals' decision on saving, borrowing and insuring using formal versus informal institutions. Finally, the third, fourth, fifth and sixth rounds of the GLSS data were combined to examine the factors that influence the incidence of credit constraints among household heads, and also to assess changes in the incidence of credit constraints among female household heads over time. A Heckman Probit regression model was employed in the analysis.

The results show a relatively stable trend in the proportion of individuals that saved from 1991 to 2006. However, from 2006 to 2013, there was a large increase in the proportion that saved. There was an oscillating trend in the pattern of borrowing from 1991 to 2014. Over the years, there was a general decline in the proportion of individuals that borrowed from informal institutions, and an increase in the proportion that borrowed from formal institution. Over the years, a lower proportion of females and rural residents saved when compared to the proportion of males and urban residents that saved. Similarly, a lower proportion of the poor saved and borrowed from all kinds of institutions than the non-poor. Furthermore, the poor, particularly in rural areas were more likely to face credit constraints than the non-poor. The study provides support for the life-cycle hypothesis both cross-sectionally and over time.

Financial literacy increases the probability of using financial services from formal institutions. Education and wage or salaried employment also increases the probability of saving and insuring in formal institutions, while non-salaried employment increases the probability of saving and insuring in informal institutions. Rural residents were generally more likely to save with informal institutions. In urban areas, females and individuals with low education were more likely to save with informal institutions, whilst in rural areas, those who were previously married, such as the divorced, separated or widowed were more likely to use informal saving institutions. In both urban and rural areas, recipients of local remittances were more likely to save in informal institutions. When it comes to the use of credit, the aged in urban areas were less likely to borrow from all kinds of institutions. Individuals who had negative experiences with financial institutions were more likely to borrow from informal institutions. For insurance, the lack of understanding of insurance increased the probability of insuring with informal institutions. The study also showed that having tertiary education as a household head reduces the incidence of credit constraints. Furthermore, the poor, widows and those who had separated or divorced in rural areas were more likely to face credit constraints. The aged in urban areas also had higher probability of facing credit constraints. In the general population, females were generally less likely to face credit constraints than males. However, the incidence of credit constraints among females increased in 2012 relative to 1991.

The study recommends the promotion of financial education and formal education to enhance the use of formal financial services. The study also recommends the design of credit products to suit the needs of the poor, widows, the divorced or separated in rural areas, as well as the aged in urban areas. Finally, the study recommends the intensification of programs that support rural financial institutions in order to increase access to formal saving products by rural residents.

CHAPTER ONE

INTRODUCTION AND OVERVIEW OF STUDY

1.1 Background

The use of financial services that are well designed for different market segments, including the poor, has far-reaching benefits for economic growth. Access to financial services is believed to improve incomes and enhance asset accumulation, which improves the welfare of households. An increase in income also enables investment in human capital and health, and this increases productivity and economic growth (Shem, Misati & Njoroge, 2012; Claessens, 2006). Access to and use of financial services by households also results in positive change in income and eventually provides an opportunity for the poor to rise above poverty traps. This also serves as a tool for female empowerment (Beck, Demirgüç-Kunt & Levine, 2007a; Ashraf, Karlan & Yin, 2010).

The literature on finance in African countries clearly reveals the existence of financial dualism whereby formal and informal financial institutions co-exist and both are used extensively by households and enterprises (Germidis, 1990; Bose, 1998; Aryeetey, 2008). The literature includes reports of active informal financial institutions of saving and borrowing in African countries which serve low-income households who are either voluntarily or involuntarily excluded from the formal financial system (Besley, 1995; Besley & Levenson, 1996; Handa & Kirton, 1999; Kedir & Ibrahim, 2011). There are also different levels of informal insurance arrangements, which offer various degrees of insurance. These include agricultural practices of crop diversification, receiving private transfers from family members, mutual insurance groups such as burial societies, welfare groups, religious groups, and other societies that offer support for members during periods of shocks (Platteau, 1997; Besley, 1995; Dercon, 2002; Mariam, 2003; LeMay-Boucher, 2012). Ghana for instance, has a vibrant informal financial sector that operates concurrently with the formal sector. There are several *susu* groups, informal associations that serve savings and credit purposes, welfare groups and societies that provide insurance functions. The financial functions of many of such informal groups are inter-related. *Susu* groups for instance primarily serve the purposes of saving, but also serve insurance purposes when savings are made available during shocks (Steel, Aryeetey, Hettige & Nissanke, 1997; Aryeetey & Gockel, 1991).

Formal financial services are widely considered to be superior to informal financial services and therefore worthy of promotion. This opinion is supported by the shortcomings of informal financial services as well as the advantages of formal financial institutions over informal institutions. Some authors maintain that, although informal financial services meet the demands of low-income households, they are limited in sustainability and they lack the ability to provide extensive financial intermediation to a wider population (Dercon, 2002; Loewe, 2006; Bhattamishra & Barrett, 2010). Other authors support the superiority of formal financial services by projecting their benefits at the household and macroeconomic levels. At the household level, the use of formal financial services has the ability to increase income and eliminate poverty traps. As low-income households save through formal sources, it creates the opportunity to access credit for investment in income-generating activities (Beck et al., 2007a; Allen, Demirgüç-Kunt, Klapper & Martinez Peria, 2012). At the macroeconomic level, as many consumers increasingly save through the formal system, this increases aggregate savings and the volume of investible resources which can be availed to borrowers for productive ventures and thereby result in long-run economic growth (Ghosh & Vinod, 2017).

Notwithstanding the substantial benefits of formal financial services, the literature reports limited demand for formal financial services in developing countries. This is attributed to low levels of financial literacy and high transaction costs in accessing formal financial institutions (Beck, Demirgüç-Kunt & Martinez Peria, 2007b; Honohan, 2008; Barslund & Tarp, 2008; Cole, Sampson & Zia, 2011). In addressing the limited demand for formal financial services, many studies have examined the factors that determine demand for formal financial services alone. This study contributes to knowledge by systematically examining the factors that influence the use of formal versus informal sources of savings, credit and insurance. The problem of limited demand can be tackled from either the perspective of the consumer (demand approach) or the perspective of the financial institutions (supply approach). As much as supply factors are also important to induce demand, assessing demand factors presents a stronger case for social policy as excluded groups are identified for policy and institutional support. Moreover, the Bank of Ghana (BoG), as the regulatory authority is in touch with financial institutions through supervision, through which some of the supply-related problems can be addressed.

Financial inclusion implies increasing access to and use of formal financial services by households and micro enterprises at affordable prices (Arun & Kamath, 2015; Allen, Demirgüc-Kunt, Klapper & Martinez Peria, 2016; De Koker & Jentzsch, 2013). Financial inclusion enhances efficiency in financial intermediation. As formal credit, for instance, is made available to households and firms that are excluded, the averge credit risk of the loan portfolio is reduced. This in turn enhances the recycling of funds, and a larger number of households can also have access to credit (Bayoumi & Melander, 2008; Ghosh & Vinod, 2017). In order to reduce the rate of exclusion in the formal financial sector, financial inclusion programs have taken on a two-pronged approach. The first approach is to increase access to formal financial services by low-income groups and small-scale enterprises that have been excluded from the formal financial system. The second approach to financial inclusion is to deal with some of the limitations of the informal institutions through embracing them in the mainstream financial system, whereby they can be regulated (Steel, 2013).

Economic theory indicates that the formal credit market does not clear itself by price. This is because the market is characterised by incomplete information, which is associated with moral hazard and adverse selection. Lenders have limited information on borrowers, and in the quest to acquire information about borrowers, high transaction costs are incurred. This leads to non-price credit rationing and households can only borrow under heavy-collateral contracts. Consequently poor households that do not have collateral are denied credit. This has consequences for poverty reduction and growth as it limits investment in business activites (Hoff & Stiglitz, 1990; Barham, Boucher & Carter, 1996; Boucher, Carter & Guirkinger, 2008; Fletschner, 2009).

African countries, including Ghana, carried out financial sector reforms from the late 1980s to the early 1990s. In Ghana, financial sector reforms involved the launch and implementation of the Financial Sector Adjustment Program (FINSAP) in 1988. As part of this program, the legal and regulatory environment were reviewed and there was an amendment of existing banking laws, which provided room for the entrance of foreign banks and non-bank financial institutions. The program also involved deregulation of interest rates and the abolishment of credit ceilings. In effect, government monopoly over the financial sector was halted and commercial banks were allowed to determine their own interest rates. Efforts were made to restructure distressed banks through recapitalization. Furthermore, these efforts were made possible through intensified supervision from the Central Bank (Aryeetey, Nissanke & Steel, 2000; Biekpe, 2011; Adu, Marbuah & Tei Mensah, 2013; Akpandjar, Quartey & Abor, 2013). With these reforms, it was expected that access to and use of formal financial services by households and micro enterprises would be enhanced as against the use of informal financial services (Aryeetey, 2008; Beck & de la Torre, 2006). It has been almost three decades since the reforms, and there have been developments in the financial sector which have resulted in a more expanded and diversified financial sector. However, the current trend on financial inclusion is unclear. This study aims at enhancing knowledge relevant to financial inclusion by investigating the use of formal versus informal sources of savings, credit and insurance and also by investigating issues of credit constraints.

1.2 An Overview of Ghana's Financial Sector

1.2.1 Developments in the Financial Sector

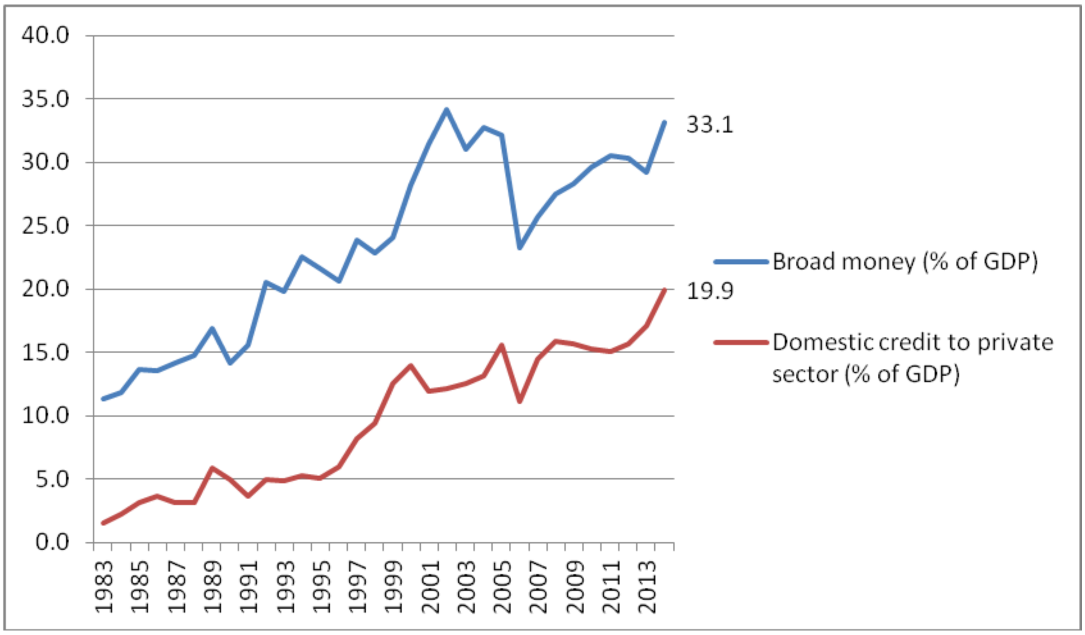
As part of the Structural Adjustment Program (SAP) and the Economic Recovery Program (ERP), financial sector reforms were introduced in 1987 (Biekpe, 2011; GoG, 2012). This has yielded positive results so far, as the financial sector has experienced an extensive transformation over the last three decades and is still in the process of modification. The most interesting aspect of the transformation is the advent of institutions that have increased the supply of financial services to households and entities that were initially excluded from the financial system. More so, the financial system is much more diversified than it was prior to the reforms. For instance, in 1991 there were 11 Deposit Money Banks (DMBs) and 124 Rural and Community Banks. As at 2016 year ending, there were 33 DMBs, 17 of which were foreign-controlled and 16 were Ghanaian controlled. The number of RCBs increased to 141 and there were 64 Non-Bank Financial Institutions (NBFIs) and 564 microfinance institutions (MFIs) that were not in existence as at 1991. In 1991, certain institutions such as the Social Security and National Insurance Trust, the National Trust Holding Company and the Ghana Stock Exchange, and a large number of Insurance Companies were described as NBFIs. These are currently not classified as NBFIs as they are not regulated by the Central Bank (ISSER, 1992; BoG, 2017).

In line with the SAP, the "Financial Sector Adjustment Programs (FINSAP I and II)" were embarked upon to propel the reforms. In 1987, FINSAP I was launched to correct the deteriorated state of the financial sector. During that period, many banks in Ghana were insolvent as a result of mismanagement and government interference. Plans such as the "Financial Sector Strategic Plan (FINSSP I and II)" were later set up in the 2000s to intensify financial inclusion. FINSSP I was implemented from 2003 to 2008 and FINSSP II was implemented from 2012 to 2016 (Biekpe, 2011; GoG, 2012; Ackah & Asiamah, 2016).

There has been an improvement in monetary indicators such as domestic credit to private sector as a percentage of GDP and broad money supply as a percentage of GDP. These indicators have increased steadily (Figure 1.1). Broad money supply as a percentage of GDP increased from 11.3% in 1983 to 33.1% in 2014. Domestic credit to private sector as a percentage of GDP also increased from 1.5% in 1983 to 20% in 2014 (World Bank, 2016).

Prior to 1985, the financial sector was directed by interventionist policies. The banking sector was dominated by state-owned banks which channelled credit to the government's designated productive sectors of the economy through selective interest rates and credit ceilings. The BoG adjusted all interest rates periodically in order to promote investment in the real sectors. In 1973 for instance, the lending rate was fixed at a maximum of 10% per anum, and was further adjusted to 9% per anum in 1980. In 1983, a preferential interest rate of 8% per anum was ordered on loans and advances to small-scale farmers (Aryeetey et al., 2000).

Figure 1.1: Trends in Broad Money Supply and Domestic Credit to Private Sector, 1983-2014



Source: World Bank, 2016

These repressive policies had a negative impact on the financial sector as it failed to mobilize resources for growth and development efficiently, and Ghana lagged behind other African countries in terms of financial depth (Aryeetey et al., 2000). Furthermore small-scale enterprises and households were denied credit facilities due to higher transaction costs in dealing with them (Aryeetey, 1996). One significant result of these repressive policies was the emergence and growth of the informal financial sector as demand for informal financial services increased (Steel et al., 1997).

At the beginning of the 1980s, the banking sector experienced a decline in performance, and needed recapitalization due to poor asset management and default of state-owned enterprises. By 1983, as drought aggravated the existing economic crisis, it became obvious that the economy needed a major economic reform. At that time, international bodies such as the World Bank and the International Monetary Fund objected to interventionist policies and rather proposed a liberalized set of policies for development. This philosophy was accepted by Ghanaian policy-makers and they embarked on reforming the financial sector through liberalized policies which began extensively in 1985 (Aryeetey et al., 2000). The set of reform policies included liberalizing foreign-exchange markets through devaluation, introducing auctions for foreign exchange (in 1986) and treasury bills (in 1987), a decontrol of interest rates on lending and deposits (in 1987), and the abolishment of sectoral credit ceilings (in 1988), except for credit to the agricultural sector, which was controlled to some extent by the government (Aryeetey et al., 2000; Biekpe, 2011).

The liberalization of the sector also affected the legal and regulatory infrastructure, which had a reverse relationship with the reforms within the sector. As reform measures were put in place, it resulted in the need for amending existing laws to support the expansion in the sector. In the same manner, new laws which were passed also gave way to eventful changes within the sector. The legal infrastructure for banking operations experienced amendments since 1976 to strengthen the banking system. Starting from the Financial Institutions Act (1976), there was an amendment in 1989 and again in 2004 (Act 673). The Banking Law was again amended in 2007 (Act 738). These amendments were necessary to streamline issues of minimum capital requirement, reporting of financial institutions, and guideliness for lending (Quartey & Afful-Mensah, 2014).

Developments in the legal and regulatory infrastructure for non-bank financial activities were very remarkable. The passing of the Non-Bank Financial Institutions (NBFI) Law in 1993 resulted in the emergence of various non-bank financial institutions, some of which employed the methodology of microfinance to serve the informal economy (Aryeetey et al., 2000; Quartey & Afful-Mensah, 2014; GHAMFIN, 2014). The expansion of these institutions in the 2000s created the need for an amendment of the governing law in 2008 to Non-Bank Financial Institutions Act, 2008 (Act 774). Institutions such as savings and loans companies and microfinance companies that were not in existence during the 1970s were created to serve low-income households. With further growth in the microfinance industry, further changes were carried out in the regulatory framework by the BoG in 2011. This led to the introduction of a four-tiered classification of institutions within the microfinance industry, with differences in regulatory dictates and entry requirements. Old institutions such as the *susu* collectors and moneylenders which were not monitored are now required to register with the BoG and be regulated by their apex associations in order to enhance effective provision of savings and loans products to households. In this manner, these institutions were included in the formal financial system (Steel, 2013; GHAMFIN, 2014).

In the informal sub-sector, there were not many policy-related changes, as conscious reform efforts were not directed at this sub-sector. Nevertheless, this sector experienced growth through spillovers of economic growth. Liberalization of trade activities created the opportunity for expansion of existing businesses and start up of new businesses. This increased demand for credit by private entrepreneurs who sought for credit from the informal sector. In the same way, surplus funds from private entrepreneurs, especially traders, were saved with *susu* collectors and other informal sources. Thus, during the reform and immediately afterwards, informal financial institutions flourished. Activities of trade creditors, savings and credit associations, moneylenders, *susu* groups and collectors (these were then part of the informal sector) were on the increase (Steel et al., 1997; Aryeetey et al., 2000). In the late 1980s, *susu* companies developed a strategy of promising their clients loans after making deposits continuously for six months. This was not sustainable due to poor management and liquidity problems. Most of these activities collapsed and re-emerged as savings and loans companies after the Non-banking Financial Institutions Act 1993 was enacted (Aryeetey et al., 2000).

It is obvious that the financial sector reform policies were directed at the formal financial sector. This portrays the belief in the financial repression hypothesis that liberalization of the formal financial sector results in a decline of the informal financial sector. In the case of Ghana, this did not occur immediately. It is also evident that a shift from interventionist policies to liberalized policies resulted in an increase in the numbers of financial institutions, which suggests an increase in the supply of formal financial services. It is not clear if active demand of formal financial services has been on the increase relative to demand for informal financial services.

1.2.2 Structure of Ghana's financial sector

The financial sector of Ghana is made up of the formal and informal sub-sectors in a continuum of formality. The formal sub-sector constitutes institutions that are licensed by the central bank and/or require registration by their apex associations. The informal sub-sector on the other hand consists of financial intermediaries that are neither licensed nor registered by the central bank nor any body (GHAMFIN, 2014; Aryeetey, 2005). It must be noted that there is a continuum of formality and informality within the formal and informal sub-sectors respectively and in some cases the separation is unclear.

The formal sub-sector includes activities of institutions regulated under the Banking Act, such as commercial banks, rural and community banks (RCBs) and those regulated under the NBFI Act, much of which belong to the microfinance industry. The microfinance industry is important for providing households and small and micro enterprises with a range of savings, loans and insurance products as well as non-financial services such as training on business practices. The unique feature of the financial sector of Ghana is the strong presence of the microfinance industry, which was initiated by activities of RCBs, often in collaboration with NGOs in the 1990s. In the mid 1990s, some NGOs were tranformed into S&Ls, which further enhanced the growth of the microfinance industry. Later on in 2011, the micro finance regulations recognized various institutions that employ microfinance methodologies in financial outreach as microfinance institutions (Steel & Andah, 2003; GHAMFIN, 2014).

The microfinance industry is made up of four tiers that have different registration requirements and mandates. Tier 1 includes Savings and Loan Companies (S&Ls), and RCBs. Both institutions are licensed and regulated by the BoG. Savings and loans companies are regulated under the NBFI Act 1993, as amended in 2008, whilst RCBs are regulated under the Banking Act of 2004, as amended by Act 738 of 2007. Tier 2 consists of Credit Unions (CUs) and microfinance companies. CUs are registered by the Department of Cooperatives and currently regulated by their apex body, the Credit Union Association. Although provisions were made in the NBFI Act 1993 for CUs to be regulated by the BoG, it is currently not doing so as a framework for their regulation is being developed. Microfinance companies are licensed and regulated by the BoG under the NBFI Act. These are private companies that are incorporated under the companies code 1963 as companies limited by shares. Financial non-governmental organizations (FNGOs) and money lending comapanies are categorized under Tier 3. These require licensing from the BoG and are strictly to perform borrowing functions and not to mobilize deposits. Tier 4 consists of *susu* collectors and individual moneylenders. These institutions require licensing and it is mandatory to register with their apex associations which perform supervisory and regulatory functions and report to the BoG (GHAMFIN, 2014).

The informal sub-sector is made up of both institutionalized and non-institutionalized activities which provide savings, credit and insurance to households and micro enterprises. This includes institutionalized sources such as rotating savings and credit associations (also known as *susu* groups), village savings and loans associations, and other self-help groups through which people save, access credit and insure themselves. Non-institutional sources include relatives and friends, landlords, trade partners and other sources which are not tracked (GHAMFIN, 2014; Alabi, Alabi & Ahiawodzi, 2007).

1.3 Problem Statement

There is a growing body of literature that suggests a generally limited demand for formal financial services by developing countries relative to developed countries (Beck et al., 2007b; Honohan, 2008; Barslund & Tarp, 2008; Cole et al., 2011). In developing countries, for instance, 54% of adults are reported to own accounts with formal financial institutions as against 94% of adults in high-income OECD economies in 2014 (Demirgüç-Kunt, Klapper, Singer & Van Oudheusden, 2015). There is also evidence in the literature of informal institutions of savings, credit and insurance that are active in developing countries. Limited demand for formal financial services is attributed to the existence of a large informal sector which encourages financial transactions through informal systems. This in turn limits the ability of households to start and expand their own businesses, invest in education and also to manage risks effectively. At the macroeconomic level this impedes the growth in aggregate savings and investible surplus and in the long-run affects economic growth. Thus limited demand for formal financial services remains a problem for development.

Owing to limited demand for formal financial services in developing countries, a number of studies have been carried out on the determinants of demand for various components of financial services. Studies conducted on the factors that drive demand for saving include Carpenter and Jensen (2002), Elven and LeMay-Boucher (2016), Cole et al.

(2011), Dupas and Robinson (2013), Efobi, Beecroft and Osabuohien (2014) and Swamy (2014). With the exception of Carpenter and Jensen (2002), and Elven and LeMay-Boucher (2016), none of these studies paid attention to the factors that determine saving in formal versus informal institutions. Consequently, there is limited knowledge of such factors. This study varies from these two studies in terms of methodological approach.

Similarly, several studies on factors that influence demand for credit overlook the determinants of borrowing from formal financial institutions *vis-**à**-vis* informal institutions and focus on only the determinants of borrowing from only formal institutions (see for example Togba, 2012; Duy et al., 2012). Other studies also focused on only the determinants of borrowing from informal institutions (see for example Adugna and Heidhues, 2000). Also, many studies on determinants of demand for insurance did not pay attention to the determinants of insuring from formal institutions *vis-**à**-vis* informal institutions and only focused on formal insurance (see for example Giné, Townsend and Vickery, 2008; Ito and Kono, 2010; Kakar and Shukla, 2010; Akotey, Osei and Gemegah, 2011). In the case of Ghana, where an active informal financial sector exists, an understanding of the factors that drive the use of formal financial services alone is not adequate to understand the problem of limited demand for formal financial services. In Ghana, continued dependence on informal institutions of saving, borrowing and insurance, requires a research that examines the use of financial services from formal and informal institutions in order to understand the problem of limited demand for formal financial services.

Giving credence to the importance of formal financial services, Ghana, just like other developing countries embarked upon extensive financial sector reforms in the late 1980s. As interest rates on loans were reduced and a large number of financial institutions entered the market, it was expected that this would induce demand for loans and savings products in the formal sector and eventually decrease demand for informal loans and savings products (Beck and de la Torre, 2006; Aryeetey, 2008). Earlier studies conducted after the reforms reveal a pattern which was short of this expectation. Aryeetey (1996) assessed the formal financial sector after the reforms and observed a significant non-price rationing of small borrowers in the formal sector. Steel et al. (1997) also studied both formal and informal financial institutions after the reforms and concluded that the informal financial sector continued while there was little effect of the reforms on financial deepening in the formal financial sector. These studies were carried out two decades ago. For the past two decades, the financial sector has gone through several transformations, such as the entrance of foreign banks that have increased competition, and the budding of non-banking financial institutions that focus on socio-economic groups that were previously excluded in the financial sector. These changes may have had an impact on the use of formal versus informal financial institutions.

Many theoretical and empirical studies support the view that access to credit has poverty reduction consequences and also eliminates poverty traps among poor households (Guirkinger, 2008; Nader, 2008; Luan & Bauer, 2016). However, economic theory indicates the probability of non-price credit-rationing in the formal credit market as a result of information asymetry. Consequently, collateral is required to support credit requests and credits are provided with uncertainty. Following this, poor households seek credit from informal sources (Hoff & Stiglitz, 1990; Barham et al., 1996; Boucher et al., 2008). A recent study from China also indicates that the poor encounter credit constraints in the informal sector (Yuan & Xu, 2015). Thus the problem of credit constraints remains a challenge in financial inclusion efforts and requires attention.

Stemming from the credit rationing hypothesis, some socio-economic groups are more or less likely to experience credit constraints than other groups. Interestingly, studies on determinants of credit constraints have largely focused on firms (see for example Oduro et al., 2016; Hansen & Rand 2014a; Hansen & Rand, 2014b; Aterido, Beck & Iacovone, 2013). A few studies that have been carried out so far at the household level vary in context (see for example Barslund & Tarp, 2008; Ali, Ali, Deininger & Duponchel, 2014). In the case of Ghana, knowledge on the factors that determine the incidence of credit constraints at the household level is lacking.

1.4 Research Objectives

Primary objective: To examine the use and determinants of financial services, namely, credit, savings and insurance at the household level.

Specific Objectives:

1. To examine the trends in household saving and use of credit between 1991 and 2014.

2. To analyse the determinants of saving, borrowing and insuring through formal versus informal sources.

3. To analyse the determinants of credit constraints by households.

1.5 Research Questions

The study will be guided by the following research questions:

1. How has the consumption of financial services changed over time?

2. What factors influence households' decisions on use of formal versus informal sources of financial services?

3. What factors influence the incidence of credit constraints, and how differently do female and male household heads face credit constraints?

1.6 Statement of Hypotheses

i. Over time, the proportion of households using financial services does not change and the balance in use of formal versus informal financial services does not change.

ii. The choice of using formal versus informal sources of saving, borrowing and insurance is independent of financial literacy and education.

iii. The incidence of credit constraints experienced by households is independent of the age of household head.

The first hypothesis is tested qualitatively using descriptive statistics, while the second and third hypotheses are tested statistically.

1.7 Justification and Relevance of the Study

The literature on development finance establishes a strong relationship between financial sector development and economic growth, notwithstanding the debate on the direction of relationship. Thus progress in the financial sector is associated with economic growth. The recent global financial crisis, for instance, provides clear evidence of this relationship, as negative outcomes in the financial sector resulted in an economic decline (Levine, 2008 ; Ang, 2008; Uddin, Sjö & Shahbaz, 2013; Beck, Demirgüç-Kunt & Levine, 2010). The financial sector of Ghana, which includes all financial and insurance activities, contributes immensely (both directly and indirectly) to the gross domestic product of Ghana. Its performance has been growing steadily since 2010. The financial sector is the second highest contributor in the services sector next to transport and storage and recorded a GDP of GHC 9,115million in 2014 as direct contribution to economic growth (ISSER, 2015). As the financial sector in Ghana is dualistic, this figure may well have excluded most informal financial activities, which could not readily be captured in national statistics. Beside the direct contribution of the formal financial sector to economic growth, it also facilitates resource reallocation from resource-surplus entities to resource-deficient entities. This enables investment in infrastructure that improves economic development in the long-run. This study, which aims at enhancing financial inclusion, by addressing the use of formal versus informal financial services, is relevant.

The economy of Ghana has gone through several economic and social transformations and the standard of living of Ghanaians has changed in the past twenty-five years. The large reduction in poverty status, and increase in GDP per capita are prominent transformations made in the economy. GDP per capita at constant 2005 US $ increased from $376.6 in 1990 to $763.93 in 2014 and poverty incidence declined from 51.7% in 1991 to 24.2% in 2013 (World Bank, 2016; GSS, 1995; GSS, 2014b). A lot of progress has been made in education, as evidenced by improvement in educational attainment. For instance in 1991, 40.3% of the population had never been to school; whereas this figure declined to 19.7% by 2013 (GSS, 1995; GSS, 2014a). Many employment opportunities have been created through private sector participation in the economy. These have ramifications for the use of formal versus informal financial services, which warrants the study of trends in use of formal versus informal financial services.

The role of financial literacy in the use of financial services is increasingly becoming important in this era of technological advancement, where financial transactions are carried out within seconds on mobile phones and computers. The mobile money platform, for instance, facilitates transfer of funds and accords convenience and flexibility. As much as this facilitates transactions and enhances flexibility, individuals who are less financially savvy may fall prey to financial fraudsters. Besides, as individuals visit financial institutions less, the opportunity to gain financial literacy from bank officials is lost. These emerging events prove that financial literacy is relevant. An examination of the influence of financial literacy on saving, borrowing and insuring will provide guidance on the financial component for which financial education is required.

Giving credence to the importance of credit in poverty reduction, many governments in times past offered institutional credit to farmers and other groups that were assumed as credit constrained (Hoff & Stiglitz, 1990). These interventions were not successful due to high default rates and political factors. It was not certain if the targets were really credit constrained. However, efficient institutional support in terms of credit depends on the extent of knowledge on the factors that influence the incidence of credit constraints, among other factors.

1.8 Definition of Key Concepts

1.8.1 Financial Services

The development finance literature conceptualizes financial services in two ways. Conceptualization of financial services may exclusively focus on products offered by formal financial institutions and exclude financial activities of the informal sub-sector. This includes products that enable individuals to deposit funds, save, withdraw funds, access credit, and carry out insurance and funds transfer facilities (Allen et al., 2016). Financial services may also be conceptualized as all formal and informal activities that enable individuals to save, access credit, insure themselves and transfer money (Akpandjar et al., 2013; Shem et al., 2012; Armendàriz & Morduch, 2010). In this thesis, "financial services" refers to both formal and informal savings, credit and insurance. While savings, credit and insurance products enable transfer of funds over time, remittances are different products which enable transfer of funds across geographic locations. The study focused only on financial services that enable transfer of funds over time.

1.8.2 Formal versus Informal Financial Institutions

There are many ways of distinguishing between formality and informality in a broader view. However, in financial institutions, formality and informality are distinguished by the extent to which financial intermediation is based on regulations and supervision of an external body. In addition, the external body offers the mandate for operation of some financial institutions, known as the license. In the case of Ghana, the central Bank, which is the Bank of Ghana (BoG), serves as the external body which licenses financial institutions, offers regulations and supervises activities of some financial institutions. Following this, formal financial institutions are licensed and supervised by the BoG, whilst informal financial institutions are neither licensed nor supervised by the BoG, though their activities are legal. The supervision of formal financial institutions implies that direct responsibility of financial intermediation is taken by the BoG, and as it applies prudential requirements, enhances efficiency and ensures that both suppliers and consumers of financial services are protected (Sindzingre, 2006; Aryeetey, 2008; GHAMFIN, 2014). Formal financial institutions include government banks, private banks, insurance companies, co-operative unions, credit unions, rural and community banks, microfinance companies, savings and loans companies, financial non-governmental organizations and other institutions that are licensed and supervised by the BoG (GHAMFIN, 2014).

Informal financial institutions include *susu* groups, also known as rotating savings and credit associations (ROSCAs), Village savings and loans associations, *susu* collectors, moneylenders (Aryeetey & Gockel, 1991; Aryeetey, 2008; Steel, 2014; Gugerty, 2007). Informal risk-sharing is exhibited in activities of burial societies, welfare associations and common interest clubs for which members make regular financial contributions and funds are deliberately set aside to support members when shocks occur. As risk-sharing activities of such groups are considered in the literature as informal insurance, they constitute informal financial institutions (Dercon, 2002; Dercon, 2008; Mazzucato, 2009; LeMay-Boucher, 2012). There are also non-institutional sources of informal finance which are classified under informal financial institutions. These are friends, relatives and neighbours who offer relatively small amounts of credit, often with little or no interest. Trade partners, suppliers and landlords also offer credit and form part of informal financial institutions. These are common sources of borrowing in many developing countries (Barslund & Tarp, 2008; Togba, 2012; GHAMFIN, 2014). Informal financial institutions may be integrated into the formal financial system through regulation and licensing. In the case of Ghana, by way of integrating *susu* collectors and corporate moneylenders into the formal financial system, it was required that these institutions report to their apex associations, which in turn reports to BoG. Through this, although they are not licensed nor supervised directly by BoG, their activities can be monitored through their apex associations (GHAMFIN, 2014). This study will investigate the demand for savings, credit and insurance from these two types of institutions. Thus loans taken from formal financial institutions constitute formal loans as loans from informal financial institutions constitute informal loans. Similarly, saving and insuring with formal institutions constitute formal saving and formal insurance respectively, whilst informal saving and informal insurance are services from informal institutions of saving and insurance respectively.

1.8.3 Financial Literacy and Financial Knowledge

Financial literacy generally refers to the ability to process economic information in order to make financial decisions such as financial planning, wealth accumulation, borrowing and pensions (Lusardi & Mitchell, 2014). The OECD also defines financial literacy as a "combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decision decision which affects individuals' financial well-being". Financial literacy is a broad concept which has several components which includes numeracy, money management skills, budgeting and bills organization skills. Numeracy skills reflect the understanding of risk diversification and concepts of inflation. Budgeting and bills organization skills, aid inter-temporal allocation of funds and money management skills, and indicate prudence in financial matters (French & McKillop, 2016). Financial knowledge is a narrow concept that refers to the awareness and understanding of financial products and financial concepts.

1.9 Organization of the Study

The study is divided into eight chapters. Chapter 1 details the introduction and background to the study. Chapter two illustrates a review of relevant literature. Chapter 3 provides the theoretical framework underpinning the study as well as the conceptual framework. Information on methodology is provided in Chapter 4. Chapter 5 is a descriptive chapter which provides results and discussions on trends in saving and use of credit as well as credit from formal versus informal sources. Empirical analyses of the determinants of using formal versus informal financial services are presented in Chapter 6, which is an empirical chapter. The determinants of credit constraints are also examined in chapter 7, which is also an empirical chapter. Chapter 8 contains the summary of findings, conclusions and policy recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents existing literature on saving, borrowing and insuring in both formal and informal financial institutions, as well as credit constraints. It begins with a review of theoretical literature and follows with a review of empirical studies within the scope of the study. In order to fully appreciate what drives households in choosing between formal versus informal financial services, the stylized facts of financial services provided by formal and informal institutions are discussed. The concept of financial dualism is also discussed in order to appreciate the macroeconomic consequences of household consumption of financial services from both formal and informal institutions. Theoretical literature on credit constraints and the relevance of financial services to households is also reviewed. A review of empirical studies on trends in consumption of financial services and the determinants of demand for formal versus informal financial services and of credit constraints is provided.

2.2 Theoretical Literature Review

2.2.1 Stylized Facts: Characteristics of Formal and Informal Financial Institutions

Theoretical literature points out differences between formal and informal financial institutions and the services provided by these two types of institutions. The institutions differ in terms of characteristics of consumers, the nature of products, the purposes of the services and contract terms. The literature on the choice of credit from formal versus informal institutions is much more developed than the literature on saving. Literature on differences in contract terms and enforcement mechanisms on insurance from formal versus informal institutions is also much more developed.

Borrowers from informal institutions invariably have lower incomes, lower assets and lower levels of education than borrowers from formal institutions. In addition, loan sizes from formal institutions are larger and have longer durations than those from informal institutions. Transaction costs, which include opportunity cost of time, travel time and other indirect costs, are also higher in formal institutions than in informal institutions. More so collateral requirement is invariably positive for formal institutions of borrowing, and less strictly required in informal institutions (Menkhoff & Rungruxsirivorn, 2011; Barslund & Tarp, 2008; Guirkinger, 2008).

In informal institutions of borrowing, interest rates are relatively higher than in formal institutions (Barslund & Tarp, 2008; Guirkinger, 2008; Menkhoff & Rungruxsirivorn, 2011). It is, however, known that loans from informal institutions such as friends, family members and neighbours are relatively cheaper than loans from formal institutions (Kochar, 1997). Thus, while it is relatively cheaper to obtain very small personal loans from informal sources, interest costs tend to be higher for larger loans from informal institutions than for larger loans from the formal sector.

The purpose of loans and contract terms between formal and informal institutions also vary. Loans from informal institutions are recognized as serving the purpose of consumption-smoothing and working capital while formal sector loans are relatively more likely to be used for investment purposes (Barslund & Tarp, 2008). Loan contracts from informal institutions generally have more flexible terms than loans from formal institutions (Guirkinger, 2008; Udry, 1994).

The differences in characteristics of individuals saving through formal versus informal institutions depend on the type of saving device. Aryeetey and Gockel (1991) show that individuals from all socio-economic groups in Ghana participate in saving through *susu* groups, which are variants of ROSCAs. However, a much more recent study shows both theoretically and empirically that there are differences in characteristics of savers between formal informal institutions. In Pakistan, there were variations in terms of literacy, numeracy and education level between people saving through banks and *bisi*, a Pakistani ROSCA. Literacy, numeracy and education were important for saving through banks whilst only numeracy was important for saving through *bisi* (Carpenter & Jensen, 2002).

To a large extent, the purpose of saving with informal instituitions is typically to purchase household durable items (Carpenter & Jensen, 2002; Handa & Kirton, 1999; Besley & Levenson, 1996). Browning and Lusardi (1996) stated eight motives of saving as cited by John Maynard Keynes (1936). These include precautionary motive, life-cycle motive, intertemporal substitution motive, improvement motive, independence motive, enterprise motive, bequest motive and avarice motive. Theoretically, they added one motive which is the downpayment motive, which reflects accumulation of deposits to purchase durables and assets such as houses, cars and land. These nine motives cut across saving through all kinds of institutions.

Informal insurance institutions are characterised by low information and transaction cost, as participants live close to each other or share some things in common. Similar to ROSCAs, groups are formed along social ties, and members, living in close proximity, have knowledge of each other's economic status and shock experiences. Consequently, problems of adverse selection, monitoring and enforcement of contracts are minimised in informal insurance groups (Loewe, 2006; Bhattamishra & Barrett, 2010). On the other hand, insurance from formal institutions is characterised by high administrative and transaction costs due to costs related to marketing, underwriting, management of claims and collection of premiums (Loewe, 2006). Furthermore information problems are common as the insurers are distant from the beneficiaries. This results in adverse selection, moral hazard, lack of trust and difficulty in enforcement of contracts.

In informal insurance institutions, contracts are flexible and risks can be pooled *ex post*. On the other hand, formal insurance contracts are non-negotiable and risks are often pooled *ex ante* (Bhattamishra & Barrett, 2010; Loewe, 2006). In addition, formal insurance contracts are explicit and legally enforceable. These attributes are lacking in informal insurance contracts that make use of social precepts to encourage contract enforcement (Besley, 1995; Platteau, 1997, Bhattamishra & Barrett, 2010; Loewe, 2006).

Informal insurance groups, similar to informal saving groups, stand a chance of facing covariant shocks which have the ability to collapse groups. Covariant shocks are experienced concurrently by groups and often occur when groups are homogenous or members live in the same community. These groups also serve a smaller geographical area and do not serve the purpose of financial inclusion (Platteau, 1997; Loewe, 2006; Bhattamishra & Barrett, 2010).

At the aggregate level, informal financial institutions have been advantageous in overcoming some of the information (moral hazard, asymmetric information and adverse selection) and enforcement problems inherent in financial markets. This is enhanced by the social and geographical proximity of members in informal groups, for instance. However, informal financial groups cannot withstand covariant shocks affecting all group members and are unable to reach a wider group of people. On the other hand, formal financial institutions are stronger and have the ability to reach a larger number of people. Consequently, they stand a better chance of offering financial services to those excluded.

As financial markets (both formal and informal) develop and become diversified, these stylized facts do not remain static. Variants of both formal and informal conventional products evolve to meet the needs of society. While these developments may have their advantages, they may place a greater responsibility on households to borrow, save and insure responsibly. This requires knowledge of both formal and informal financial products in order to make the choices that provide optimal utility. Thus financial knowledge and financial literacy are important in the choice of financial services and also in the prevention of loan defaults (Lusardi & Mitchell, 2014; Bucks & Pence, 2008).

2.2.2 Financial Dualism in Developing Countries

Financial dualism is the condition where there is coexistence of formal and informal financial sectors in an economy, with price differentials. This phenomenon is characteristic of rural financial markets in developing countries, where households consume financial services from both sectors (Germidis, 1990; Guirkinger, 2008; Aryeetey, 2008; Madestam, 2014). The informal financial sector is characterised by high interest rates due to small loan sizes and a higher risk of default, while the formal sector provides cheaper credit to a limited clientele (Hoff & Stiglitz, 1990; Aryeetey & Gockel,1991; Guirkinger, 2008). Within the informal sector, there is also a wide variation in interest rates and a diversity of financial intermediation mechanisms, which leads to fragmentation, as various 'islands of finance' are created. The village savings and loans groups and rotating savings and credit associations, for instance, deal with only their groups' members and have different interest rates; while friends and relatives will lend to each other, often with zero interest rate or some minimal interest rate. Moneylenders, which remain part of the informal sector in most developing countries, appear to lend at interest rates of as much as 100% per anum (Aryeetey, 2005; Ngalawa & Viegi, 2013).

Segmentation is a major disturbing outcome of financial dualism. This occurs when there is differentiation of the two sectors, as they seem to serve distinct groups of clients, following the distinctiveness of their financial institutions. This makes it difficult for funds from different sectors substitute each other, and this limits consumers' options of using financial services. This also has exclusion implications, as consumers who are unable to meet requirements in the formal sector and are consequently denied financing may not be able to afford the higher interest rates of the informal sector. This has a possibility of limiting the overall use of finance by households. Furthermore, segmentation has equity implications, as both sectors serve different socio-economic groups of clients, and the poor who depend on financing from the informal sector may be worse off in terms of returns on their investments (Aryeetey, 2005; Guirkinger, 2008).

There are two strands of thoughts on the causes of financial dualism in developing countries. One school of thought maintains that financial dualism results from the response of the informal sector to the shortcomings of the formal sector, caused by financial repression. Financial repression policies such as credit ceilings, interest rate and exchange rate controls have negative implications for the supply of financial services. Interest rate controls have a tendency of raising demand for credit and suppressing savings. This results in credit rationing as financial intermediaries try to restrain excessive demand. This eventually creates a gap in supply, which informal financial institutions emerge to fill. Advocates of this school of thought hold the view that financial liberalization is the remedy to increase access to formal financial services and will therefore displace the informal financial sector. Thus by this school of thought, financial repression is viewed as the cause of financial dualism (Germidis, 1990; Steel et al., 1997).

The second school of thought postulates that financial dualism results from the intrinsic dualism of economic and social structures pertaining in developing countries. Proponents of this opinion base their argument on empirical evidence which suggests that informal financial activities persist alongside active formal activities several years after financial reforms (Germidis, 1990; Guirkinger, 2008). This school of thought corresponds with the hypothesis that financial market fragmentation in developing countries is explained by the structural and institutional features of financial markets in developing countries, characterised by imperfect information and costly contract enforcement. Imperfect information, largely due to limited information flow, results in high cost of screening on financial services, and also affects monitoring and enforcement of contractual obligations in the formal sector. Contrarily, informal agents utilize personal relationships, social sanctions, group responsibility, and peer monitoring to reduce transaction costs and mitigate the problem of imperfect information. Consequently, informal agents have comparative advantage over formal institutions in developing countries. This second school of thought is termed the structuralist school of thought (Steel et al., 1997; Hoff & Stiglitz, 1990; Bhattamishra & Barrett, 2010).

Advocates of the structuralist perspective propose actions to improve information flows and contract enforcement in both formal and informal institutions (Germidis, 1990; Steel et al., 1997). Some authors holding this view recommend an equitable linkage between these two institutions. This can improve the efficiency of the entire financial market as informal and formal agents specialise in their market niches and at the same time allow flow of financial resources between the two market segments (Aryeetey, 2008; Floro & Ray, 1997). Here, conscious efforts are made to include informal financial institutions in the financial sector, and the opinion is held that financial development strategies must recognise the role played by informal institutions as well. Through this, informal institutions are developed in order to provide efficient financial intermediation which enhances financial inclusion (Steel et al., 1997;GHAMFIN, 2014).

The relationship between formal and informal financial institutions is important in addressing the negative effects of financial dualism. These two types of institutions can be substitutes or complements. Substitution occurs when formal financial institutions either do not exist or are ill-developed, and alternatives are provided by informal institutions. Advocates of the substitution standpoint maintain that lack of access to services of formal financial institutions does not necessarily pose a threat to growth as informal institutions can also induce similar growth (Levenson & Besley, 1996; Besley & Levenson, 1996). Complementary relationship is experienced when informal institutions serve as safety nets to patch up market failures associated with formal financial institutions. Here informal institutions serve as support to formal institutions. Similarly, the use of formal institutions enables households to overcome shortfalls with informal institutions (Morduch, 1995; Stiglitz, 1989). In many developing countries where households simultaneously use services of formal and informal institutions, the relationship is rather complementary.

In addressing the negative outcomes of financial dualism, the driving force behind the development of each sector needs to be examined. It can be argued that the development of the informal financial sector is driven by weaknesses in the formal sector. Aryeetey and Gockel (1991), argued that the informal financial sector depends on developments within the formal financial sector as well as its own internal drives to propel its activities. Germidis (1990), also posits that the structure and functioning of the formal financial sector contributes to the development of the informal sector. Similarly, events in the informal financial sector can also stir up activities of the formal financial sector. Consequently, there is a two-way relationship between the formal and informal financial sectors, which brings out the reality of their complementary effect. To this end, it can be argued that the complementary effect of the formal and informal sectors is stronger than the substitution effect, and this provides a cause for giving equal policy attention to both sectors.

2.2.3 Financial Development and Financial Inclusion

Theoretically, the functional roles of formal financial systems are five-fold. First of all, formal financial systems provide *ex ante* information about possible investment opportunities and allocate capital. Secondly, they monitor investments and exert corporate governance after providing loans. The third role of formal financial systems is to facilitate the trading, diversification and management of risk. The fourth role of formal financial systems is to mobilize and pool savings for investment. Finally, formal financial systems ease the exchange of goods and services through money as the medium of exchange. Financial development refers to how well and efficiently these functions are performed by financial systems (Levine, 2005). It is inferred that the efficient functioning of the formal financial system results in financial inclusion, whereby an increasing number of individuals can access financial services from formal institutions.

The concept of financial inclusion broadly refers to the increasing access to financial services from formal financial institutions by socio-economic groups that were previously excluded from the formal financial system. These financial services must be provided at affordable costs and convenient to users (Efobi et al., 2014; Allen et al., 2016). Financial inclusion is a construct which is country-specific and defined differently to meet the social, economic and geographical needs of those excluded from the use of formal financial services. For instance, in Peru, financial inclusion is constructed as access to financial services such as loans, deposit services, insurance, payment systems, pension systems as well as financial education and consumer protection mechanisms. In Brazil the definition of financial inclusion focuses on increasing access to financial services that are tailored to meet the needs of users (Shem et al., 2012). The widely accepted definition of financial inclusion suggests an increasing use of formal financial services against the use of informal financial services. Consequently, this study defines financial inclusion as the use of services from formal financial institutions against the use of services from informal institutions.

2.2.4 The Role of Financial Services in Poverty Reduction

Financial services from either formal or informal institutions are employed by households for consumption-smoothing purposes and investment in economic activities. Households use financial services from various informal institutions such as saving through ROSCAs, *susu* collectors and other informal means which enables the purchase of household durable items. Loans are taken from friends, relatives and other informal sources for consumption-smoothing and starting micro enterprises, whilst households join informal insurance networks in anticipation of risks. In effect the use of these channels improves the well-being of households (Handa & Kirton, 1999; Gugerty, 2007; Morduch, 1995; Alderman & Paxson, 1992; Dercon, 2008).

The evidence on the usefulness of financial services from formal financial institutions is much more compelling at the household level, in terms of reducing income inequality. At the macroeconomic level also, the use of financial services from formal institutions supports economic growth by raising funds through aggregate savings, which is allocated for investment purposes. This, in the long-run promotes economic development. There is also country-level evidence of a relationship between access to formal financial services and economic growth. These evidences suggest the superiority of formal financial institutions over informal institutions in financial development (Claessens, 2006; Beck et al., 2007a; Beck et al., 2007b; Ghosh & Vinod, 2017).

2.2.5 Credit Rationing, Credit Constraintsand Discouraged Borrowers

Credit rationing is a supply-related construct which occurs as a result of imperfect information in credit markets. As credit markets do not clear with only price (interest rates), supply-side actions are undertaken aside from pricing, to clear the credit market. Efforts to clear the market through pricing alone results in adverse selection and moral hazard (Stiglitz & Weiss, 1981). Thus lenders ration credit by price and non-price factors. Price factors include interest rate and transaction costs. Non-price credit rationing is reflected through collateral rationing, wealth-related rationing, as well as quantity rationing. Low-income households are invariably rationed out in this manner (Barham et al., 1996; Stiglitz & Weiss, 1981).

Theoretically, credit constraints result from various forms of credit rationing and demand for credit. Hence, the construction of credit constraints follows the construction of credit rationing and access to credit. Credit constraints following price rationing occur where a consumer borrows at an interest rate which is higher than the preferred rate. Credit constraints by quantity follows when a consumer cannot borrow as much as he/she would like to smoothen consumption (Attanasio, Pinelopi & Ekaterini, 2008). Credit constraints may also arise from low wealth levels and lack of collateral. Credit constraints occurs when a loan applicant is rejected even though a borrower is willing to pay higher interest rates. Another scenario of credit constraints is when identifiable groups of individuals in a population are unable to obtain loans at any interest rate at a given level of supply, but would be in the position to obtain credit when supply is increased (Barham et al., 1996; Stiglitz & Weiss, 1981).

Credit constraints reduce the efficiency of credit allocation, as the flow of capital to the poor is impeded. In effect, poor households are denied investment opportunities and returns as they lack credit to start new businesses and also expand existing businesses. This results in income inequality and deepens poverty (Beck et al., 2007a; Dong, Lu & Featherstone, 2012; Aterido, Beck & Iacovone, 2013). Consequently investigating credit constraints is important for development.

There is an ongoing debate on the existence of effective credit constraints. One opinion holds that credit constraints exist even in perfect competitive credit markets and, particularly, agrarian households are effectively constrained in their access to formal credit. This opinion underlies assumptions that are commonly imposed on theoretical models underlying the operation of rural credit markets in developing countries (Stiglitz & Weiss, 1981). However recent authors have challenged this assumption. Typically, Kochar (1997), in his seminal work proved that the extent of formal credit constraints in the rural credit market is contingent on the level of effective demand for formal credit, the lender's decision on access, and the presence of other substitutes to formal credit. In connection with this opinion, this study considers the demand for credit in assessing the determinants of credit constraints.

Credit rationing is a necessity, as the credit market is characterised by asymmetric information and the market does not clear with the interest rate alone. However, excessive rationing also limits financial inclusion. Hence critics of credit rationing advocate the use of collateral to alleviate the adverse selection and moral hazard problems (see for example Perez, 1998). As collateral also eliminates the poor from credit markets, methodologies of microfinance are employed in lending to low-income households in groups, whereby social capital serves as collateral. Lending in this manner may carry high covariant risks, as group members tend to face similar risks at the same time. Consequently, credit rationing, and the consequent credit constraints, is an issue for households, which is currently given empirical attention in the literature.

Credit constraints may be active or latent, following the nature of demand for credit, and may also be based on perception. Potential borrowers who refuse to make a credit request because they expect their application to be rejected due to lack of collateral or ability to make repayment, are latently constrained. In addition, potential borrowers who refuse to make credit requests due to the cost of credit are also latently constrained by price. These potential borrowers are known as discouraged borrowers. Kon and Storey (2003) provide a theoretical framework for the analysis of the concept of discouraged borrowers. They theoretically show that, under a wide range of assumptions, the level of discouragement of potential borrowers depends on the screening error of the lender (most likely a formal institution), the scale of application costs and the interest rate differentials between the lender and a moneylender. The application costs include opportunity cost of travel time to the lender and time spent on activities related to loan request. This is also referred to as transaction cost. This analysis reflects the importance of both the demand and supply sides of the credit market in efficient credit allocation. The implication of this concept is that, in analysing credit market efficiency, discouraged borrowers must be accounted for. This concept also implies that a credit market with a high scale of discouraged borrowers may have a lower extent of effective credit constraints. The concept of discouraged borrowers is relevant for discussions on limited demand for credit from formal institutions and also provides a clearer picture of the credit market situation of developing countries.

In a narrow sense, borrowers who actually make loan requests and are denied for whatever reason are considered actively constrained. This latter measure of credit constraints, as adopted by Barslund and Tarp (2008), is the measure of credit constraints adopted in this study. Due to data limitations, the study did not cover discouraged borrowers and other forms of latent credit constraints. Many studies, however, adopt multiple measures of credit constraints to provide robust results (see for example Kim, Wilmarth and Choi, 2016; Oduro, Ackah, Boateng, Owoo and Domfe, 2016).

2.3 Empirical Literature Review

2.3.1 The Role of Formal and Informal Financial Services in Poverty Reduction

Many empirical studies reflect the role of formal and informal savings, credit and insurance in poverty reduction, which is indicated by an increase in income and/or expenditure, accumulation of capital assets, enhancement of nutrition and food security and any indicator which promotes the well-being of households.

2.3.2 The Role of Formal and Informal Savings in Poverty Reduction

Several studies assessing the role of formal savings do so through randomized field experiments where the treatment groups are provided access to savings accounts. In one of such experiments, households that were offered free savings accounts at local bank branches in Nepal recorded high take-up and usage rates of 84% and 80% respectively (Prina, 2015). Although a definite conclusion was not made on aggregate expenditures, it was significantly attested that the use of savings accounts resulted in a reallocation of expenditure across categories. Notably, the use of savings accounts resulted in increased expenditure on education, meat and fish and a decreased expenditure on health and dowries. Furthermore, the treatment households recovered faster from health shocks and reported an improvement in their financial situation. Thus the opening and use of formal savings accounts plays a role in poverty reduction.

Using a state panel data from 1961 to 2000, Burgess and Pande (2005) established that state-led rural branch expansion in Indian States is associated with poverty reduction, as indicated by the head count ratio. A similar study was carried out in Malawi, and it was observed that the opening of commitment[1] formal savings accounts by tobacco farmers significantly triggered a cycle of events which indicate household wellbeing. First of all, the randomized intervention resulted in the opening of commitment formal savings accounts. This in turn stimulated an increase in savings after harvesting seasons, and also increased investment in farm inputs in the next planting season, resulting in increased yields. By and large, this triggered an increase in household consumption levels (Brune, Giné, Goldberg & Yang, 2016).

The take-up and use of formal savings accounts that have negative interest rates prove useful to women traders in Western Kenya. The randomized experiment of Dupas and Robinson (2013) proved that the provision of non-interest bearing savings accounts to daily wage earners resulted in an increase in saving and productive investments, as well as household expenditure for market women. On the other hand, there was no significant impact on bicycle-taxi drivers, who were mostly males. This demonstrates that the benefits of financial services is not uniform across sub groups. The study of Swamy (2014) contributed to this assertion, as he shows that the benefits of financial inclusion programs are not equal amongst men and women. Beyond reducing poverty through an increase in consumption and income, female empowerment, constructed through females' decision-making roles in the household, is an outcome of participation in commitment savings prgrams (Ashraf, Karlan & Yin, 2010). Thus the gender dimensions in the use of financial services is an interesting area for debate.

Informal saving mechanisms also play a significant role in poverty reduction and welfare of households. Studies on informal savings have been conducted largely by assessing

[1] Commitment savings products have mechanisms to restrict withdrawals such as a limited number of withdrawals within a stipulated time, a limitation on withdrawals until a specific time, and restricting third parties from withdrawal. These mechanisms motivate saving (Ashraf et al., 2010).

Village Savings and Loans Associations (VSLAs) and ROSCAs. VSLAs are useful in rural communities in raising the welfare of participating households. Through a randomized experiment, Ksoll, Lilleør, Lønborg and Rasmussen (2016), noticed an improvement in the food security situation of households participating in VSLAs. Moreover, investment in agricultural and non-agricultural activities increased, resulting in higher outputs. Although this study acknowledged the limitation of generalization of such studies due to differences in contexts and dynamics of VSLAs across countries, it revealed to some extent the role of informal financial institutions in meeting the short-term needs of the poor.

ROSCAs belong to informal savings institutions and are common in developing countries. They have localized affinity as reflected by the various local names by which they are ascribed. For instance, they are known as *susu* groups in Ghana, *esusu* in Nigeria, and *bisi* in Pakistan (Alabi et al., 2007; Carpenter & Jensen, 2002). Though their operations vary across different countries, an inverse relationship was established generally between the sizes of groups and volume of monetary contributions made (Besley, Coate & Loury, 1993; Handa & Kirton, 1999).

There are many studies that report the usefulness of ROSCAs in household welfare. Gugerty (2007), studied the design of 70 ROSCAs in women's groups in Kenya and reports the uses of ROSCA funds in purchasing household items, payment of school fees, consumption-smoothing and for small businesses. One common motivation for saving in all the ROSCA groups was the commitment to save. Besides, members expressed that they would not have been in the position to save alone as they would have spent their money inefficiently. Clearly, as members receive lump sum through participation in ROSCAs, they are able to purchase household items and smoothen consumption. This eventually improves upon the welfare of particiapting households. Most importantly, ROSCA funds are used in the payment of school fees; and this has long-term poverty reduction implications. Engagement in small businesses also has implications for increasing household income. Moreover from the variation in ROSCA design and participation, Gugerty (2007) notes that the institutional design of ROSCAs is rather endogenous and this requires a closer examination of characteristics of participants and their economic settings. Consistent with this, recent authors have found that individual members' characteristics are more important than institutional characteristics in determining the amount of savings (Kedir & Ibrahim, 2011). Consequently, endogenous factors matter most in studying factors underlying households' choice of choosing between formal and informal financial sources.

ROSCAs also offer both rural and urban households the opportunity to save towards the purchase of indivisible consumer goods and to take care of life cycle needs. In a study of ROSCA members in Jamaica, the common use of ROSCA funds to purchase durable goods was confirmed (Handa & Kirton, 1999). Beyond this, ROSCAs enable households to meet simultaneous demands for safe savings and protection of funds from family demands (Gugerty, 2007). Participation in ROSCAs also enables households to invest in education and health, and also to smooth consumption (Kimuyu, 1999; Gugerty, 2007). ROSCAs are common among women traders who wish to expand their business but have limited chances of obtaining credit from formal sources and cannot afford high interest rates of moneylenders. A number of ROSCAs studied in a business setting in Ghana reveal the prime purpose for participation as capital accumulation for business expansion (Owusu, Anin & Zaato, 2013).

2.3.3 The Role of Formal and Informal Credit in Poverty Reduction

Access and use of both formal and informal credit benefits households directly in poverty reduction, as funds accumulated from own savings may be insufficient to support microenterprise investments. Karlan and Zinman (2010), working with a lender in South Africa, instigated the expansion of formal credit supply to marginal borrowers that would have been denied credit access following the lender's risk assessment indicators. They indicate that, although the interest rate was high, the welfare of the borrowers improved, as there was a significant and positive effect of credit on food consumption, mental health and economic self-sufficiency. In addition, lending to these marginal borrowers increased the lender's profitability. In a similar study among rural households in China, Li, Gan, and Hu (2011) confirmed the positive impact of microcredit programs on welfare of rural households. Using a mixture of panel data, and primary and secondary cross-sectional data, they established an increase in income and consumption levels for treatment groups as they participate in microcredit programs that are available to control groups as well.

Informal credit serves various purposes for households in both rural and urban households. Among low-income populations, the consumption-smoothing outcomes is very important in the short-term, as it prevents the need for the poor to sell productive assets. Barslund and Tarp (2008) point out that in Vietnam, rural households rely on informal credit, mainly from friends and relative, for consumption-smoothing purposes. In Central Ethiopia as well, informal credit from kinsmen form a greater portion of informal credit, which is used mainly for consumption-smoothing purposes among farm households (Adugna & Heidhues, 2000). These evidences point to the importance of informal credit to the well-being of low-income households.

Schindler (2010) narrates how credit obtained from trade suppliers, susu collectors and specialised informal finance agents serves as a coping strategy for managing risks encountered by market women in Northern Ghana. Common trade risks such as loss of stock through theft or fire are mitigated by establishing a relationship with these supply agents. The subtle credit arrangement with trade suppliers has a far-reaching relevance in mitigating risks of loss of stocks resulting from fire outbreaks, which is common at marketplaces in Ghana.

Informal credit also serves purposes beyond meeting the need for funds to engage in economic activities and for consumption-smoothing. Informal credit arrangements between households that know each other well have some aspects of flexibility and state-contingency[2] which works in the interest of both borrowers and lenders when shocks occur. In Northern Nigeria, a case is presented of informal credit arrangements that occur between people who are very familiar with each other. No explicit repayment dates or interest rates are set. However, agreement is made that when borrowers experience shocks, repayment is made to their advantage. Similarly, when lenders also experience shocks, repayment is made in their interest. This serves as insurance for both borrowers and lenders. This form of credit also limits the tendencies of asymmetric information and moral hazard. As much as this accords the advantage of flexibility in repayment terms, enforcement is complicated, and the social environment must be considered in devising enforcement mechanisms (Udry, 1994; Fafchamps & Lund, 2003; Fafchamps & Gubert, 2007; Bhattamishra & Barrett, 2010).

[2] Udry (1994) used the expression State-Contingency to refer to credit contracts that are not rigid but can vary, depending on changes in conditions of either lender or borrower, in order to derive mutual benefits to both parties.

2.3.4 The Role of Formal and Informal Insurance in Poverty Reduction

Another type of financial service used by households is the purchase of formal insurance or engagement in informal insurance groups which may have additional functions besides insurance. Households' choice of engaging in formal or informal insurance is dependent on risk preference and utility derived from insurance (Akpandjar et al., 2013). Following the benchmark insurance model based on full information, risk-averse households engage in insurance activities, whilst risk-loving households do not bother about insurance. Consequently it is expected that individuals whose actions and behaviours are consistent with risk aversion engage in insurance from any kind of institution. However, recent studies have proven that participation in formal insurance is negatively associated with risk aversion due to incomplete information in the formal insurance market. This also suggests that insurance is inherently risky. Whilst this counteracts the benchmark model, it also reflects that access to information in the insurance market enables participation (Giné et al., 2008; Giesbert, Steiner & Bendig, 2011).

Insurance generally provides protection to households against specific risks in exchange for regular payments known as premiums, which is proportionate to the likelihood and cost of the risk(s) involved (Churchill, 2007). In the case of formal insurance, the likelihood and cost of risks involved are computed with a higher level of precision, while in informal insurance institutions, there is less precision in the computation of parameters that feed into premium payments (Loewe, 2006).

Formal insurance markets are underdeveloped in many developing countries, where vulnerability to various risks is very pervasive. This is reflected by difficulty in writing and enforcing market contracts. This situation is aggravated by low levels of financial literacy, inefficiencies in legal systems, and high communication cost resulting from poor infrastructure. These factors increase information cost, resulting in high premium payments which cannot be afforded by many households. Consequently, insurance is sought from informal sources, which seem less expensive (Besley, 1995; Dercon, 2002; Mazzucato, 2009).

Informal insurance covers a wide range of risk-sharing arrangements such as labour exchange, agricultural contracts, food sharing backed by reciprocity, risk-sharing networks, and participation in self-help groups that provide support during shocks Similar to formal insurance, the basic theoretical principle is that of risk-pooling where people come together and pool their risks such that in the event of shocks, they will receive suport from the pool (Mazzucato, 2009; Fafchamps & Gubert, 2007; Platteau, 1997; Fafchamps, 1992). Informal insurance has been useful to households, particularly rural households who do not have access to formal insurance. Nevertheless, studies indicate their limitations in the scope of risk coverage and tenacity to macroeconomic shocks. To this end the advent of microinsurance, which employs microfinance methodology, provides a stronger interface for households excluded from formal insurance (Llanto, 2007; Loewe, 2006; Dercon, 2002).

Empirical literature on the relevance of formal and informal insurance to households examines the impact of participation in various insurance schemes as far as household consumption, income, asset accumulation or indebtedness are concerned. Alternatively, the relevance of insurance can be assessed by examining the consequencies of shocks on households. Generally, shocks such as droughts and illness of household heads have significant impact on consumption levels of households and lead to poverty traps (Dercon, Hoddinott & Woldehanna, 2005). There is, however, a caution on interpreting differentials in consumption as insurance value, because risk-averse households may adopt coping strategies that may not affect consumption (Chetty & Looney, 2006; Gertler & Gruber, 2002).

Yilma, Mebratie, Sparrow et al. (2015) studied a community-based health insurance scheme in Ethiopia and found out that participation in this scheme resulted in a substantial increase in household income and a decline in the probability of borrowing. However, there was no evidence of impact on consumption and asset holdings. In a related study, Dercon, Gunning, Zeitlin & Lombardini (2012) also confirmed a decline in informal borrowing for medical expenses and a decline in health-related expenses as households participated in health insurance programs. In addition non-food and overall consumption increased.

Households do not benefit only from formal insurance, but also from informal insurance arrangements. LeMay-Boucher (2012), studying 209 informal insurance groups in Benin illustrates the role of such groups in supporting members during 'happy' events and 'unhappy' events. 'Happy' events include life cycle events such as the marriage of a member, birth of a memeber's child, baptism of a member's child, and other celebrations of members. 'Unhappy' events include death and illness of members or their close relatives, loss of job, destruction of occupational or household assets and other negative events for which members require support. Although the impact of these groups was not statistically tested, the study illustrates the support provided by these groups in terms of death and illnes of members and their close relatives, loss of job and life-cycle events. Informal insurance arrangements have also been illustrated between migrants abroad and kinsmen in their home countries. In these arrangements migrants support kinsmen in financial support for funerals, births and other life cycle events as kinsmen also run errands on behalf of migrants (Mazzucato, 2009).

2.3.5 Trends in Use of Formal and Informal Financial Services

The pattern of usage of financial services is likely to follow access. However, there are a few instances, such as in the situation of self exclusion, where access to formal financial services does not translate into usage. Generally, it is assumed that as access to formal financial services increase, the use of same will also increase, which will also negatively affect the use of informal financial instruments. This assumption forms the basis for most financial reforms that were carried out extensively in the 1990s in both developed and developing countries, as well as for financial inclusion programs (De Koker & Jentzsch, 2013; Allen et al., 2016).

Shem et al. (2012), using household data, studied the use of various sources of financial services in Kenya between 2006 and 2009. They indicated a general increase in the use of formal financial services from 18.9% to 22.6%, and a general decrease in the use of informal financial services from 35.2% to 26.8%. Over the period, they also indicated a general decrease in the population not using any financial services. An observation of differences in geographical locations indicated a decrease in the use of informal financial services, and an increase in the use of formal financial services in both urban and rural areas. There was a more pronounced decrease in the population not using any financial service in urban areas than in rural areas. This indicates an improvement in financial inclusion in urban areas. The study of Shem et al. (2012) did not distinguish between the various components of financial services. However, the use of each financial service may follow a different pattern. It may be interesting to have knowledge on the trends in saving separately from the trends in credit use. This thesis provides knowledge on the trends in saving in formal versus informal sources separately from the trends in borrowing from formal versus informal sources.

It is a general consensus that, in the period since the inception of microfinance methodologies, the supply of formal financial services has generally been on the increase, resulting in a general increase in the use of formal financial services. However, Togba (2012) identified different patterns in the trends in the volume of saving and loans taken from Microfinance Institutions (MFIs) in Cote d'Ivoire from 1998 to 2005. The pattern of savings followed an upward trend whilst the pattern of borrowing followed an undulating pattern (Togba, 2012). Whilst this reveals a stronger preference for microfinance savings products, it also reveals either the lack of demand for credit products or credit constraints. For financial inclusion considerations, knowledge on developments in the proportion of individuals in the population that had access to credit and saving institutions is relevant.

2.3.6 Trends in Household Savings

Household savings is important for economic growth. As a lot more individuals save, it results in an increase in aggregate savings, which in turn increases the volume of investible funds in the financial system. These funds are given out as loans for investment in infrastructure and also economic activities that provide employment opportunities (Ghosh & Vinod, 2017).

Odhiambo (2006) shows that after the financial sector reforms in South Africa, which was initiated in 1980, household savings did not improve. Household savings relative to disposable income took a downward trend and decined consistently from 5.5% in 1992 to 0.5% in 2000. The author suggests that in the case of South Africa, the evidence that finacial liberalisation results in increased savings is weak. In the case of Ghana gross domestic savings as a percentage of GDP was unstable after the inception of the financial sector reforms. The average figure for the period between 1990 and 2000 was 7.3% and the lowest figure of 1.3% was recorded in 1992 and the highest figure 13.2% was recorded in 1996 (World Bank, 2016). The relationship between financial sector reforms and financial outreach, indicated by the number of individuals in the population having access to financial services would be relevant knowledge for financial inclusion efforts.

Chamon, Liu and Prasad (2013) noted a general increase in the savings rate in China over the period 1989 to 2009. The average saving rate, which was a share of household disposable income, increased by 30% over the period for urban households. This increment was pronounced among households with younger heads and those with older heads nearing the ages of retirement. They attributed this phenomenon, which contravenes the traditional life-cycle hypotheis, to two shocks that were experienced largely by the two groups of household heads. These are income uncertainty, emanating from a rise in variance of transitory income shocks and pension reforms, which pose shocks to the young and older household heads respectively, inducing an increase in saving among these groups. Theoretically, an inverted U-shaped pattern of the relationship between saving and age is expected based on the life-cycle hypothesis. An earlier finding of Deaton (1992) suggests that empirical evidence from less developed countries, such as Cote d'Ivoire and Thailand, does not support this hypothesis. This provides a basis for assessing the relationship with age (as well as other demographic characteristics such as sex and location) and saving (and borrowing) in the examination of trends in use of financial services.

2.3.7 Trends in Household Use of Credit

Patterns and trends in household use of credit depend on the credit product and its suitability for households. In investigating the relationship between credit constraints and credit use among United States households after the 2008 financial crisis, Kim et al. (2016) explored the trends in credit use. The US Survey of Consumer Finances dataset was used, and the focus was on two credit products, namely credit cards and instalment loans. From 1992 to 2010 there was a general stability in the proportion of households that used instalment loans. Contrarily, there was an unstable pattern in the use of credit cards, with a more pronounced decrease between 2007 and 2010. Clearly, the results reflect the negative impact of the financial crisis on the use of credit cards. As an unsecured product carrying high interest rates and fees, many households could not afford the cost of using credit cards. However, the impact of the crisis on the use of instalment loans, which are secured and do not attract much cost, was not significant. This is because instalment loans are secured and do not attract high interest rates and fees. In the following survey year, which was in 2010, as the economy recovered, the use of both credit cards and instalment loans increased.

A similar study, carried out by Weller (2010), with the same survey data assessed trends in indebtedness and access to credit among demographic groups and socio-economic groups. There was a general increase in debt from 1989 to 2004; however, there were differences among different socio-economic groups. Over the period, debt increased amongst White and Black households, but decreased among Hispanic households. There was also an increase in debt over the years among all income groups except the fourth and bottom quintiles. The author measured access to credit by loan denials. Households that were denied loan requests and did not secure the full amount desired afterward were termed as not having access to credit. Loan denial also increased generally over the years; however, there were differences among socio-economic groups. Over the years, there was an increase in loan denial among Black and White households over the years; however, there was a decline among Hispanic households. Furthermore, as all income groups experienced a general increase in loan denial, the top quintiles experienced a marginal decline in loan denial. This study supports the argument that lack of access to financial services disproprtionately disadvantages certain socio-economic groups (Levine, 2008).

2.3.8 Determinants of Use of Financial Services

This section reviews literature on the factors underlying households' demand for saving, borrowing and participation in insurance form formal versus informal sources. Demand for financial services consists of different levels of demand. First of all, households have to decide on whether or not to participate in the financial market. Secondly households must decide whether to participate in formal versus informal financial institutions. Finally, households have to make decisions on the extent to which financial services are used from these two types of institutions. This final decision-making stage is subject to supply constraints especially when it comes to borrowing. This raises concerns of credit constraints. Several studies on demand for financial services are limited to the first level of demand, and not many studies have looked at the second and third levels of demand. The driving factors behind households' choice of financial services from formal and informal institutions have been of interest in development finance literature. This is due to the quest to include low-income groups in formal financial institutions, which offer security of savings and cheaper sources of credit than informal financial institutions (Hoff & Stiglitz, 1990; Carpenter & Jensen, 2002).

Households' choice of financial services from either formal or informal sources depends largely on utility derived from these sources, according to the neoclassical perspective. However, unconventional studies have indicated the influence of transaction cost in determining the choice of financial instruments (Aryeetey, 1996; Atieno, 2001). Common factors from existing literature, which have been observed as influencing the choice of formal or informal financial services, include financial literacy, level of education and income and other personal and household characteristics (Lusardi, 2008, Akpandjar et al., 2013). The influence of these factors has been ambiguous and there is a need to review literature separately for each component of financial services to place the role of these factors in perspective.

2.3.9 Determinants of Demand for Formal versus Informal Savings

Accumulation of financial resources through savings is critical for households in smoothing consumption and financing productive investments, which have an implication for poverty reduction. Consequently, the drivers and deterrents of saving are important in any financial inclusion agenda. A large body of literature on determinants of demand for savings examines demand for formal savings using the opening of bank accounts, the volume of savings in the account or the frequency of deposits as a measure of demand for savings (see for example Cole, et al., 2011; Dupas and Robinson, 2013; Efobi et al., 2014).

Many experimental studies that assess the impact of financial literacy and financial education on saving behaviour confirm the positive influence of financial literacy on saving in formal institutions. Cole et al. (2011) examined the role of financial literacy on demand for formal savings in India and Indonesia. Financial literacy was measured using an index which assesses knowledge on interest rates and risk, with mathematical and cognitive ability. Using a nationally representative household survey data supplemented by a randomized field experiment, they found that financial literacy training was most relevant among populations with low initial financial literacy levels. They found that financial education training did not induce the adoption of formal saving products in the whole sample. Also, financial education training did not induce saving among individuals with no formal education. However, financial education training induced saving among individuals who scored low for financial knowledge in the initial survey. This implies that financial literacy programs will benefit socio-economic groups with low financial knowledge, but may not necessarily benefit those with no formal education. Thus financial literacy education may benefit individuals with low financial knowledge who have an appreciable level of formal education to understand financial concepts. Most often, the uneducated tend to have low levels of financial knowledge. Lusardi (2008) argues that the challenge for financial literacy programs is how to package programs such that knowledge will be transferred to the people that need it in a most effective manner. Financial concepts are complex to understand and the need to apply learning tools that facilitates understanding is important.

In another study, Sayinzoga, Bulte and Lensink (2016) show in a randomised field experiment that one-week intensive financial education training increased the financial literacy levels of participants and also affected their saving behaviour positively. The participants were mainly smallholder farmers in rural areas of Rwanda. There was an increase in savings rate, which was constructed as the ratio between annual savings and annual expenditure. There was also an increase in the number of smallholder farmers that borrowed from the local cooperative and those that started new business activities. However in the short-term there was no significant impact of financial literacy training on income, as expenditure pattern remained unchanged after 30 days. Obviously, the income effect of saving and borrowing may be realised in the medium term. Clearly, this study shows the relevance of financial literacy for the uptake of formal savings products among smallholder farmers who have low levels of formal education.

Contrarily, Heckman and Hanna (2015) did not find financial literacy as a significant determinant of low-income earners' saving behaviour. In their study, other factors such as age, net worth, having non-adult children and social networks were significant in determining saving behaviour. The insignificance of financial literacy is possibly due to the methodology of measuring financial literacy. In the previous study by Cole et al. (2011), financial literacy of respondents was assessed rigorously through the answering of questions that bothers on interest rate computations and numeracy. However, in the study of Heckman and Hanna (2015) financial literacy was measured based on the interviewers' perception of how well the respondents' understood financial products and concepts based on interrogations on some products and concepts. This methodology may have introduced bias resulting from the interviewers' subjectivity and may not have resulted in an accurate measure of financial literacy score.

Kostov, Arun and Annim (2015) also found that basic financial literacy does not distinguish between 'Mzansi' savings accounts holders and non-holders in South Africa. Using the 2007 Finscope South Africa dataset, and estimating with the local quadratic approximation algorithm, they found that aspiration for financial education was significant in influencing the adoption of 'Mzansi' accounts. These results indicate that individuals that have high aspirations for financial education are likely to take up new financial products. This reveals the role of innate attributes that cannot be quantified when it comes to the use of financial services. The mixed findings on the effect of financial literacy on savings raises curiosity on the variable. Certainly, one might expect financial literacy to influence the choice between formal and informal savings. However, financial literacy may not be equally relevant to all socio-economic groups, as different socio-economic groups may process financial knowledge differently. The outcome of financial literacy on households in rural versus urban areas would be interesting to investigate in order to provide specific policy intervention.

Other variables that determine saving from formal institutions have also been documented in the literature. Karlan et al. (2014), reviewing empirical literature on barriers to savings, identified five categories of barriers. These are transaction cost, lack of trust and regulatory barriers, information and knowledge gaps, social constraints, and behavioural biases. They classify transaction cost as either pecuniary (monetary) or non-pecuniary (non-monetary).

Many studies have revealed the factors affecting the decision to save and invest in formal institutions such as banks. Efobi et al. (2014) also found that age, education, monthly income, financial discipline and ICT inclination were important determinants of the use of accounts to save in banks in Nigeria. Issahaku (2011) also found that income, education, occupation and household size determine saving and investment decisions in both formal and informal avenues among deprived communities in Ghana.

The demand for financial services is also explained by unobserved characteristics such as perceptions and attitudes towards money and financial issues. Kostov and Annim (2012), using the 2007 Finscope survey data for South Africa, found that individuals with a preference towards saving and aversion towards debt are more likely to adopt an entry level savings account known as Mzansi account. Attitudes and perceptions also account for differentials in use of financial services by gender. They assert that the limited demand for formal financial services among women in Ghana as compared to women in South Africa is contributed by attitudes and perceptions that inhibit the use of financial services (Annim & Arun, 2013). Thus socio-cultural underpinnings serve as determinants of use of financial services from formal versus informal institutions.

The informal savings institution which has been broadly studied is the ROSCA. However, there are few studies on factors influencing households' participation in ROSCAs. Elven and LeMay-Boucher (2016) examined the correlates of participation respectively in banks, *tontiniers* and ROSCAs in Benin. They ran separate probit models for each financial institution, and observed that monthly income, employment type, number of children, and the experience of health shocks were significant for participation in ROSCAs. Participation in ROSCAs increased as monthly income increased. However, monthly income in the higher order terms had a negative influence on saving through ROSCAs. This implies that at very high monthly incomes, individuals saved less through ROSCAs. Individuals in formal employment were less likely to save through ROSCAs and more likely to save through banks. People who had large number of children and also experienced shocks were less likely to save through ROSCAs. Gender, age, literacy and marital status were not significant correlates of participation in ROSCAs.

Elven and LeMay-Boucher (2016) also found that females were generally more likely to save through *tontiniers* and banks, and females that were married were less likely to save through *tontiniers* and banks. The aged were also less likely to save through *tontiniers*. There is an assertion that households that are credit constrained resort to informal savings devices (Besley et al., 1993). However, there is a tendency to consume the savings when they are easily accessible, and this may intensify poverty.

2.3.10 Determinants of Demand for Formal versus Informal Credit

Several studies have been conducted on the determinants of household demand for credit, be it formal or informal, the type of credit, be it individual credit or group credit, and the location of households, be it rural or urban. This review seeks to identify such mixed findings and place them within context for the purpose of guiding the study. Togba (2012) examined both the factors determining households' entry in the credit market in Ivory Coast, and the factors affecting the choice of formal credit. In her study, education was not significant for entry in the credit market, nor was it relevant for demand for credit from formal sources. Factors that were significant for market entry included income, land ownership, nature of business, household size, whether or not a household had a development project, and geographical location. Factors that influenced the choice of borrowing from formal sources included income, loan size, wealth, ethnicity and location. Loan size and wealth had a positive relationship with borrowing from formal sources, while income had a negative relationship with borrowing from formal sources. A particular ethnic group, the *Krous*, were more likely to borrow from formal sources than from informal sources to avoid social sanctions in informal groups.

Barslund and Tarp (2008) investigated determinants of demand for rural credit from formal and informal sources, as well as the level of credit rationing in Vietnam. In the total sample, education was not significant for entry in the credit market. However, when the sample was divided according to sectors of borrowing, education had different effects on various levels of demand for credit. Education was not significant for demand for credit from formal sources, but significant in determining the loan amount from formal sources. Highly educated household heads accessed higher credit amounts from the formal sector. In the informal sector, education was negatively related to demand for credit but was not significant for the amount of credit. This indicates that household heads with low education qualification accessed credit from informal sources. Assets holdings and labour force, proxied by number of adults in the household, were significant and positively related to credit demand from formal sources but did not affect loan amount. For the informal credit market, although these variables were not significant for credit demand, they were negatively related to loan amount.

In a similar study in Vietnam, Duy et al. (2012), examined the determinants of rural households' entry into the formal credit market and loan size using Heckman two-stage selection model and double hurdle model. They also observed differences in the influence of some of their variables, depending on whether access to credit was based on group lending or individual lending. Generally, access to credit from formal sources was positively related to marital status, proximity to market centre, and location. Education was not significant for access to formal credit. However, when formal credit was distinguished between individual credit and group credit, results showed that group-based credit was targeted at poor households and negatively related to education, landholding and proximity to market centre, while individual credit positively favoured married individuals and community involvement, which was proxied by having a job in the community. Generally, loan amount was positively related to age, asset holdings and community involvement, and negatively related to family size. For group-based lending, loan amount was positively related to community involvement and negatively related to dependency ratio.

Adugna and Heidhues (2000) examined factors that influenced Ethiopian farm households' access to informal credit in cash and in kind. Variables that influenced demand for informal credit include access to farm capital such as oxen and small ruminants, and engagement in off-farm activities. Access to oxen had a negative relationship with demand for informal credit whilst the possession of small ruminants by farm households had a positive relationship with demand for informal credit. Literacy level (which reflects formal education) and farm size had negative influence on demand for informal credit in kind, and dependency rate had a positive influence on demand for informal credit in cash.

Clearly, the above studies reflect two dominant positions in the influence of education on demand for credit. The first opinion from the findings is that education is not relevant for deciding on whether or not to borrow, which is the entry into the credit market. Thus all individuals can decide on whether or not to borrow, based on the need for credit (Togba 2012; Barslund & Tarp, 2008; Duy et al., 2012). Secondly, individuals with low educational attainment tend to borrow from informal sources or participate in group lending in formal institutions (Barslund & Tarp, 2008; Adugna & Heidhues, 2000 ; Duy et al., 2012).

Knowledge of the drivers of demand for credit from formal and informal institutions is important to appreciate limited demand for formal credit. However, limited demand for formal credit could result from the increasing use of informal credit. Consequently, investigating concurrently the drivers of use of both formal and informal credit will provide a broader view to help understand the problem of limited demand for formal credit. The above studies, with the exception of Barslund and Tarp (2008) focused on credit from either the formal sector or informal sector. In the case of Ghana, there is limited knowledge on the drivers of demand for both formal and informal credit using the same data. This study seeks to fill this knowledge gap.

2.3.11 Determinants of Demand for Formal versus Informal Insurance

Participation in various formal and informal insurance schemes is contingent on individual attributes as well as characteristics and type of insurance. Giné et al. (2008) identified basis risk, binding credit constraints, wealth level and risk-aversion as factors determining the uptake of rainfall insurance. Binding credit constraints and risk-aversion negatively affected uptake of rainfall insurance. Wealthy households had a higher tendency to take up rainfall insurance. Basis risk, which indicates the gap between insurance payouts and income fluctuations, was negatively related to rainfall insurance uptake. In the study of Giné et al. (2008), education was not a significant variable. In a similar study on uptake of rainfall insurance, Cole et al. (2013) investigated barriers to uptake of insurance using a series of randomized field experiments. They observed that insurance uptake was sensitive to price. However, at prices below actuarially fair prices, uptake remained low. Consequently, they investigated other non-price factors such as liquidity constraints, lack of trust and lack of understanding of insurance. These emerged as significant barriers to the uptake of rainfall insurance.

In another study, Kakar and Shukla (2010) studied factors that determine life insurance participation. Significant factors included occupation, education and financial perception, which was driven by perceived income adequacy. Households that believed they had enough savings to meet future needs had a greater tendency to buy life insurance, while households that borrowed money for some purposes had a lower tendency to buy life insurance. In this study, interactions with other financial services enhanced participation in life insurance. This corroborates the study of Giesbert et al. (2011), who established a reinforcing relationship between the uptake of micro life insurance and the use of other financial services, particularly, formal savings and formal credit.

In addition, Giesbert et al. (2011) found that risk-aversion, education, age, asset index and remittances were significant factors in the uptake of micro life insurance. Asset index and education were positively associated with the uptake of micro life insurance, while risk-aversion and remittances were negatively associated with the uptake of micro life insurance. They also confirmed the existence of a life-cycle effect in that the uptake of microlife insurance increased with age and experienced a downward trend after the age of 47 years.

In reviewing the low uptake of micro health insurance, Ito and Kono (2010) found that risk attitude, hyperbolic preference[3], health status of household head, household size, were important determinants of uptake. Particularly, they validated the Prospect Theory as they found out that people held a risk-loving attitude towards losses and were less

[3] Hyperbolic functions are characterised by a relatively high discount rate over the short-term and low discount rates in the long-run. Thus hyperbolic discounters or people with hyperbolic preference choose to defer current consumption in order to enjoy in the future (Laibson, 1997).

likey to take up health insurance, which was perceived as a loss. Hyperbolic discounters[3] had preference for commitment and were more likely to purchase insurance. Interestingly, they observed that ill-health status of the household head was negatively related to uptake of insurance. Furthermore, households with larger proportions of ill members were likely to purchase insurance, which is an evidence of adverse selection. Larger households were less likely to purchase insurance. In their study, the education level of the household head was not significant.

Similarly, Akotey, Osei and Gemegah (2011) found that the uptake of micro insurance among informal sector workers in Ghana was not driven by education level, but other factors such as income, flexibility in premium payment, ease of transaction, which is offered by nodal agencies, insurance literacy and trust of insurer.

Arun, Bendig and Arun (2012) also suggest bequest motives as the driving force for participation in micro life insurance in Sri Lanka. They found that participation in insurance was correlated with measures of bequest motives such as number of children and old age. However, age in the linear form had a negative effect. Clearly, the decline in participation as individuals aged, and an increase in participation also support the bequest motive hypothesis. They also found out that ownership of assets, education and self-employment facilitated participation in insurance.

Age and income have been empirically shown to influence participation in informal insurance groups in Benin. Participation in informal insurance groups increased with income and age and declined after the age of 38years. Income and household size were also significant for coverage of informal insurance. People with high income and larger household sizes were more likely to participate in insurance groups with greater coverage (LeMay-Boucher, 2012). In another study, larger household sizes in Tanzania and

Ethiopia were more likely to participate in burial societies with greater insurance coverage (Dercon, De Weerdt, Bold & Pankhurst, 2006).

2.3.12 Determinants of Credit Constraints

The function of informal credit to households excluded from formal credit has been established in the literature. It is also established that not all households excluded from the formal credit market have access to informal credit. This makes a review of the factors that determine credit constraints in both the formal and informal credit markets important.

Barslund and Tarp (2008) studied the determinants of credit constraints from both formal and informal credit institutions in rural Vietnam. They observed that factors such as education and sex of household head, as well as credit history influenced the probability of being credit constrained. The educated were less likely to face credit constraints as males were more likley to be constrained than females. Household heads with bad credit history were also more likely to be rejected for loan applications.

Using Heckman two-stage selection approach, Menkhoff and Rungruxsirivorn (2011) assessed the relationship between 'village funds', a microfinance program which typifies semi-formal credit, and credit constraints among rural households in Thailand. In their study, households that had their credit request from any kind of institution denied, as well as those who recieved lesser credit amounts relative to their requests, were considered as credit constrained. They found that type of employment and number of children were important predictors of credit constraints. Informal sector workers were more likely to encounter credit constraints and households with larger number of children were less likely to be constrained. Interestingly, sex and education, which were significant in the study of Barslund and Tarp (2008), were not significant. After several robustness checks, they established that village funds had a significant impact in reducing credit constraints in rural households. However, after dividing the sample by sex, they found out that village funds had a significant impact in reducing credit constraints for male household heads but not for female household heads.

Ali, Ali, Deininger and Duponchel (2014) also observed that household variables such as asset ownership, number of male adults and number of children below 14years influenced the incidence of credit constraints in the semi-formal credit sector in Rwanda. Other factors of household head such as education, access to information and connections with political persons were also significant. Households owning assets, specifically land and livestock, were less likely to be credit constrained. Households with a larger number of male adults were more likely to encounter quantity rationing, and those with larger number of children below 14 years were less likely to be rationed by quantity, transaction cost and by risk. The educated, those who had access to informtion and connections with political persons were less likely to face credit constrained.

Mason (2014) looked at individual characteristics of microcredit group members that influence the chances of experiencing credit constraints by quantity. Results indicate that asset level, sex, and length of time with financing institutions influenced credit constraints. Groups for which members have adequate assets were less constrained. Groups that had a majority of females were offered lower loan amouts and groups for which members had a long standing relationship with lenders were less constrained.

Several other studies on credit constraints focused on firm-level determinants. The sex of firm owner or entrepreneur has been a focal determinant whose effect is debatable. Female entrepreneurs are perceived to face discrimination, especially in the formal credit sector. However, Hansen and Rand (2014a) established that small and microenterprises owned by females faced less credit constraints than their male counterparts. They, however, identified that larger firms owned by females were more likely to face credit constraints than larger firms owned by males. Thus the firm size is an intermediating factor of credit constraints at the firm level. Hansen and Rand (2014b) prove that the measure of credit constraints is important for estimations, and credit constraints as measured by respondents' perception are more likely to adjudge females as constrained. This also indicates that females perceive themselves as credit constrained.

Clearly, the above studies indicate that the factors that determine the incidence of credit constraints depend on how credit constraints is defined. In the study of Barslund and Tarp (2008), where credit constraints referred to the situation of being denied credit request, females were less likely to be constrained. However, in the study of Mason (2014), where credit constraint was defined by receiving a lower amount of credit, females were more likely to face constraints. This suggests that even though females stand a higher chance of receiving credit approvals relative to males, females are offered lower loan amounts than males.

CHAPTER THREE

THEORETICAL AND CONCEPTUAL FRAMEWORK

3.1 Introduction

This chapter presents the theories that guide various aspects of the study as well as the conceptual framework which interlinks the various concepts underpinning the study. The life-cycle and permanent-income models are introduced as traditional models which offer insight on the motivations of people to save and borrow. These are supported by the evolutionary and intergenerational models. The evolutionary model explains the trends in general use of financial services as well as the change in the balance in use of formal versus informal financial services. The intergenerational models explain the nature of transfer of financial resources between generations, which affect the demand for financial services, notably insurance and credit and also have an implication on the extent of credit rationing. The intergenerational transfer model also applies to transfer of funds within the household and between households.

3.2 Life Cycle Model

This model was originally proposed by the Nobel Prize-winning Economist Franco Modigliani (1954, 1979). This hypothesis postulates that saving and consumption depend on expectations about future income in addition to actual current income. Young adults tend to have lower saving rates because they have lower income (and expect higher incomes in the future) and are raising children. During this stage, it is expected that many people go into debt. Saving rates tend to rise and peak toward the middle and end of a person’s working life when incomes are higher and there are fewer consumption-related expenses for children. People take advantage of this period to accumulate savings to be used in retirement. As workers retire, their income falls and they cannot save, but rather dissave by drawing on their previous saving. Consequently, saving rates tend to be low or negative during the younger years and increase till retirement, when income ceases or decreases and saving becomes negative. Thus, it is expected that the relationship between age and saving (or borrowing) should follow an inverted U-shaped pattern.

3.3 Permanent-Income Model of Consumption and Saving (Milton Friedman)

The permanent-income model was formulated by the Nobel-Prize laureate Milton Friedman at the University of Chicago in the 1950s. This hypothesis, although developed to explain saving behaviour in developed countries, has been applied influentially to explain saving behaviour in developing countries. In this hypothesis, income consists of two components, namely permanent income and transitory income. The basic assumption is that individuals expect to live for many years and make consumption decisions over a horizon that includes the entire life span. Permanent income is the yield from wealth, including both physical and human capital assets (education, building, land, etc.) at the disposal of the household (Perkins et al., 2001:398). Friedman maintained that individuals can predict with a reasonable degree of assurance the magnitude of the flows from the physical and human capital assets and they gear their consumption in line with these flows which they perceive as normal, stable or permanent. Friedman argues that consumption tends to be a constant proportion of the permanent income and approaches 100 percent, whilst saving normally occurs out of the transitory income. In the most extreme version of the permanent-income hypothesis, individuals are held to save 100 percent of any transitory income. But this has been debated as some studies show a fairly high propensity to consume out of transitory income. From economic theory, consumption is related to savings and income, as income which is not saved is consumed. Thus, the factors which influence saving decisions tend to influence consumption. The boundaries of this model can be extended to include borrowing and buying insurance, as these are consumption activities.

The permanent-income hypothesis is expressed as follows:

$S = a + b_1 Y_p + b_2 Y_t$

Where S = saving, a = constant, Y_p = permanent income, and Y_t = transitory income. As noted, in the extreme version, $b_1 = 0$ and $b_2 = 1$, so all saving arises from the transitory component of income. A modified version of this hypothesis, which tends to support situations in developing countries, holds that saving out of permanent income is constant over a person's lifetime but can be positive and that, although the propensity to save out of transitory income is high, all transitory income may not be saved. This version can be represented with the following equation:

$0<b_1<b_2<1$

The implicit assumption of the life-cycle and permanent-income models concerning the use of financial services is that all can save and borrow at a minimal cost, once actual income is received and future income is assured. However, the presence of an inclusive financial system is necessary for the tenets of these models to operate. Thus the classical version of these models depends fully on an inclusive financial system. Due to the existence of market imperfections and the absence of perfectly inclusive financial systems, variants of life-cycle and permanent-income models have emerged to explain consumption and saving behaviour (Browning & Lusardi, 1996). In the presence of constrained access to financial services in developing economies, informal financial mechanisms serve as an alternative financial system. Thus additional theories such as the intergenerational and evolutionary models are needed to explain the use of informal financial mechanisms.

3.4 Lenski-Nolan-Lenski Stage Evolutionary Model

The Lenski-Nolan-Lenski evolutionary model is employed to explain the use of informal financial mechanisms and also the progress in the use of formal versus informal mechanisms. This adaptationist evolutionary model employs concepts from evolutionary biology and ecology to examine the path of human history and societal development from hunting and gathering societies to modern industrial systems. The model notes that social evolution occurs as experiences are preserved and transmitted from generation to generation in the form of coded systems of information. The transmission of information across societal types is likely to result in societies that are less similar to societies that existed in the past. Furthermore, social evolution depends on processes that involve "random variation and selection" of those traits that promote adaptation to the environment. The model also notes that social evolution is a cumulative process, and new technologies that prove more adaptive alter the pattern of social organization, generally towards larger and more complex forms of organization. The model notes two forces that drive change in human societies namely innovation and extinction. With innovation, new technologies are created whether by chance or consciously to adapt to the environment. Extinction occurs where old cultural and structural patterns are abandoned (Turner, 1998).

This study seeks to borrow the above sociological theory in explaining the trends in use of formal versus informal financial services. In hypothesizing that as economic conditions change (improve), individuals are likely to drift from the use of informal financial institutions to formal institutions, social evolution or transformation is suggested. As the environment (economic condition) changes, new technologies in the financial system that offer greater opportunities for households arise to enable adaptation. In the same way, there is extinction of old forms of saving, accessing credit and insuring that do not support the changing environment. These actions may occur consciously or by chance.

3.5 Intergenerational Transfer Models

Intergenerational transfer models describe and explain the flow of resources within the extended family. Three major models that explain the motives of resource transfer are the altruism model, exchange model and insurance model (Agree, Biddlecom & Valente, 2005). These models are relevant in developing countries where transfer of financial resources to older generations is culturally important. These transfers in turn affect the behaviour of both the recipients and remitters in terms of saving, borrowing and in dealing with risk through market institutions.

3.5.1 Altruism Model

The altruism model maintains that transfers are made to members within a household based on their need. Following altruistic feelings towards one another, and not necessarily what one would receive in return, household members support each other to enable consumption-smoothing during the life cycle and uncertain periods. Without such transfers, individuals would have required borrowing and purchase of insurance from market institutions (Lillard & Willis, 1997; Agree et al., 2005). This model was advanced by Becker in developing the concept of 'social income' (Becker, 1974). This model is not limited to intra-household transfers but also explains inter-household transfers. This model guides several informal risk-sharing arrangements documented in the development finance literature, which offer consumption-smoothing benefits support to mitigate other shocks among low-income households and rural communities (Dercon, 2008; Morduch, 1995; Besley, 1995). This is consequential in the adoption of market insurance mechanisms, as household members who receive protection through these means are less likely to participate in market-based insurance.

3.5.2 Exchange Model

Unlike the altruism model, the exchange model is based on the ethos that household members transfer resources in return for services rendered to them. Thus the motive of transfer is the potential benefit from the recipient. This model was developed by Cox, who provided evidence that inter vivo transfer is more consistent with the exchange model than with the altruism model (Cox, 1987). In many mutual informal insurance groups, the motive for participation is exchange, as households place their personal interest first in deciding on joining such groups. Some interests may be physical resources and other interests may be unobservable, such as friendship and social network. The principle of balanced reciprocity is based on this model (Platteau, 1997). Transfer with exchange motive has an implication for participation in market-based insurance, as households that efficiently meet each other's interest are less likely to participate in market-based insurance.

3.5.3 Insurance Model

The insurance model is founded on the thought that transfers are made for consumption-smoothing purposes across time and also to overcome problems of liquidity constraints. This model expresses that, while altruism may not be relevant for transfer, some level of mutual trust and honesty is required for transfers to be made. In this model, household members may provide assistance to other members during periods of low income and unemployment and also when members encounter credit constraints. In this manner, risk is reduced and insurance is provided implicitly (Kotlikoff & Spivak, 1981; Cox & Jappelli, 1990; Schoeni, 1997; Lillard & Willis,1997; Agree et al., 2005). The ramifications of the insurance model for credit demand and credit constraints are relevant, as household members receiving transfers in this manner are less likely to demand credit from neither formal nor informal sources. This is because transfers are spontaneously received to smoothen consumption. In the same manner, as insurance is implicitly provided in this model, the conscious demand for insurance of any kind is reduced (Cox & Jappelli, 1990).

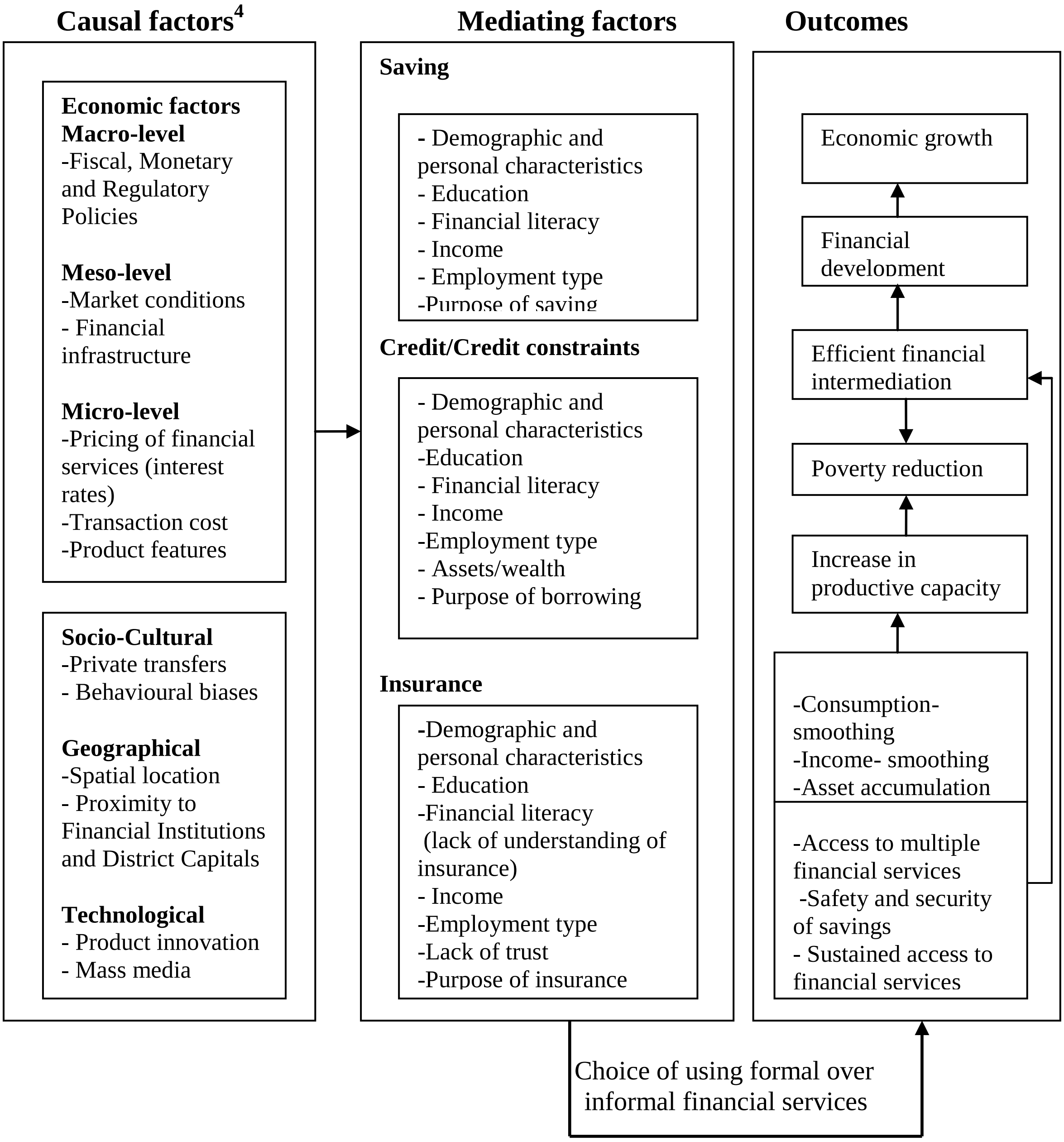
3.6 Conceptual Framework for Use of Financial Services

Drawing on the theoretical framework, the use of financial services is implicitly dependent on life cycle needs and income, be it permanent or transitory income. Furthermore, the balance in use of formal versus informal financial services over time is implicitly propelled by change in technology and extinction of some socio-cultural practices. The behaviour of individuals at the household level in terms of consumption of financial services depends on a complex of factors that include economic, social, cultural, demographic, technological and other factors which are either exogenous or endogenous in nature. Exogenous factors are those beyond the control of the individual, which also affect all other individuals in a particular location. Endogenous factors are peculiar to individuals and/or can be altered by the individual (Niculescu-Aron & Mihăescu, 2012). Following the analytical framework of Efobi et al. (2014), these factors can either promote the adoption of financial services from formal institutions (pull factors), or discourage individuals from using informal institutions (push factors).

3.6.1 Determinants of Motivation to Save, Borrow and Insure with Formal versus Informal Institutions

From figure 3.1, the determinants of the motivation to use financial services from formal versus informal institutions implicitly depend on causal factors which are exogenous in nature and mediating factors which are endogenous. Exogenous factors include economic, socio-cultural, geographical and technological factors. Endogenous

Figure 3.1: Conceptual Framework for Determinants of Use of Formal versus Informal Financial Services



Source: Author's construct with reference to Efobi et al., (2014); Barslund & Tarp (2008); Carpenter & Jensen (2002); Togba (2012); Claessens (2006); Levine (2005)

[4] Although the causal/exogenous factors are conceptually important in influencing the choice of using formal versus informal financial services, with the exception of spatial location, they are not tested in the empirical models as a result of data limitations.

factors include monthly income or wages, wealth and education, which determine permanent income, and life cycle parameters such as age, sex and marital status. Financial literacy is implicitly a function of permanent income. These factors affect the balance in the use of formal versus informal financial services, and the choice of using formal over informal financial services produces the outcomes as illustrated.

Government's fiscal, monetary and regulatory policies affect general economic conditions which in turn affect decisions of consumption of financial services at the household level. Fiscal policies that dictate an increase in government expenditure results in flow of funds through the formal financial system, which results in the use of formal financial institutions at the household level. For instance, government's decision to invest in infrastructural development results in employment opportunities for private contractors who are paid through formal financial institutions. As private contractors also pay their employees through formal financial institutions, it increases their chances of saving and accessing credit through formal institutions. Similarly government decision to engage additional human capital results in staff recruitment. As new recruits receive their salary through formal financial institutions, it increases their chances of saving with formal financial institutions and access to credit.

Monetary policies that affect lending rates and treasury bill rates serve as pull factors for borrowing and saving through formal institutions. The Monetary Policy Rate (MPR) set by Bank of Ghana reflects the lending rates set by formal financial institutions. A reduction in the MPR tends to reduce lending rates and this induces borrowing from formal financial institutions. On the other hand, an inrease in MPR results in an upward adjustment of lending rates. This makes it difficult to borrow from formal financial institutions, and household members opt for substitute forms of credit with lower cost from informal institutions. High effective interest rates on lending also increases interest rates of moneylenders who borrow from formal institutions. Thus individuals will borrow from friends, family members and neighbours and also use trade credit and other sources of informal credit that are not costly. Similarly, as government borrows from the local market, it results in an increase in treasury bills rates, which serves as a pull factor for saving in formal institutions.

Regulatory policies and legislations that affect financial markets' conditions at the meso-level also affect operations at the micro-level, which eventually affects the consumer's decision in using financial services from formal institutions. Regulatory policies and legislations may serve as push or pull factors for the use of services from formal financial institutions. Legislations that tend to lower risks of dealing with financial institutions increase the confidence of consumers. The Ghana Depository Protection Act 2016 (Act 931) for instance will serve as a pull factor for saving in formal institutions against fears of losing deposits. Policies that result in effective financial intermediation and improvement in financial products' features serve as pull factors for using financial services from formal institutions. Policies that end up increasing transaction costs in the formal sector results in exclusion of the poor. Regulatory policies that support complex and rigid operational activities may also exclude the uneducated from formal financial institutions.

At the meso-level, market conditions and financial infrastructure may affect the decision to use more formal financial services or less, which implies more use of informal services. Market conditions dictate the general pricing and attributes of financial products available to consumers from both formal and informal institutions. Following the push and pull analytical framework of Efobi et al. (2014), market conditions serve as either deterrents (push factors) or promoters (pull factors) in the use of formal versus informal financial services. Rigid documentation and requirements in opening savings accounts with formal institutions may serve as deterrents, despite the importance of customer information. Jentzsch (2009) recounts the exclusion of the poor in developing countries from formal saving institutions as a result of lack of identification cards. Such individuals may fall on informal sources of saving, such as *susu* groups or saving at home, which may be convenient but risky. In the same way, lack of security with saving at home serves as a pull factor for saving with formal institutions. Unfavourable terms and delays in obtaining loans from formal financial institutions may push consumers to the informal sector. Similarly, delays in processing insurance claims from formal insurance institutions may serve as a deterrent (push factor) for participation in formal insurance. Consequently, in order to fill the gap in demand for insurance, households fall on informal institutions. On the other hand, instability of informal insurance groups may push individuals to the formal sector.

The financial infrastructure, made up of support systems that aid efficient large-scale financial intermediation, can also serve as either push or pull factors. For instance, standing orders on individual accounts, and funds transfer mechanisms facilitiate the movement of funds electronically to other people without any physical movement and handling of physical cash. This provides convenience and security, and saves time and cost of transportation. These facilities within formal institutions serve as pull factors that promote the use of formal savings institutions. The recent introduction of mobile money transfer services functions as a pull factor for saving in the formal financial sector. Although the mobile money platform is not widely accepted as part of the mainstream banking system, there is evidence from Kenya that users of the mobile money system tend to save in formal institutions. Thus the mobile money system serves as a stepping stone for financial inclusion (Ouma, Odongo & Were, 2017). In Ghana, there is anecdotal evidence of the unbanked saving through this system.

Micro-level factors such as pricing (interest rate), transaction costs and peculiar stylized features of financial products are considerations for saving, borrowing or insuring through formal versus informal sources. When taking decisions regarding borrowing, the interest rate, other costs, loan size, loan duration and convenience are considered in choosing between formal and informal institutions. When it comes to taking decisions on saving, safety of funds, interest rates, ease and convenience of withdrawals are considered in choosing between formal and informal institutions. In the late 1980s, and particularly prior to the liberalization of the financial sector in Ghana, there were concerns of safety of deposits with government banks due to government control over accounts of individuals that were suspected to have embezzled state funds. Consequently, consumers, especially women traders, were careful in saving with government banks and opted to diversify their sources of saving in order to minimize financial risk (Aryeetey & Gockel, 1991). With a current liberalized financial sector, there are no concerns of saving with government banks. However, a new concern on safety and security is associated with some deposit-taking microfinance institutions.

The social and cultural structures of a society affect economic outcomes and have indirect influence on decisions of using financial services from either formal or informal institutions (Guiso, Sapienza & Zingales, 2006). The culture of many developing countries encourage private transfers to parents and support for elderly extended family members. Receiving transfers may serve as a pull factor to save generally. However, the means of receiving transfers influence the choice of saving in formal or informal institutions. When transfers are made through informal sources, the recipients are likely to save their money at home or in other informal institutions. Contrarily, when tranfers are made through formal institutions, the recipients are likely to save with formal institutions and build up funds to access credit as well. In this manner, behaviours that are guided by the intergenerational transfer model can influence the use of formal versus informal institutions.

Behavioural biases, superstitions and beliefs have socio-cultural underpinnings. These affect the use of formal financial services negatively. Formal funeral insurance, for instance, is avoided by some groups due to the belief that one calls for death by taking up funeral insurance (Ackah & Owusu, 2012). Superstitious beliefs, concerning money has the ability to induce risk-averse behaviour in individuals (Kramer & Block, 2008). Some groups, for instance, hold the negative belief that one's business will collapse when bank loans are used. This prevents borrowing from formal financial institutions. These beliefs stem from negative experiences of people who received loans from formal institutions and defaulted due to poor management of funds, resulting from lack of financial literacy. This calls for financial literacy training on the use of loan funds.

Culture, in terms of religion (which may be endogenous) may also affect the choice of using financial services from various sources. The Islamic religion, for instance, does not permit the earning of interest on savings. Consequently some individuals belonging to this religion make limited use of formal institutions that promise high interest rates on deposits.

Geographical factors, represented by the spatial location of households, whether in urban or rural settings, close to the district capital or to any financial institution influence the choice of financial services. First of all, consumers that are close to formal financial institutions are more likely to use these institutions, especially for saving, as well as to make credit requests. Households in urban locations are more likely to engage in formal financial services due to the greater abundance of formal financial institutions in urban settings than in rural areas. Households close to district capitals are also more likely to be involved with formal financial institutions due to abundance of these institutions at district capitals (Akpandjar et al., 2013). Contrarily, households that are located at a distance from district capitals and cities tend to consume less financial services from formal institutions. Togba (2012) found evidence that households in the Western rural forest and rural savannah areas of Ivory Coast were less likely to borrow from formal sources.

Technological factors influence the use of formal versus informal financial services. New innovations from banks, S&Ls, RCBs, microfinance and insurance companies that offer convenience and benefits to individuals serve as pull factors for the use of financial services from these institutions. In addition, the use of advertising tools such as the mass media also promotes the use of formal financial services. Through various local languages, the mass media reaches out to a larger number of households in both urban and rural areas. Efobi et al. (2014) allude that in some situations, technological factors over-shadow endogenous factors such as the education level of the individual. Thus the effect of advertisements on the decision to use formal financial institutions may be stronger than the effect of education.

Mediating factors, which are endogenous, combine with exogenous causal factors in influencing the decision to save, borrow and insure through formal institutions against informal institutions. Following the life-cycle hypothesis, demographic characteristics such as age, sex, household size and other factors influence saving and borrowing behaviour. In effect, these attributes also influence the decision to save and/or borrow from either formal or informal instutions and are theoretically relevant for this study. The permanent-income hypothesis also assumes that consumption is a function of permanent income, which consists of the yields from one's wealth, which includes both human capital and physical resources. Thus following the permanent-income hypothesis, personal characteristics such as education, assets, income or earnings from employment, employment type and related factors are theoretically important for demand for financial services; and in effect the choice of the type of institution to use. Studies on determinants of demand for formal and informal financial services account for the significance of demographic and personal characteristics (see for example Akpandjar et al., 2013; Barslund and Tarp, 2008; Carpenter and Jensen, 2002; Togba, 2012; Efobi et al., 2014). Personal characteristics come with differences in taste and preferences, and following this, individuals may choose between formal and informal institutions.

Education qualification is expected to influence the choice of financial institution in this manner. Individuals who have lower education qualification have lower skill levels and are less likely to be employed in the formal sector. Consequently, they are employed in the informal sector, which supports the use of informal financial institutions and are also less likely to use formal financial institutions due to exclusion. Thus it is expected that the highly educated consume savings, loans and insurance products from formal financial institutions as individuals with low education qualification save, borrow and insure through informal institutions.

Financial literacy is also a personal attribute which influences the use of formal versus informal financial services. Individuals with knowledge of financial products and concepts are empowered to choose formal financial products which offer optimal utility. Those who have understanding of borrowing terms of financial institutions use loans efficiently to avoid defaults and are empowered to access additional loans from formal institutions. Thus it is expected that individuals with high financial literacy scores save, borrow and insure through formal institutions, as those with low financial literacy scores use informal financial institutions (Lusardi, 2008; Lusardi & Mitchell, 2014; Bucks & Pence, 2008).

Employment type influences the choice of using formal versus informal institutions. Wage earners are more likely to use formal financial systems relative to informal sources, as they may have to open accounts with formal institutions for the payment of salaries. The self-employed, especially those engaged in petty trading activities, receive cash on a daily basis and also purchase stocks of goods very often. Consequently, they handle physical cash on a daily basis and tend to save at home, with friends and other informal means. They are also less likely to receive loans from formal institutions either because they hardly save with formal institutions or they are excluded because their transactions are not profitable. Consequently, the self-employed, who are engaged in petty trading activities tend to borrow from informal institutions. They are also more likely to insure with informal insurance institutions, as they are excluded voluntarily or involuntarily from the formal insurance market.

Following the stylized facts of the characteristics of formal and informal financial institutions, the purposes of saving, borrowing and insuring are important for the choice of institution. Barslund and Tarp (2008) indicate that informal loans are predominantly used for consumption-smoothing purposes as formal loans are used for business investment purposes. Informal loans from friends and family members are at zero interest rates and for short durations which makes it convenient for individuals to borrow for consumption-smoothing and income-smoothing purposes. Studies on ROSCAs indicate that the purpose of joining such saving groups is to enable the accumulation of funds to purchase household durable items (Carpenter & Jensen, 2002; Handa & Kirton, 1999; Besley & Levenson, 1996). The purpose of saving with formal institutions may be to accumulate an amount that could be used as a collateral to secure a loan from the institution. The purpose for which individuals demand insurance also reflects the choice of institution with which insurance is made. Individuals that desire to form networks and enjoy other benefits of group formation decide on insuring and saving through informal institutions. Thus the purposes for the demand of each of the financial components reflects the choice of the two institutions from which demand is made.

The endogenous factors that influence the use of credit from formal versus informal institutions also influence the chances of experiencing credit constraints. Demographic and personal characteristics that inform lenders on borrowers' repayment ability serve as endogenous factors that mediate the incidence of credit constraints or otherwise.

Following the evolutionary model, it is expected that, over time, as improvements are made in the economic environment, innovations from technology will drive the use of financial services from formal financial institutions, giving the appropriate mediating factors. It is also expected that changes in socio-cultural values and beliefs will support adoption of new innovations in the formal financial system. Concurrently, it is expected that with improvement in economic factors, old ways of saving, borrowing and insuring will be abandoned.

The use of financial services from formal institutions against informal institutions over time, will result in benefits of consumption-smoothing, income-smoothing and asset accumulation. These result in an increase in the household's productive capacity and poverty reduction. Additional outcomes at the household level include mutliple access to financial services. Individuals who open savings accounts can also benefit from loans as long as regular deposits are made and other requirements are satisfied. Insurance services may be obtained through financial institutions that are affiliated with insurance; and through the financial infrastructure, payment of insurance premiums can be made with ease and convenience. Considering saving in formal institutions, individuals are assured of the safety and security of their funds relative to saving at home or in secret hiding places. Other additional outcomes at the household level include a sustained access to financial services. Formal insurance companies and saving institutions are less likely to face the challenge of covariate risks associated with informal institutions. Reinsurance and reserve requirements help to stabilize formal institutions. Individuals can borrow from formal institutions several times, as long as lending requirements are fulfilled. However, one cannot be guaranteed of a regular access to credit from informal sources such as friends, family members and neighbours.

From the conceptual framework, the continuous use of formal against informal financial institutions at the household level has outcomes at the meso-level as well. As individuals save in formal institutions, it results in a larger pool of funds which is reallocated for investment in businesses and infrastructural development. This enhances financial intermediation and reinforces the development of the formal financial sector, resulting in economic growth. Also business expansion creates employment opportunities for the poor and results in poverty reduction. Infrastructural developments also enhances production efficiency and affects economic growth (Ghosh & Vinod, 2017; Niculescu-Aron & Mihăescu, 2012).

CHAPTER FOUR

METHODOLOGY

4.1 Introduction

This chapter describes the research paradigm underpinning the study, the various data sets used, and their suitability for the study. It also presents the methods employed to address the various research questions of the study and further describes the overall research design and analytical framework of this study. The choice of the various analytical approaches is also explained in this chapter.

4.2 Research Paradigm

The post-positivist approach forms the philosophical motivation for the study. This is referred to as the scientific approach or empiricist approach. It represents the thinking after positivism, challenging the notion that truth is absolute and recognising that we cannot be positive about our claims of knowledge when studying the behaviour and actions of humans. The post-positivist tradition emanates from 19th century writers such as John Locke, August Comte and Emile Durkheim. This approach also reflects a deterministic philosophy in which causes determine effects or outcomes (Creswell, 2014). This paradigm holds the realist ontology that there is an existing reality which can be measured. Its epistemology is that this reality needs to be uncovered in an objective manner. The methodology involves the verification of hypotheses and the use of quantitative methods (Lincoln & Guba, 2000). The implication of this approach is that the researcher must identify and assess the causes that influence outcomes, and the researcher must be detached from the research and adopt measures that maximize objectivity and minimises the researcher's involvement in the study. These inherently pose limitations, as it becomes a challenge for the researcher to completely detach him or herself from a research, being part of the world. Secondly, in most cases, a cause and effect relationship cannot be established when studying human actions due to unobserved human differences. Thus in quantitative researches, assumptions are made and control variables are included, which to some extent take care of such unobservable differences.

4.3. Data of the Study

The study used three sets of data as follows:

- The last four rounds of the Ghana Living Standards Surveys (GLSS); for 1991/92 (GLSS 3), 1998/99 (GLSS 4), 2005/06 (GLSS 5) and 2012/13 (GLSS 6).
- The Finscope Ghana 2010 household survey data on access and usage of financial services.
- The Ghana- Global Financial Inclusion (Global Findex) Database 2011 and the World-Global Financial Inclusion (Global Findex) Database 2014.

The third, fourth, fifth and sixth rounds of the GLSS data sets and the Global Findex data were used individually to investigate the trends in household use of savings and credit. In assessing the determinants of credit constraints, the GLSS data were combined to obtain a larger dataset and also to examine how female household heads experienced credit constraints over the years.

The Finscope Ghana 2010 data was used in examining the determinants of saving, borrowing and insuring from formal versus informal institutions as it had information on both formal and informal institutions of saving, borrowing and insurance. While the GLSS data had no information on informal institutions of saving and insurance, it provided a series of cross-sectional data to examine the use of financial services over time.

4.3.1 The Ghana Living Standards Surveys

The Ghana Living Standard Surveys are nation-wide cross-sectional surveys. Six rounds of the survey have been conducted so far, starting from 1987. The first round was conducted in 1987/88 and the second round was conducted in 1988/89 with the same methodology. Subsequent rounds were conducted at an interval of 7 years, with a methodology different from that of the first two rounds. Consequently, the first two rounds were excluded in the study. The multi-stage sampling technique was used in collecting the data for all the rounds. The duration of data collection for each set of data was 12 months.

The surveys, focusing on the household as the key socio-economic unit, provide valuable information on the living conditions of Ghanaians at a point in time. The data provides detailed information on demographic characteristics and various aspects of living conditions such as health, education, housing, household income, consumption and expenditure, credit, assets and savings, prices and employment. The sixth round of the GLSS surveys provides additional information on access to insurance, migration and tourism, and households' perception of governance, peace and security in the country. Table 4.1 provides information on sample sizes of the various GLSS data sets used. The GLSS 3 data is considered to have a self-weighting sample as a result of the sample design used and the very high response rate. Consequently each household had an equal probability of being selected (GSS, 1995). The remaining GLSS data, specifically, GLSS4, GLSS5 and GLSS6, did not have self-weighting sample designs, and weights were computed to reflect the different probabilities of selection in order to obtain the true contribution of each selected enumeration area in the sample (GSS, 2000; GSS, 2008;

GSS, 2014a). Although weights were computed already, the household effect was controlled in the analysis by multiplying the weighting variable by the household size.

Table 4.1: Sample sizes of various GLSS datasets

Sample Unit	**GLSS 3**	**GLSS 4**	**GLSS 5**	**GLSS 6**
Number of households	4,508	5,998	8,687	16,772
Number of individuals	20,403	26,411	37,128	72,372

Source: GLSS 3, GLSS 4, GLSS 5, and GLSS 6

4.3.2 The Finscope Ghana 2010 Household Survey Data

The Finscope Ghana 2010 household survey is a nation-wide survey on access and use of financial services by Ghanaians. The data was collected by Finmark Trust in 2010. The main objectives of the survey were to determine the level of access to financial services and to identify barriers to financial inclusion. Findings from the survey were expected to facilitate the debate surrounding the demand for financial services (Finscope Ghana, 2010). The stratified multi-stage random sampling technique was employed. This comprised 3,643 households in geographically enumerated rural and urban settings in all the ten regions of Ghana. In each household an individual aged 15 years and above was selected to represent the household by means of the Kish grid[5]. The data contains very rich information on household demographic characteristics, economic conditions, and ownership of assets, income levels and access to social amenities. Furthermore, it contains information relevant for determining access to formal against informal financial services, such as knowledge of financial products and concepts, perceptions on financial

[5] Kish grid is a set of tables that directs researchers on the selection of individuals within a household for interviewing, such that a fair representation of the household is obtained.

institutions, financial liberty and information on informal financial services. The data was self-weighted. However, due to the sampling of households in clusters, it results in larger sample-to-sample variability, which tends to produce larger standard errors. This effect was controlled in the data.

4.3.3 The Ghana- Global Financial Inclusion (Global Findex) Database 2011

The Global Findex 2011 indicators are drawn from survey data collected by Gallup Incorporated in 2011. The Gallup survey covered more than 150,000 adults in 148 economies. Data for Ghana was collected through face-to-face interviews carried out between 15th April, 2011 and 29th April, 2011. The Global Findex 2011 data provides information on how individuals aged over 15 years save, borrow, make payments and manage risks. The data is nationally representative, and the sampling procedure involved a stratified multistage random sampling technique. The first stage of sampling is the identification of primary sampling units, made up of clusters of households, which are stratified by population size, geographical location or both. Further stages of sampling were conducted based on probabilities proportional to population sizes, where population size data is available. In situations where population size data is not available, sample selection is based on simple random sampling. At the final stage of sampling, the respondent is randomly selected within the selected household by means of the Kish grid. Languages of interview include English, Twi, Hausa, Ewe and Dagbani. Sample size is 1,000 individuals. The data included base sampling weights that corrected for oversamples and differences in household size. The data included post-stratification weights to correct for differences based on age and gender, education or socio-economic status.

4.3.4 World-Global Financial Inclusion (Global Findex) Database 2014

Similar to the Global Findex 2011 data, the World-Global Financial Inclusion Database 2014, also known as the Global Findex data 2014, was also drawn from survey data collected by Gallup Incorporated in 2014. The data collection duration was from 5th September 2014 to 22nd September, 2014. The same methodology used for Global Findex 2011 was followed for this data collection.

This data is also nationally representative and provides information on how individuals aged 15 years and above save, borrow and make transfers. The sample size is also 1,000 individuals. The 2014 data also included base sampling weights and post-stratification weights as in the 2011 data.

4.4 Analytical Techniques

Table 4.2 presents the analytical techniques employed in the study. Descriptive analyses were carried out to examine the trends in saving and borrowing. The individual within the household is the unit of analysis. In examining the determinants of saving, borrowing and insurance participation from formal versus informal institutions, the individual is the unit of analysis. Although the data used is a household data, individual respondents that represented the household and not necessarily household heads were interviewed on the use of financial services.

Theoretically, decisions on the choice of financial services of individual household members who are not necessarily breadwinners have no bearing on the whole household. More so the variables of interest, financial literacy and education fall within personal characteristics. Consequently, for the second objective, the focus is the individual respondents. The unit of observation for the investigation of the determinants of credit constraints is the household as the household, represented by the household head.

Table 4.2: Analytical Techniques Employed in the Study

Objective	Analytical Technique	Unit of observation	Data
1. Examining the trends in saving and credit use.	Descriptive Analysis	Individual	GLSS 3-6, Global Findex 2011 and 2014
2. Analysing the determinants of saving, borrowing and insurance from formal versus informal sources.	Multinomial Logit Model (MNL)	Individual	Finscope 2010 data
3. Analysing the determinants of credit constraints among households.	Heckman Probit Model	Household	GLSS 3-6

Source: Author's construct

4.5 Empirical Model: Examining Determinants of Use of Formal versus Informal Sources of Saving, Credit and Insurance

The multinomial logit (MNL) model is employed in the estimation of the determinants of use of credit, saving and insurance from formal versus informal sources. The model is based on the assumption of the independence of irrelevant alternatives (IIA). The assumption of ordering is not imposed on the analysis of the various choices of formal and informal sources of financial services. Consequently, the consideration of the ordered logit model as an alternative is ruled out. As a second alternative to the MNL, one might consider the multinomial probit model, as it does not impose the IIA property on the choice of using financial services. However studies indicate that much significant gains are obtained from multinomial probit in studies involving routine activities, such as studies of transport use, and also when observations run into tens of thousands. For unscheduled activities such as voting and making decisions on financial services, multinomial logit provides better gains and stability (Dow & Endersby, 2004; Menkhoff & Rungruxsirivorn, 2011). Consequently the MNL is employed in analyzing the factors underlying decision on saving, borrowing and insurance from formal versus informal sources. Although the MNL is appropriate for this estimation, this study acknowledges its limitation of being unrealistic (Cheng & Long, 2007). In practical terms, rational individuals are more likely to change their decisions when other alternatives are introduced.

The MNL model simultaneously estimates binary logits for all comparisons among various outcomes. Generally, with a given number of outcomes J, only J - 1 binary logits are estimated, as comparing an outcome to itself yields a coefficient of 0 and the log odds of an outcome compared with itself is always 0 (Long & Freese, 1997).

The MNL model represents the decision of an individual within a household on saving, borrowing and participating in insurance from various sources. The formal statement of the MNL model is as follows:

$$\ln\Omega_{m \mid b}(x) = \ln \frac{\Pr(y = m \mid x)}{\Pr(y = b \mid x)} \qquad (1)$$

$$= x\beta_{m \mid b} \text{ for } m = 1 \text{ to } J$$

where *m* is a particular alternative and *b* is the base category, also known as the omitted/base category or comparison group. Since $\ln\Omega_{b \mid b}(x) = \ln 1 = 0$, it must hold that $\beta_{b \mid b} = 0$. That is the log odds of an outcome compared with itself equals 0, and thus the effects of any independent variable must also be 0. The *J* equations can be solved as follows to compute the predicted probabilities.

$$\Pr(y = m \mid x) = \frac{\exp(x\beta_{m \mid b})}{\sum_{j=1}^{J} \exp(x\beta_{j \mid b})} \qquad (2)$$

4.5.1 Model Specification: Determinants of Borrowing from Formal versus Informal Sources

Three similar models are specified and estimated for analysing the determinants of saving, borrowing and insuring through formal versus informal sources. The model for borrowing for instance, indicates use of formal institutions, informal institutions, a combination of formal and informal institutions (dual), or not borrowing. Assuming that the error terms of the utility functions are independent and identically distributed (i.i.d.) and extreme value distributed, the probability that an individual representing a household *i* chooses to borrow or use a loan, *l* from source *a*, Prob ($y_{il} = a$) is given by:

$$Prob(y_{il} = a) = \frac{\exp\,(\alpha_a X_i + \beta_a Z_l + \gamma_a L)}{\sum_{j=1}^{4} \exp(\alpha_j X_i + \beta_j Z_l + \gamma_j L)} \qquad (3)$$

a = 1....4 representing borrowing from formal sources, informal sources, dual sources, and not borrowing respectively.

y_{il} is a categorical dependent variable representing the individual's decision on borrowing. X_i is a vector of personal/household characteristics of *i*. Z_l is a vector of characteristics of loan, which includes purpose of loan or borrowing. L is a vector of location characteristics.

The following variables constitute personal characteristics in all the three models for borrowing, saving and insuring: age, sex, marital status, education qualification, employment type, and income of individual representing the household. Knowledge of financial products, proxied by financial literacy score, is included in the models for saving and borrowing. Knowledge of insurance is also included in the model for insurance.

Household characteristics include household size, household income, and ownership status of residence. Characteristics of borrowing or loan, *l*, constitute the purpose of loan. Location characteristics include the setting of household, whether urban or rural. Other variables which are included in the model as control variables include having negative experiences with financial institutions (FIs), having financial liberty, and receiving remittances from foreign and local sources.

4.5.2 Model Estimation: Determinants of Borrowing from Formal versus Informal Sources

From equation (2), taking the decision not to borrow as the base category, the probability equation will be as follows:

$$\Pr(y = m \mid x) = \frac{\exp(x\beta_{m \mid nl})}{\sum_{j=1}^{J} \exp(x\beta_{j \mid nl})} \qquad (4)$$

where *nl* represents the base category, which is the alternative of not borrowing. Three estimates are obtained comparing the outcomes of borrowing from formal sources with not borrowing, borrowing from informal sources with not borrowing, and borrowing from dual sources with not borrowing. $\beta_{f \mid nl}$, $\beta_{inf \mid nl}$,and $\beta_{finf \mid nl}$ would be the respective estimates.

4.5.3 Model Specification: Determinants of Saving from Formal versus Informal Sources

The model for savings indicates saving from formal sources, or informal sources, or both formal and informal sources or not saving. Assuming that the error terms of the utility functions are independent and identically distributed (i.i.d.) and extreme value distributed, the probability that an individual within household i chooses to save s through mechanism a, Prob (y_{is} = a) is given by:

$$\text{Prob}\,(y_{is} = a) = \frac{\exp\,(\alpha_a X_i + \beta_a Z_s + \gamma_a L)}{\sum_{j=1}^{4} \exp\,(\alpha_j X_i + \beta_j Z_s + \gamma_j L)} \qquad (5)$$

a = 1....4 representing saving through formal sources, informal sources, both formal and informal sources, and not saving.

y_{is} is a categorical dependent variable representing household decision on saving. X_i is a vector of characteristics of household i. Z_s is a vector of characteristics of saving. L is a vector of location characteristics.

Characteristic of saving s is the purpose of saving. Location characteristics include the setting of respondent, whether urban or rural. Other variables which are included in the model as control variables include having negative experiences with a financial institution, having financial liberty and receiving remittances from foreign and local sources.

4.5.4 Model Estimation: Determinants of Saving from Formal versus Informal Sources

From equation (2), taking the decision not to save as the base category, the probability equation will be as follows:

$$\Pr\,(y = m \mid x) = \frac{\exp(x\beta_{m \mid ns})}{\sum_{j=1}^{J} \exp(x\beta_{j \mid ns})} \qquad (6)$$

where *ns* represents the base category, which is the alternative of no saving. Three estimates are obtained comparing the outcomes of saving through formal sources with not saving; saving through informal sources with not saving; and saving through a combination of formal and informal sources with not saving. $\beta_{f \mid ns}$, $\beta_{inf \mid ns}$, $\beta_{finf \mid ns}$ would be the respective estimates.

4.5.5 Model Specification: Determinants of Insurance Participation from Formal versus Informal Sources

Similar to the model for borrowing, the model for insurance participation through various sources indicates having insurance from formal sources only, informal sources only, a combination of formal and informal sources, or not having insurance. Assuming that the error terms of the utility functions are independent and identically distributed (i.i.d.) and extreme value distributed, the probability that an individual representing a household *i,* chooses to insure *I* through mechanism *a*, Prob ($y_{iI} = a$) is given by:

$$Prob(y_{iI} = a) = \frac{\exp(\alpha_a X_i + \beta_a Z_I + \gamma_a L)}{\sum_{j=1}^{4} \exp(\alpha_j X_i + \beta_j Z_I + \gamma_j L)} \qquad (7)$$

a = 1....4 representing having insurance through formal sources, informal sources, dual sources and not having insurance.

y_{iI} is a categorical dependent variable representing household decision on insuring through various sources. X_i is a vector of personal and household characteristics *i*. Z_I is a vector of characteristics of insurance. L is a vector of location characteristics.

Characteristics of insurance I includes the purpose of having insurance. Location characteristics include the setting of respondent, whether urban or rural. Other variables which are included in the model as control variables include having negative experiences with financial institutions, having financial liberty, and receiving remittances from foreign and local sources.

4.5.6 Model Estimation: Determinants of Insurance Participation from Formal versus Informal Sources

Following equation (2), and taking the decision not to insure as the base category, the probability equation will be as follows:

$$\Pr(y = m \mid x) = \frac{\exp(x\beta_{m \mid nI})}{\sum_{j=1}^{J} \exp(x\beta_{j \mid nI})} \qquad (8)$$

where *nI* represents the base category, which is the alternative of not having insurance of any kind. Three estimates are obtained comparing the outcomes of insuring through formal sources with not having insurance, insuring through informal sources with not having insurance and insuring through dual sources with not having insurance. The respective estimates would be $\beta_{f \mid nI}$, $\beta_{inf \mid nI}$ and $\beta_{finf \mid nI}$

4.6 Determinants of Credit Constraints

4.6.1 Empirical Model: Determinants of Credit Constraints

In investigating the probability of an individual being credit constrained, the Heckman probit model is employed in the estimation. Two models with two dependent binary response variables are run simultaneously. Generally, probit models can be derived in two ways. First of all, an unobserved or latent variable can be hypothesized in specifying a non-linear model relating the regressors to the regressand. Also, the model can be generated as a random utility or discrete-choice model (Wooldridge, 2009). In this study, the first approach of an underlying latent variable model is taken. There are different propensities of being credit constrained which are unobserved. The observed measures are being rejected upon loan application or not. The dependent variable is related to the latent or unobserved variable y^*, which ranges from $-\infty$ to ∞, by the following structural equation:

$$y_i^* = \boldsymbol{x}_i \boldsymbol{\beta} + \varepsilon_i \qquad (9)$$

where *x* denotes the full set of independent variables.

4.6.2 Model Specification: Determinants of Credit Constraints

For one independent variable x_i, the structural equation can be simplified as follows:

$$y_i^* = \alpha + \boldsymbol{\beta}\, \boldsymbol{x}_i + \varepsilon_i \qquad (10)$$

where y_i^* is the unobserved or latent variable for observation *i* , and related to the observed binary variable for credit constraint as follows:

$$y_i = \begin{cases} 1 & \text{if } y_i^* > 0 \\ 0 & \text{if } y_i^* \leq 0 \end{cases}$$

For a given value of $\boldsymbol{x}$,

$$\Pr(y = 1|x) = \Pr(\varepsilon > -[\alpha + \beta x]|x) \qquad (11)$$

ε is the error term which is independent of x, with an assumed mean of 0 and distributed normally with Var $(\varepsilon) = 1$. This results in a binary probit model as follows:

$$\Pr(y = 1|x) = \int_{-\infty}^{\alpha+\beta x} \frac{1}{\sqrt{2\pi}} \exp\left(-\frac{t^2}{2}\right) dt \qquad (12)$$

The probability of being credit constrained is the cumulative density function (cdf) of ε evaluated at given values of the independent variables.

$$\Pr(y = 1|x) = F(\,\boldsymbol{x\beta}) \tag{13}$$

where F = normal cumulative density function Φ

$$y_{1i} = 1 \; if \; y_{1i}^{*} = \alpha_1 x_{1i} \; + u_{1i} > 0, 0 \; otherwise \qquad \text{(Selection)} \tag{14}$$

$$y_{2i} = 1 \; if \; y_{2i}^{*} = \alpha_2 x_{2i} \; + u_{2i} > 0, 0 \; otherwise \qquad \text{(Outcome)} \tag{15}$$

4.7 Description and Conceptualization of Variables

4.7.1 Trends in Household Saving and Use of Credit

Main Variables

Saving and *use of credit* are the main variables in the analysis of trends in saving and credit use. The GLSS 3, GLSS 4, GLSS 5 and GLSS 6 data provide consistent information for the measurement of the distribution of individuals saving in Ghana from 1991/92 to 2012/13. The variable *saving* represents the distribution of individuals saving in any kind of financial institution.

Use of credit is measured by whether or not an individual was indebted to any person or institution, using the GLSS 3, GLSS 4 and GLSS 5 data sets. In the GLSS 6, credit use was measured differently, indicating whether or not an individual took any loan from any kind of institution in the past 12 months. This offers a measure of credit use which is different from the previous GLSS rounds. Consequently the GLSS 6 data was not included in the analysis of trends in credit use in order to avoid inconsistency in the comparison in the proportion of individuals using financial services. The Global Findex 2011 and 2014 also measured *use of credit* as whether or not an individual borrowed money from any kind of institution in the past 12 months. Consequently, in addition to the GLSS data, the Global Findex 2011 and 2014 data were used to provide a current picture of use of credit at the household level.

In the analyses of trends in borrowing from formal versus informal sources, formal credit was constructed from the GLSS data as loans taken from state banks, private banks, co-operatives, Government Agencies, NGOs, business firms and other formal institutions. Informal credit constitutes credit from moneylenders, employers, traders, farmers, friends, relatives, neighbours and other informal sources.

In the Global Findex 2011 and 2014 data, formal credit constitutes loans taken from financial institutions such as banks, savings and loans companies, rural banks, microfinance companies etc. Informal credit constitutes loans taken from employers, moneylenders, store credit and loans taken from friends, family members and neighbours. Similarly saving with financial institutions constitutes formal saving and saving with savings clubs constitutes informal saving.

Demographic Variables

Age, sex, location and poverty status were the demographic variables used in assessing trends in saving and use of credit among different socio-economic groups. Age was captured in the data as a continuous variable. However, for meaningful analysis and to test the life cycle hypothesis, age was re-grouped to reflect different periods in the working life of individuals. Table 4.3 presents the description of the demographic variables.

Table 4.3: Description of Demographic Variables in Analysing Trends in Saving and Borrowing

Variables	Description/ Categories	Categories
Age	Continuous variable capturing the age of an individual in years.	
Age groups(years)	Categorical variable capturing age groups to which individual belong.	1=15-24 2= 25-40 3= 41-50 4= 51-60 5= 61-99
sex	Dummy variable capturing the sex of individual.	1-Male 2- Female
Location	Dummy variable capturing the setting of household to which individual belong.	1-Urban 2- Rural
Poverty status	Position of individual's household with respect to poverty line.	0- Very poor 1- Poor 2- Non-poor

Source: Author's construction based on GLSS 3, GLSS 4, GLSS 5 and GLSS 6

4.7.2 Determinants of Saving, Credit Use and Insurance Participation through formal versus informal sources

Dependent Variables

The dependent variable *SAVING* represents whether the individual representing the household is putting money away for a specific purpose. This is constructed as a multinomial variable that takes on four alternatives. The first category represents saving exclusively through formal sources and the second category represents saving exclusively through informal sources. The third category represents saving through a combination of formal and informal sources and the last category represents not saving at all.

The dependent variable *CREDIT* represents credit use and is measured by borrowing money within a period of 12 months. This is also a multinomial variable that takes on four alternatives. The first category represents borrowing money exclusively from formal institutions and the second category represents borrowing exclusively from informal institutions. The third category represents borrowing from a combination of formal and informal sources. The last category represents households that have not borrowed in the past 12months.

The dependent variable representing participation in insurance, *INSURANCE,* was also constructed as a multinomial variable. This took on the value of 1 if the respondent participated in only formal private insurance. The value of 2 was assigned in the case where the respondent participated in only informal private insurance and the value 3 was assigned to the category that participated in both formal and informal private insurance. The fourth category represents individuals who did not participate in private insurance. Individuals who were insured through only the National Health Insurance Scheme (NHIS) were excluded from the sample. Thus the sample included individuals who had informal insurance and those who subscribed on insurance products such as funeral, life, travel, auto, private medical, education, livestock, equipment, household content and property insurance. Other insurance products are endowment/investment saving plan and retirement plan. Table 4.4 presents the definition and description of dependent variables for the analysis of determinants of use of financial services from formal versus informal sources, using the Finscope 2010 data.

Table 4.4: Description of Dependent Variables in the Determinants of Savings, Credit Use and Insurance Participation Models

Dependent Variables	Definition	Description/Categories
SAVING	This is a dependent variable representing saving, which is defined as the act of putting money away for a specific purpose. This variable takes on four alternatives; 1.Saving through only formal sources. 2. Saving through only informal sources 3. Saving through both formal and informal sources 4. Not saving.	From the data, the following constitute formal sources of saving: Banks, MFIs, co-operative unions, CUs, and S&Ls. Informal sources of saving are the following: *Susu* collector[6], *susu* group, employers, saving at home/ secret hiding place, with a family/ household member/ friend, with someone in the community or lending out to others. "Not saving" is the base category.
CREDIT	This is a dependent variable which captures whether the individual received money or borrowed from someone or an institution that must be paid back. This variable has three alternatives: 1- Borrowing from only formal sources. 2- Borrowing from only informal sources. 3- Borrowing from a combination of formal and informal sources 4- Not borrowing.	From the data, the following constitute formal sources of borrowing: Banks, MFIs, co-operative unions, CUs, S&Ls and Government Agencies. Informal sources of credit include *Susu* collectors/*susu* groups, family and friends, private moneylenders, employers, church groups and other community groups. "Not borrowing" is the base category
INSURANCE	This is a dummy variable capturing whether the individual has private insurance or not. It indicates making provisions (through formal and informal means to be covered financially if some unforeseen or negative events happen. It takes on the following values: 1- Having private insurance from only formal sources 2-Having private insurance from only informal sources 3-Having private insurance from a combination of formal and informal sources. 4 - Not having private insurance.	Formal sources of insurance include life insurance, education insurance, vehicle insurance, private medical insurance, equipment insurance, livestock insurance, travel insurance, retirement plan, endowment/investment saving plan and other market-based insurance products. Provisions made for financial cover against negative or unforeseen events through savings groups constitutes informal insurance. Informal sources of insurance include informal societies and informal saving groups and schemes. Not having private insurance is the base category.

Source: Author's computation based on 2010 Finscope data

[6] Susu collectors are classified as informal because data was collected in 2010 prior to the change in the Microfinance guidelines whereby susu collectors are now included in the formal financial system.

Independent Variables

The independent variables captured from the Finscope 2010 data are grouped into two as follows:

i. Personal, economic and demographic attributes

ii. Location characteristics

Personal attributes include age, marital status, education and financial literacy level of respondents. Financial liberty and negative experiences with financial institutions are also personal attributes. The rationale for including personal attribute variables is derived from the life cycle hypothesis, and the permanent income model provides the basis for including economic attributes Economic attributes include employment status, employment type, income and wealth. Income includes earnings from employment (monthly income) and remittances. The variable house ownership is an indication of wealth status. Demographic attributes includes household size, age and sex of respondents.

Location characteristics include geographical location of household, whether in rural or urban setting, and proximity of household to financial institution. Although proximity to financial institution is theoretically relevant for the choice of financial institution, this variable was not fully observed in the Finscope data as the leading question was applicable to only consumers of formal financial services. In the GLSS data, the variable was available for only rural households. Consequently, proximity to financial institutions was excluded in the analyses. Operationally, with advancement in financial technology, the variable proximity to financial institutions is losing its relevance. Consumers have the option to carry out all their transactions on-line without having to visit their bank branches. With the use of visa cards, money can be withdrawn from Automated Teller

Machines (ATMs), of other banks that are closer. With the use of mobile money transfers, individuals borrowing from friends and family members have the chance to receive their money without having to travel to the lender.

Through principal component factor analysis, a financial literacy score (FLS) was created from the Finscope data to capture individuals' knowledge of financial concepts and products. These are, *susu*, debit card, credit card, shares in stock exchange, hire purchase, microfinance, cheque book, ATM, Co-operatives, E-Zwich, money transfer, minimum balance, mortgage/home loan and mobile phone banking. The knowledge involves whether one has never heard, heard but do not understand, or heard and understand the various financial concepts and products. One of the concepts, Islamic banking, was not included in the analysis, as it was poorly observed and its knowledge is not relevant in the Ghanaian financial market and may not be an appropriate measure of financial literacy. More so, the factor loading was low for Islamic banking. The scores for financial literacy ranged from 0 to 2. The mean score was 0.63. A categorical variable which captured knowledge of insurance was also created.

Another variable, which captures only knowledge of insurance (*iKNOW*) was created as a categorical variable and used in the model for insurance, as the variable for FLS (*finliteracy*), was used in the models for saving and borrowing. The variable indicates whether respondents have heard of insurance or not, have heard of insurance, but lack understanding of the concept or have understanding of the concept. The descriptions of the categories are in Table 4.5.

The following independent variables were used in the analysis of the determinants of saving, borrowing and insuring in formal versus informal institutions:

Age was captured as a continuous variable. However in order to obtain meaningful estimates, the higher order terms of age was used and scaled by 100. *Hhsize (*Household size), was captured as a continuous variable in the data. Table 4.5 presents a description of the independent variables.

Table 4.5: Description of Independent Variables in the Determinants of Savings, Credit Use and Insurance Participation Models

Independent Variables	Description/ Categories	Categories
Agesq	Continuous variable capturing the age of respondent in years.	
Hhsize	Continuous variable capturing the total number of household members aged 15years and above.	
sex	Dummy variable capturing the sex of respondent.	1=Male 2= Female Base category = 1
Loc2	Dummy variable capturing the setting of household.	1-Urban 2- Rural Base category = 1
Maristatus	Categorical variable representing marital status of respondent	1=Married 2=Never married 3=Ever married Base category is 2
Edulevel	Categorical variable capturing the education qualification of respondent	1=No education 2=Primary education 3=Some Secondary education 4=Secondary education and above Base category=1
Finliteracy	A composite variable created to capture knowledge of financial products and concepts.	
iKNOW	A categorical variable capturing knowledge of insurance.	0 - Never heard of insurance 1 -Heard but do not understand 2- Heard and understand Base category =0
NegexpFI	Dummy variable which captures whether the individual had any negative experiences with a financial institution that may have caused him/her to stop using their services.	1 = Yes 0 = No
fin_lib	Dummy variable capturing financial liberty, representing having one's own money that one can use as desired.	1 = Yes 0 = No
HHIncgrp	Categorical variable capturing household monthly income in GHS.	1= No income 2=<200 GHS 3= >200 GHS Base category = 1
PINCGRP	Categorical variable capturing individual monthly income in GHS	1= No income 2=<200 GHS 3= >200 GHS Base category = 1
House ownership	Categorical variable that captures the ownership rights of the household dwelling place.	1 = Rented 2 =Family owned 3 = Residence without payment The base category= 2
Remitforeign	A dummy variable indicating whether individual receives foreign remittances or	1 = Yes 0 = No

	not.	
Remitlocal	A dummy variable indicating whether individual receives local remittances or not.	1 = Yes 0 = No
empl_status	A categorical variable indicating the employment status of respondent.	0 = Not employed 1= Wage/Salaried employment 2= Non-salaried employment Reference category is 0.

Source: Author's computation based on Finscope 2010 data

Sex was captured as a dummy variable, with male as the reference category. The data captured *location* as a dummy variable. Urban location is the reference category. *Marital status* was captured in the data as a categorical variable but was recoded for meaningful analyses. The new categories created are "ever married", never married and presently married. Individuals who were widows, separated or divorced were classified as "ever married".

Edulevel (Education qualification), was captured in the data as 12 categorical variables, ranging from 'no education' to post graduate education and teacher training education. For a meaningful analysis, the categories were re-grouped to 4 categories, as detailed in Table 4.5. Incomplete educational forms were captured in preceding education qualifications. The reference category is 'no education'.

NegExpFI (Negative experiences with financial institution) is a dummy variable capturing an experience that resulted in a respondent not using a financial institution again. It is a dummy variable which represents 1 if a respondent had experienced events such as loss of money/savings, unavailability of savings upon withdrawal, excessively high interest rates on loans, high bank costs, poor customer service, closure of financial institution and the like. This variable is expected to influence decision on saving and borrowing.

fin_lib (financial liberty), was created as a dummy variable which captures whether an individual had his or her own money which can be used as desired. Theoretically, this has an implication for decision-making on saving, borrowing and participation in insurance.

PINCGRP (Personal income), indicating the monthly personal income of respondent, was captured in the data as a categorical variable with 13 categories. In order to reflect differences in income groups, and to obtain meaningful results following adequate observations in each cell, the categories were re-grouped to 3 categories. Most importantly, the minimum monthly wage of GHS83.97 as at 2010 was taken into consideration to reflect lack of income, low income, and middle to high income groups. The reference category is the group that does not receive any income.

HHIncgrp (Household monthly income), indicating the household monthly income, was also captured in the data as a categorical variable with 13 categories. This was also re-grouped to 3 categories as in the case of personal income, following similar reasons.

House ownership was captured in the data as a categorical variable with three categories as presented in Table 4.5. Ownership status of residence is theoretically expected to dictate the availability of funds for saving and insurance and the need for funds, which results in borrowing.

Remitforeign is a dummy variable representing the receipt of remittances from countries outside Ghana, and *Remitlocal* is a dummy variable that represents the receipt of remittances from people within Ghana. Employment status is indicated by the categorical variable e*mpl_status.* Three categories were created under employment status. The first category includes individuals that were exclusively engaged in wage or salaried employment. The second category includes those exclusively engaged in their own businesses (self-employed) as well as those who earned income from other activities such as farming, fishing, trading and all kinds of piece jobs. This second group is known as the non-salaried workers. The third category includes those who did not engage in any of these economic activities specified in the data. This group, known as the "not employed", forms the base category.

4.7.3 Determinants of Credit Constraints

The dependent variables in the Heckman probit model are binary response variables. Operationally, the dependent variable of the selection equation takes a value of 1 if the individual made a loan request, and zero, if otherwise. The dependent variable of the outcome equation also takes a value of 1 if the individual was rejected for a loan application, and zero, if otherwise. Table 4.6 presents the variables in the Heckman probit model, which runs a simultaneous regression of two models. The Heckman Probit assumes dependence of the selection and outcome equations.

Table 4.6: Description of Variables in the Determinants of Credit Constraints Model

Variables	Description/ Categories	Categories
Dependent variable: *Credit request*	Dummy variable representing whether or not a household made a loan request.	1 = Yes 0 = No
Dependent variable: *Credit constrained*	Dummy variable representing the refusal of a household's loan request.	1 = Yes 0 = No
Age	Continuous variable capturing the age of a household head above 15years.	
Hhsize	Continuous variable capturing the total number of individuals within the household	
Loc2	Dummy variable capturing the setting of household.	1-Urban 2- Rural Base category is 1
sex	Dummy variable capturing the sex of household head.	1=Male 2= Female

		Base category is 1
Maristatus	Categorical variable representing marital status of household head	1=Married 2=Never married 3=Ever married Base category is 2
Edulevel	Categorical variable capturing the highest education qualification of household head	1=No education 2=Primary/Basic education 3=Secondary education 4=Tertiary education Base category is 1
Work	Dummy variable capturing whether or not household head did some work within seven days prior to survey	1 = Yes 0 = No
Hospitalization	Dummy variable capturing the experience of shocks. Indicates whether a member of the household has been admitted at the hospital for at least a night.	1 = Yes 0 = No
Pov	Dummy variable indicating whether or not the Household was poor with respect to poverty line.	1=POOR 0= Non-poor

Source: Author's computation based on GLSS 3, GLSS 4, GLSS 5 and GLSS 6 data

In this study, the two models have two dependent dummy variables capturing credit request and credit constraints respectively. The decision to request for credit might be related to unobserved factors that also affect the incidence of credit constraints. This results in endogenous selection bias, which is addressed by using the Heckman probit model to allow a simultaneous estimation of the two models (Wooldridge, 2009). Alternatively, the Heckman two-stage selection model could be used, but this does not allow a simultaneous estimation. Secondly, since the dependent variables of the two models are categorical, the Heckman two-stage model is inappropriate. Independent variables are age, household size, location, sex, marital status, education qualification and poverty status, which are described in Table 4.6. Year dummies were created for the various GLSS data and included in the model. The variable *Hospitalization* was included in the model for credit requests as an exclusion restrictive variable. The variable is a proxy for the experience of shocks. In the data, it represents being admitted at the hospital for at least a night. The variable W*ork* was also included in the credit constraints model as it determines repayment ability. Reasons for the inclusion of these variables in the model are provided in Chapter 7.

4.8 Analytical Framework

4.8.1 Trends in Saving and Credit Use

The analysis of trends in use of financial services is within the broader framework of financial inclusion. Financial inclusion can be conceptualized in two ways. Broadly, financial inclusion is conceptualized as the use of services within the formal financial system by excluded groups. This indicates the use of formal financial services over informal financial services without any price or non-price barriers. This conceptualization reflects the relative importance of formal financial institutions over informal institutions (Efobi et al., 2014; Allen et al., 2016). In another way, financial inclusion is recognized when groups that do not have access to any kind of financial services are included in either the formal or informal financial system. This paradigm gives equal importance to both formal and informal financial institutions (Shem et al., 2012). This study is carried out within the framework of financial inclusion which gives superiority to formal financial systems relative to informal financial systems.

With time and economic growth, it is expected that as economic activity increases, it would create demand for financial services generally. Considering the evolutionary theory, there is a likelihood of adopting formal financial technologies which arise out of innovation. As these are adopted, there is a likelihood of neglecting informal institutions which may become extinct. This argument follows the forces of innovation and extinction that drives change in a society. Innovation through media and formalization of the economy enhances the adoption of formal financial technologies. In the same way, formalization of the economy renders some informal financial technologies obsolete, leading to extinction. This leads to the hypothesis that individuals move away from the use of informal financial services to formal financial services with time.

4.8.2 Determinants of Saving, Credit Use and Insurance Participation

The literature on financial inclusion argues that limited demand for formal financial services results from high fixed cost of these services and limited financial literacy in developing countries (Cole et al., 2011; Guirkinger, 2008). Studies have also indicated a consistent relationship between financial literacy and formal education. Formal education is required to understand financial concepts and products. In recent times of technological advancement, where financial transactions are carried out electronically, this becomes more relevant (Lusardi, 2008; Lusardi & Mitchell, 2014). Thus in the analysis of the determinants of use of formal versus informal financial services, the key variables are financial literacy and education. Other variables such as income, household size, age, marital status, which from the literature influence the demand for formal and informal financial services, were included in the model as control variables (Carpenter & Jensen, 2002; Akpandjar et al., 2013; Efobi et al., 2014; Barslund & Tarp, 2008; Akotey et al., 2011). Theoretically, other variables such as negative experience with a financial institution and financial liberty have an influence on the decision to save and borrow from formal versus informal institutions. Thus it is strongly expected in this study that financial literacy and education qualification should influence the use of formal financial services against the use of informal financial services.

4.8.3 Determinants of Credit Constraints

The concept of credit constraint is measured in various ways. First of all, households that apply for credit and were turned down are credit constrained. Some authors consider latent demand for credit and include households that were discouraged from borrowing because they can predict a high probability of being denied credit (Kim et al., 2016). In addition, households can also be credit constrained when they are discouraged from borrowing as a result of the high cost involved (Li, Lin & Gan, 2016). Theoretically, households that are offered loan amounts below their requested amounts, with interest rates above their preference are considered credit constrained. Consequently, some authors measure the extent of credit constraint using loan size or interest rate as indicators (Attanasio et al., 2008; Oduro et al., 2016). Thus, there are many ways in which households may be considered credit constrained. In this study, the analysis of credit constraints is limited to households that were turned down for credit requests, as supported by the data.

Economic theory indicates that the credit market does not clear with price due to imperfect information (on the side of both lenders and borrowers), which results in moral hazard and adverse selection. Consequently, collateral is required in lending and the probability of credit rationing exists. Following this, access to information by both lenders and borrowers tend to reduce credit rationing. Characteristics of borrowers such as education, which enable access to information on lenders, tend to reduce the incidence of credit constraints. Similarly, characteristics of borrowers which aid the provision of information to lenders also tend to reduce the incidence of credit constraints. In addition, attributes of borrowers which demonstrate repayment ability also tend to reduce the incidence of credit rationing by lenders (Stiglitz & Weiss, 1981; Hoff & Stiglitz, 1990; Barham et al., 1996). Consequently, the factors that influence credit constraints include education, poverty status and employment attributes. From the existing literature, other variables including age, household size, sex and marital status have been found relevant. Consequently, these variables are included in the model.

CHAPTER FIVE

RESULTS AND DISCUSSION: TRENDS IN SAVING AND USE OF CREDIT

5.1 Introduction

This chapter presents results on the first objective, which is to examine the trends in use of financial services. The examination of the trends in saving from 1991 to 2013 was made with the GLSS data and the Global Findex 2011 and 2014 data. Information on the sources of saving was not provided by the GLSS data. Consequently, the Global Findex 2011 and 2014 data were used in the analysis of the trends in saving from formal versus informal sources. The use of credit, which was reflected by the stock of indebtedness, was also examined from the period 1991/92 to 2005/06 with the GLSS 3, GLSS 4 and GLSS 5 data. The Global Findex 2011 and 2014, was also used to provide a current picture of the trends in use of credit.

This chapter begins with summary statistics of the four rounds of GLSS data used. It follows with the characteristics of individuals that saved as well as those who borrowed money from any kind of institution. The summary statistics of the Global Findex data also follow accordingly. Results on saving trends from 1991 to 2013 and 2011 to 2014 are presented and discussed. The use of formal versus informal institutions of saving for 2011 and 2014 also follow. Results of trends in credit use and the balance in use from various sources from 1991 to 2006 and 2011 to 2014 are also presented and discussed. An account of changes in macroeconomic conditions *vis-a-vis* the trends in use of financial services is also provided. The trends in use of financial services by some socio-economic groups follow, and the chapter concludes with a summary of the results.

5.2 Description of Data

5.2.1 Summary Statistics of the GLSS Data: Trends in Saving

Table 5.1 presents a summary of the GLSS data. The sample was restricted to individuals aged 15 years and above. From 1991 to 2013, the proportion of individuals that saved in all kinds of institutions increased from approximately 13% to 24%. Over a half of the respondents were females. This corresponds to the high proportion of females in the population of Ghana; the sex ratio, which, is defined as the number of males to 100 females, was 95.2 in 2010 and 97.9 in 2000 (GSS, 2013). The average age of a respondent was around 36 years. A majority of respondents fell within the ages of 25 years and 40 years. From table 5.1, there was a general improvement in educational attainment over the years as the proportion of individuals who had no formal education reduced from 68% in 1991 to 43% in 2012. In addition, the proportion of individuals who had attained tertiary education qualification increased steadily from 2% in 1991 to 5% in 2012. A majority of respondents were married. Over half of the population lived above the poverty line during the period. Over the years, there was a significant decline in extreme poverty rate, from 33% in 1991 to 13% in 2012. This has an implication for saving and borrowing, and an increase in saving is expected over the years. A decline in borrowing for consumption-smoothing purposes is also expected. A majority of individuals were self employed rather than paid employees. The self-employed include unpaid workers in family enterprises and farms.

Table 5.1: Descriptive Statistics: Trends in Saving

	GLSS3 1991/92	**GLSS4 1998/99**	**GLSS5 2005/06**	**GLSS6 2012/13**
Number of observations (individuals)	10,832	15,023	22,144	43,267
% Saving in any kind of institution	12.8	13.9	11.9	24.2
Sex (% Female)	53.9	54.1	52.9	53.4
Average age (years)	35.5	36.2	35.8	36.3
Age groups (years)				
15-24	32.4	31.8	32.5	32.0
25-40	35.2	34.4	34.1	33.9
41-50	13.6	14.1	14.6	13.9
51-60	9.7	9.3	9.3	9.6
61-99	9.0	10.5	9.5	10.7
Education level (%)				
No education	68.2	58.4	62.1	42.6
Basic education	25.1	31.2	26.3	40.9
Secondary education	4.8	7.1	7.6	11.6
Tertiary education	1.9	3.3	4.0	4.9
Marital status				
% Presently married	57.5	53.1	54.2	53.7
% Never married	12.6	14.4	12.5	12.0
% Married before	29.9	32.5	33.3	34.3
Household Poverty status[7]				
Very poor	33.0	26.0	22.3	13.2
Poor	14.6	12.2	9.4	17.5
Non-poor	52.4	61.8	68.4	69.3
Location				
% Urban	35.0	35.5	38.6	40.6
% Rural	65.0	64.6	61.4	59.5
Employment status (% self employed)	85.2	87.1	82.7	88.7

Source: Author's computation using GLSS 3, GLSS 4, GLSS 5 and GLSS 6

[7] According to the poverty classification in the Ghana Living Standards Survey, "Very poor" refers to individuals lying below the extreme poverty line. "Poor" refers to individuals below the poverty line but above the extreme poverty line, and "non-poor" refers to those above the poverty line.

5.2.2 Summary Statistics of the GLSS Data: Trends in Use of Credit

Table 5.2 describes the data used in the analysis of trends in credit use. As at 1991/92, 16% of the individuals aged 15 years and above had borrowed money or goods from individuals and institutions. The proportion increased to 37.5% in 1998/99 and decreased to 29.5% in 2005/06. Similar to the sample used in the analysis of trends in saving, females constituted over half of the sample.

Table 5.2: Descriptive Statistics: Trends in Use of Credit

	GLSS3 1991/92	**GLSS4 1998/99**	**GLSS5 2005/06**
Number of observations	10,832	15,023	22,144
% Indebted	15.9	37.5	29.5
Sex (% Female)	53.9	54.1	52.9
Average age (years)	35.5	36.2	36.0
Age groups (years)			
15-24	32.4	31.7	32.5
25-40	35.2	34.4	34.1
41-50	13.6	14.1	14.6
51-60	9.7	9.3	9.3
61-99	9.0	10.5	9.5
Education level (%)			
No education	68.2	58.4	62.1
Basic education	25.1	31.2	26.3
Secondary education	4.8	7.1	7.6
Tertiary education	1.8	3.3	4.0
Marital status			
% Presently married	57.5	53.1	54.2
% Never married	12.6	14.4	12.5
% Married Before	29.9	32.5	33.3
Household Poverty status			
Very poor	33.0	26.0	22.3
Poor	14.6	12.2	9.3
Non-poor	52.4	61.8	68.4
Location			
% Urban	35.0	35.4	38.6
% Rural	65.0	64.5	61.4
Employment status (% self employed)	85.2	87.1	82.7

Source: Author's computation using GLSS3, GLSS4 and GLSS5

In this sample also, the largest proportion of respondents fell within the ages of 25 to 40 years, which constitutes the active labour force. Over half of the respondents were married and over half lived in rural areas. A majority of respondents also belonged to households that lived above the poverty line, and a majority were self-employed.

5.2.3 Summary Statistics of the Global Findex Data: Trends in Saving and Use of Credit

Table 5.3 provides the summary statistics of the Global Findex data for 2011 and 2014. The total number of respondents was 1,000 for each of the data sets. The proportion of respondents who saved money within a period of 12 months increased from 44.8% in 2011 to 55.7% in 2014. Contrarily, the proportion of borrowers reduced from 36.2% in 2011 to 30.8% in 2014. In the 2011 data, the proportion of female respondents was almost equal the proportion of male respondents. However, in the 2014 data, the females in the sample were slightly lesser than males.

Table 5.3: Descriptive Statistics from the Global Findex Data

	Global Findex 2011	**Global Findex 2014**
Number of observations	1,000	1,000
% Saving in any kind of institution	44.8	55.7
% Borrowed money from any kind of institution	36.2	30.8
Sex (% Female)	50.9	48.1
Average age (years)	36.0	32.0
Education level (%)		
Completed primary or less	38.4	41.0
Secondary	53.7	53.8
Completed tertiary or more	7.6	5.1

Source: Author's computation using Global Findex 2011 and 2014 data

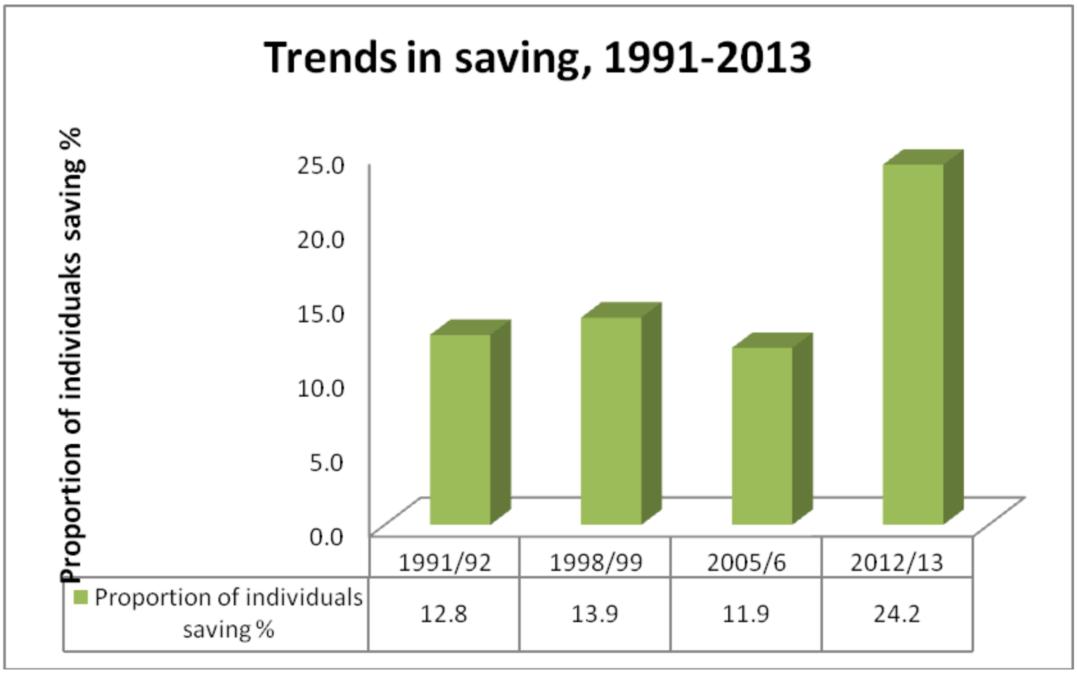
From table 5.3, the average ages of respondents for the 2011 and 2014 data were 32 years and 36 years, respectively. The sample was restricted to individuals aged 15 years and above. The proportion of respondents who had secondary education as the highest education remained relatively stable between the two years, while the proportion who had tertiary education reduced from 7.6% to 5.1%.

5.3 Trends in Saving, 1991-2014

Figures 5.1 and 5.2 present the proportions of individuals that saved in any kind of institution from the GLSS and the Global Findex data respectively. There was an overall increase in the proportion of individuals that saved in various institutions between 1991 and 2014. From figure 5.1, the proportion of individuals that saved remained relatively stable between 1991 and 2005, and increased sharply by 12.3 percentage points in 2012. From figure 5.2, there was an overall increase in the proportion that saved by 10.9 points, between 2011 and 2014.

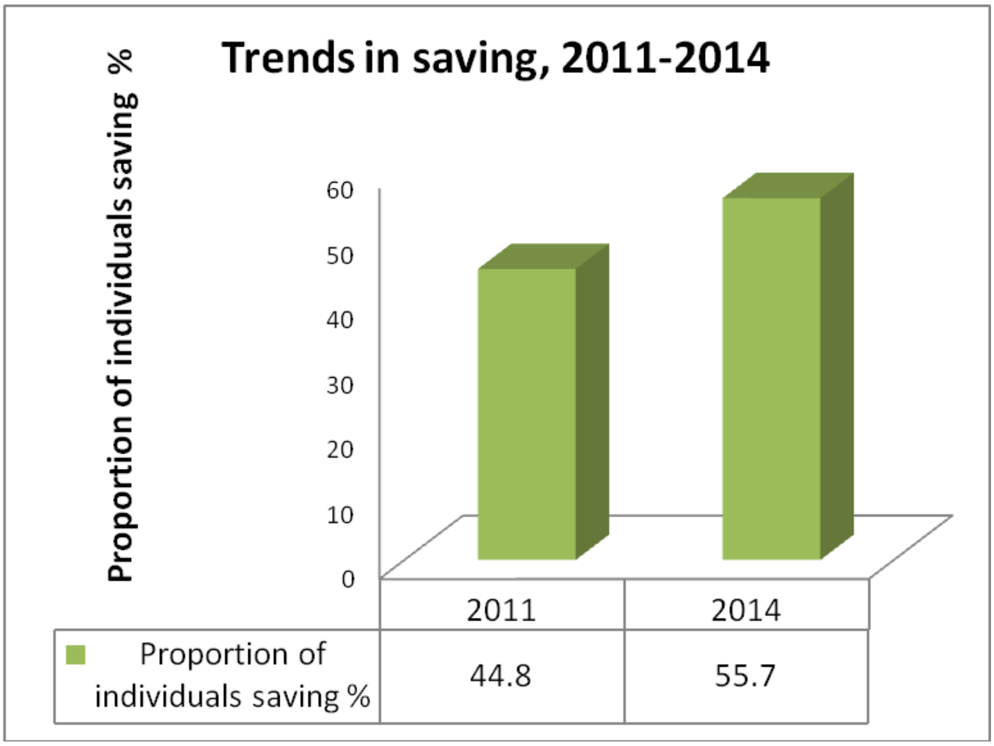
The increase in the proportion of individuals that saved in 2012 (figure 5.1) and 2014 (figure 5.2) provide good indications of financial inclusion. The significant progress made in these years was contributed by developments in the microfinance subsector from 2005 to 2012. The inception of the licensing process in 2011, following changes in the regulatory processes in the subsector resulted in the growth of microfinance companies, which increased access to savings products by individuals that were excluded from the formal financial system (GHAMFIN, 2014). Also, the favourable macroeconomic conditions in 2011, depicted by a high GDP growth rate of 14.05% and an inflation rate of 8.73% created the room for employment opportunities and an increase in incomes, resulting in an increase in the capacity to save.

Figure 5.1: Trends in Saving, 1991-2013



Source: Author's computation from GLSS3, GLSS4, GLSS5 and GLSS6

Figure 5.2: Trends in Saving, 2011-2014



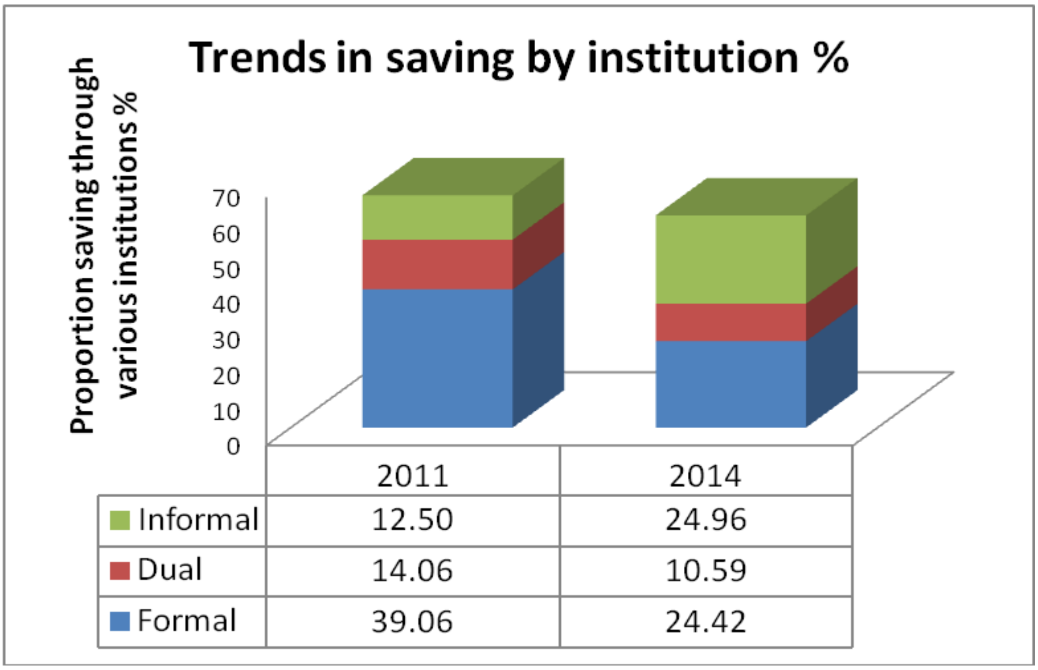
Source: Author's computation from Global Findex 2011 and 2014 data

There were also significant developments in the administration of RCBs that resulted in increasing access to savings products by individuals that were excluded in the financial system. In the year 2006, as part of the Rural Financial Services Project (RFSP), there was intensive capacity building of RCBs as logistics were provided and the staff was offered training. The ARB Apex Bank, which is owned by the RCBs and is also responsible for the promotion and development of rural banking operations, also received training of its staff. As the RFSP came to an end in 2008, the Rural and Agricultural Finance Program (RAFiP) took over from 2010 to 2016 and continued with capacity building, focusing on connecting farmers with rural finance institutions. Such support, together with the commercial approach which was already adopted by RCBs in the 1990s, contributed to an increase in savings products (GHAMFIN, 2014; BoG, 2007; Steel, 2013; Steel and Andah, 2003; Nair and Fissha, 2010). The direct evidence of the developments in the RCBs is reflected by an increase in the number of clients from about 350, 000 in 2006 to over 600,000 in 2012 (GHAMFIN, 2014). In addition, the increase in commercial banks from 2006, with the entrance of foreign banks with aggressive deposit mobilization strategies, also contributed to the increase in saving in 2012. Due to data limitations, the sources of saving for the period 1991 to 2013 could not be established. However, the sources of saving for the period 2011 to 2014 provide some illumination on the nature of progress in aggregate saving.

5.3.1 Trends in Saving from Formal versus Informal Sources

Although the overall distribution of individuals that saved increased from 2011 to 2014, as shown in figure 5.2, a closer observation of the sources of saving revealed an interesting result. The proportion that saved through formal financial institutions decreased, while the proportion that saved through savings clubs, an informal institution, increased between 2011 and 2014.

Figure 5.3: Trends in Saving through Various Institutions, 2011-2014



Source: Author's computation from Global Findex 2011 and 2014 data

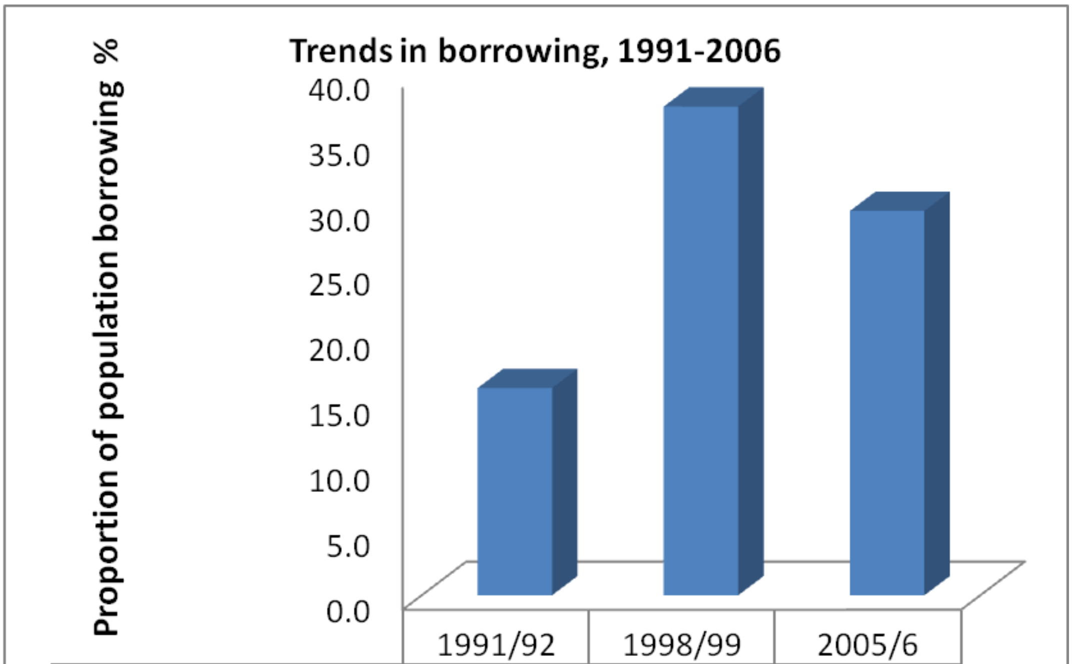
Note: The proportion of individuals that saved in various institutions exclude those who saved in neither formal financial institutions nor savings clubs. In 2011, 34% of savers belonged to this group, and in 2014; the proportion increased to 40%, and accounted for the shortfall in the total proportion that saved through various institutions in 2014.

From figure 5.3, the proportion that saved exclusively through formal institutions decreased by 15 percentage points, and that which saved exclusively through savings clubs increased by 12 percentage points. Those who saved through a combination of formal institutions and savings clubs reduced by 3.5 percentage points. This finding is against the *a priori* expectation and has a negative implication on financial inclusion efforts. It suggests that more people found savings clubs as attractive and fewer people saved through formal financial institutions. Although just two data points are inadequate to establish a conclusive opinion on trends, the substantial gaps raise much concern for the development of the financial sector. If this persists over a long term, it may hamper efficient mobilization and distribution of financial resources.

5.4 Trends in Borrowing, 1991-2014

The results of the trends in borrowing using the GLSS data and the Global Findex data are shown in figures 5.4 and 5.5 respectively. From figure 5.4, the proportion of individuals that borrowed from any kind of institution increased by 21.6 percentage points from 1991 to 1998. The figure decreased by 8 percentage points between 1998 and 2005. From figure 5.5, the figure decreased by 4.8 percentage points between 2011 and 2014.

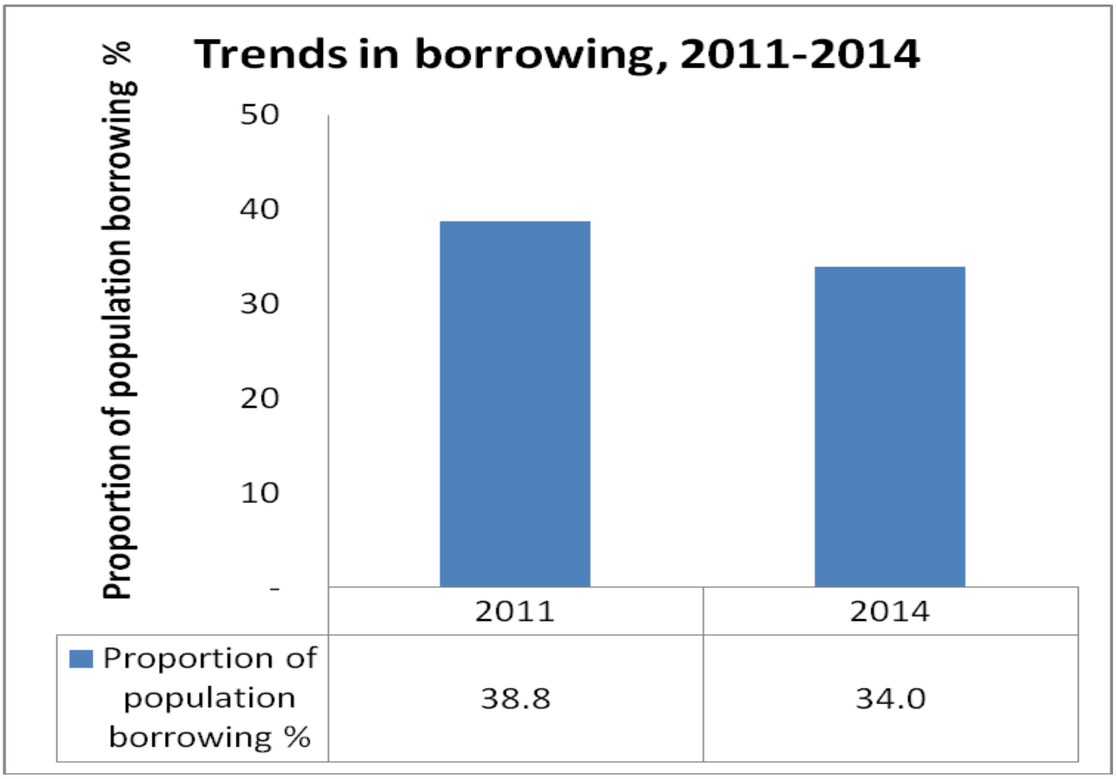
Figure 5.4: Trends in Borrowing, 1991-2006



	1991/92	1998/99	2005/6
Proportion of population borrowing %	15.9	37.5	29.5

Source: GLSS 3, GLSS 4, GLSS 5

Figure 5.5: Trends in Borrowing, 2011-2014



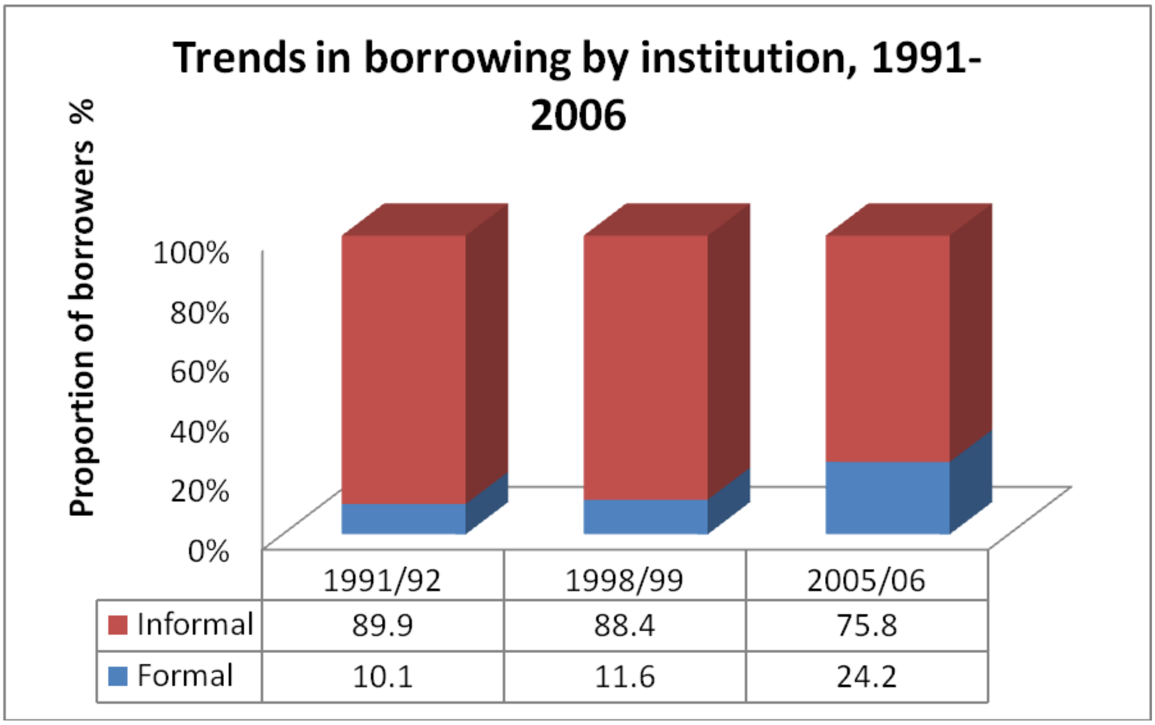
Source: Global Findex, 2011 and 2014

The results show an oscillating trend in the proportion of individuals that borrowed. A similar trend with a generally increasing pattern in the use of credit was observed in Cote d'Ivoire (Togba, 2012). The increase in the proportion of individuals that borrowed in 1998 was influenced by factors such as increase in access to credit from the formal sector following the financial sector reforms. The literature establishes a positive relationship between financial sector reforms and financial sector competition, and also a positive relationship with foreign ownership in banking and banking competition in many developing countries (Chien-Chiang, Meng-Fen & Yang, 2016; Zhao, Casu & Ferrari, 2010). Claessens (2009), argues theoretically that competition in the financial sector, following an increase in supply entities, generally results in an increase in access to financial services by households and small firms at reasonable prices. He further argues that increased competition may have adverse effects on access to credit by socio-economic groups that are information-intensive as lenders invest in information acquisition. In the case of Ghana, there is evidence of an increase in the number of financial institutions following the financial sector reforms. As at 1991, there were 11 commercial banks or DMBs in Ghana. The number increased to 17 by 1998 with a large number of NBFIs that were not in existence in 1991 (ISSER, 1992; ISSER, 1999). Furthermore as the NBFI Law was passed in 1993, it encouraged the establishment of various degrees of non-bank financial institutions such as S&Ls and credit unions, which increased access to credit. In 1994, Women's World Banking Ghana (WWBG) was licensed as the first S&L company (Aryeetey et al., 2000; Osei-Assibey, 2011; GHAMFIN, 2014). Thus in the period 1991 to 1999, there was an increase in the number of financial institutions, and this increased competition in the financial sector, which eventually resulted in increased access and use of credit.

5.4.1 Trends in Borrowing from Formal versus Informal Sources

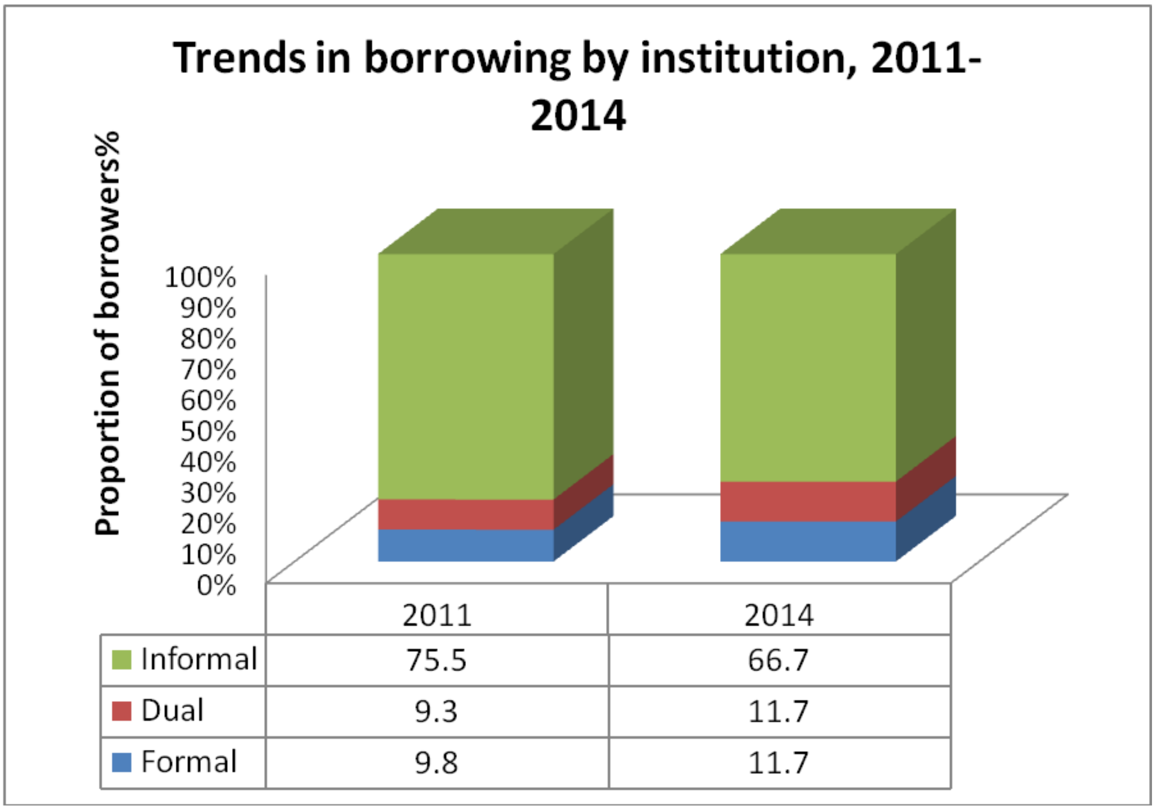
A disaggregation of the proportion of individuals that borrowed from formal versus informal institutions shows the actual progress in financial inclusion over the years. The results from figures 5.6 and 5.7 show that a larger proportion of borrowers accessed their major credit from friends, family members and neighbours, moneylenders and other informal sources. From figure 5.6, the proportion that borrowed from formal versus informal sources remained relatively stable between 1991 and 1998. However, between 1998 and 2006, there was a reduction in the proportion that borrowed from informal institutions by 12.6 percentage points and an increase in the proportion that borrowed from formal institutions by 12.7 percentage points. A similar trend was observed with the Global Findex data.

Figure 5.6: Trends in Borrowing from Formal versus Informal Sources, 1991-2006



Source: GLSS 3, GLSS 4 and GLSS 5

Figure 5.7: Trends in Borrowing from Various Institutions, 2011-2014



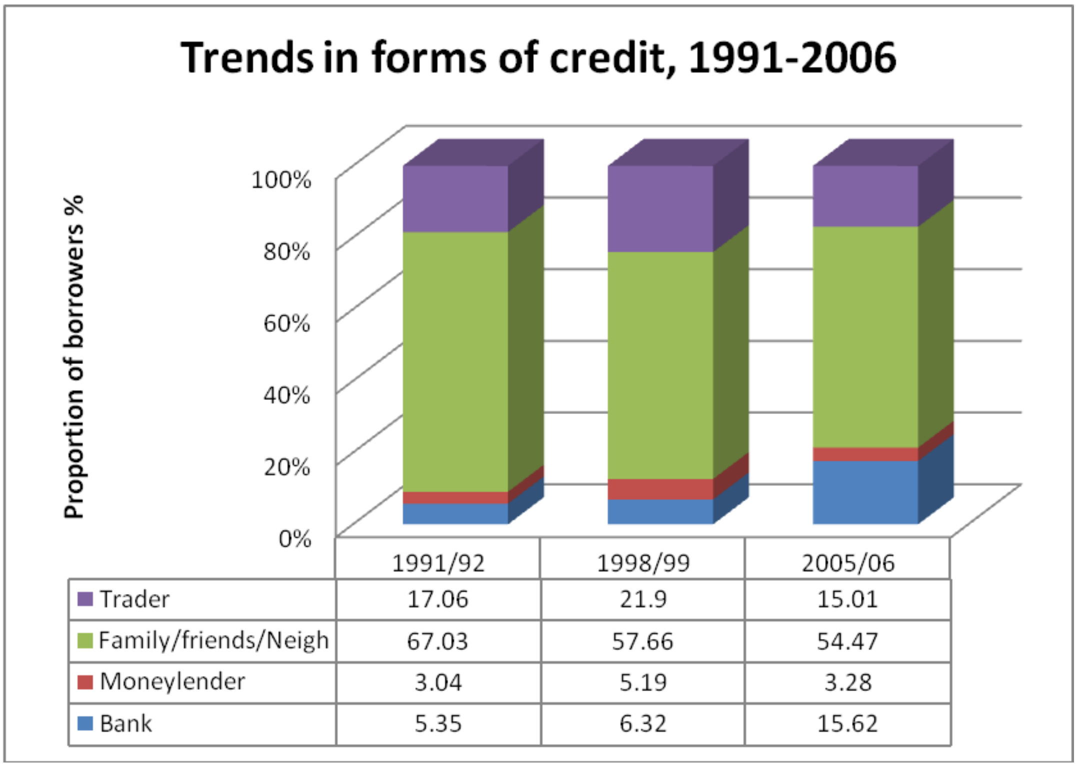
Source: Global Findex, 2011 and 2014 data

From figure 5.7, the proportion of individuals that borrowed from formal financial institutions increased by 1.9 percentage points, and, the proportion that borrowed from informal institutions declined by 8.9 percentage points between 2011 and 2014.

The above trend indicates an increase in access to loans in the formal sector over the years, particularly between 1998 and 2005. This is a good indication of financial inclusion efforts. Following the financial sector reforms, new banks were licensed into the banking system and the inclusion of foreign banks promoted efficiency and competition. A revolution can be said to be experienced in the financial sector as the new banks, especially foreign ones, introduced attractive loan products. A number of S&Ls were established in the mid-1990s to the late 1990s, which set up branches at market centres and increased access to credit by micro enterprises. The growth of these S&Ls in the late 1990s and early 2000s paved the way for other non-bank financial institutions such as microfinance companies to operate. These institutions increased access to credit by individuals that were previously excluded in the financial system. Furthermore RCBs, which in the mid-1990s started serving their clients with innovative products, intensified their activities to increase their customer base. Clearly, increase in access to credit from formal institutions is likely to decrease interest in informal institutions (Aryeetey et al., 2000; Steel & Andah, 2003; Quartey & Afful-Mensah, 2014; GHAMFIN, 2014).

Again, a closer look at the forms of credit indicates that the largest share of informal credit is from uninstitutionalised sources such as friends, family members and neighbours (Table 5.8). This reflects kinship support, which is consistent with the intergenerational transfer models. Based on altruism, family members, friends and neighbours lend to individuals in need. Such loans usually attract no interest, and lenders are not very much concerned when borrowers default. Based on the exchange model, family members, friends and neighbours lend to individuals in need with the expectation that they can also receive such support in the future (Agree, Biddlecom & Valente, 2005; Lillard & Willis, 1997; Cox, 1987). The results show a consistent decline in the use of credit from family members, friends and neighbours, and an increase in the use of credit from banks including state banks, private banks, RCBs and other banking institutions. This development is a good indication of financial inclusion, as many more individuals have access to sustainable credit from the formal sector. The use of credit from the formal sector against uninstitutionalised sources of credit, results in the growth of the formal financial sector, which eventually results in economic growth.

Figure 5.8: Trends in Use of Various Forms of Credit, 1991-2006



Source: GLSS3, GLSS4 and GLSS5

Supply side statistics indicate an increase in the number of DMBs, RCBs and other financial institutions over the years. Figure 5.8 shows an increasing trend in use of credit from banks. Clearly, the increase in the number of banking institutions including RCBs, state banks and private commercial banks resulted in the observed trend.

5.5 Macroeconomic Developments and the Use of Financial Services

The economy of Ghana has gone through several transformations over the past three decades. First of all, there has been an improvement in economic growth, as the average GDP growth rate increased over the years. As shown in Table 5.4, the average GDP growth rate increased from 4.8% in the late 1980s to 7.7% in 2011-2015. Inflation rate has also dropped significantly from an average of 31.6% in the late 1980s to 12.4% in 2011-2015. The unemployment rate has also declined in recent times, as domestic credit to private sector has increased consistently over the years.

The financial sector has also made a tremendous progress after the financial sector reforms. The reforms touched on the legal and regulatory framework as well as the structure of the financial system. The amendment of the legal infrastructure resulted in the entrance of a diversity of financial institutions, some with foreign ownership. The movement from a repressive set of policies to a liberalised set of policies gave banks the freedom to increase lending to households and firms that meet loan application requirements. Also, banks could adjust their deposit rates upwards to attract depositors. There has also been an increase in the number of financial institutions over the years. In 1991, there were 11 Deposit Money Banks (DMBs) and 124 Rural and Community Banks. As at 2016 year ending, the number of DMBs increased to 33, and the RCBs increased to 141. The sector expanded by the addition of 64 NBFIs, 564 MFIs and 3 Credit Reference Bureaux that were not in existence as at 1991 (ISSER, 1992; BoG, 2017).

The above conditions in the macro economy and financial sector are supposed to serve as precursors for a steady increase in access to credit and saving at the household level. Looking at the trends in saving and use of credit, there was no significant increase in the proportion of individuals that saved during the 1991/92, 1998/99 and 2005/06 survey periods, except for the 2012/13 survey periods. From Table 5.4, there was also a lack of growth in gross domestic savings to GDP. It was only in the 2010-2015 period that a significant increase was made in the average gross domestic savings to GDP. Household saving is important in supporting economic growth as aggregate funds are allocated for investment in infrastructural development and economic activities. In the same way, an increase in household saving also enhances efficient reallocation of funds to individuals that lack resources. Thus the lack of progress in saving trends in the first three survey periods was not good for economic growth (Aghion & Bolton, 1997; Niculescu-Aron & Mihăescu, 2012; Ghosh & Vinod, 2017).

Table 5.4: Trends in Macroeconomic Indicators

Macroeconomic indicators	**1986-90**	**1991-95**	**1996-2000**	**2001-05**	**2006-2010**	**2011-2015**
GDP growth (annual %)	4.81	4.28	4.31	5.04	6.53	7.71
Inflation rate (%)	31.64	27.48	25.33	20.43	13.62	12.43
Unemployment rate (%)	-	6.00	8.98	6.70	6.25	4.79
Domestic credit to private sector (% of GDP)	4.14	4.75	10.02	13.05	14.48	17.62
Gross domestic savings (% of GDP)	5.24	7.73	7.34	6.50	5.83	15.72

Source: World Bank, 2017

Over the years, there was also an unsteady pattern in the use of credit from all kinds of institutions. However, the pattern of use of credit from formal versus informal institutions indicates progress in the formal financial sector in terms of allocation of funds. Access to credit from the formal sector enables the start-up of new businesses and expansion of existing businesses. It also enables consumption-smoothing and income-smoothing. The use of credit from formal sources rather than informal sources enhances the growth and development of the formal financial system, resulting in economic growth. Nevertheless, the lack of progress in the proportion of individuals that saved during the first three survey periods reflects a lack of financial deepening at the household level. This means inadequate resources were available for allocation. This situation has a possibility of destabilizing the financial system when loan default rates increase. Promisingly, the proportion of individuals that saved increased in 2012/13, and the gross domestic savings to GDP also increased during that period.

5.6 Analysis of Saving by Demographic Features

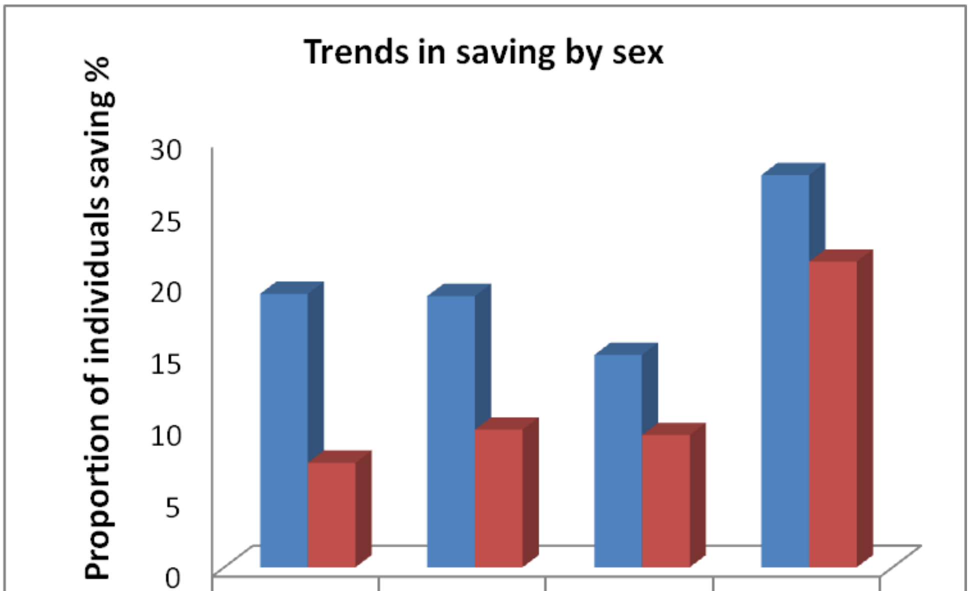
Analysis of the distribution of savers by sex, location, poverty status and age group, using the GLSS data, is provided in this section. Results on analysis made on other variables such as marital status, education level, and household size show no conclusive relationship and hence were not presented.

5.6.1 Trends in Saving by Sex, 1991-2013

Figure 5.9 shows the trends in the proportion that saved by sex. Generally, the proportion of males who saved over the years was greater than the proportion of females who saved. In 1991, 19% of males saved in any kind of institution against 7% of females.

A similar finding was made by Annim and Arun (2013) who studied the gendered use of general financial and investment services among Ghanaians and South Africans, using the Finscope 2010 data for Ghana and South Africa. They found out that females in Ghana were less likely to use general financial and investment services than males, while in South Africa, gender was not a significant. Furthermore, they found out that the variation in the use of financial services by sex is attributed to unobserved characteristics related to perception and attitude.

Figure 5.9: Trends in Saving by Sex, 1991-2013



	1991/92	1998/99	2005/06	2012/13
Males	19.2	19.0	14.9	27.5
Females	7.3	9.6	9.3	21.4

Source: GLSS 3, GLSS 4, GLSS 5 and GLSS 6

The differences in saving by sex may be contributed by differences in earnings, resulting from differences in employment opportunites between males and females. A study on gender and ethnic earning gaps in seven French-speaking countries in West Africa indicate large gender earning gaps against females in all the countries studied (Nordman, Robilliard & Roubad, 2011). In Ghana, the informal sector is dominated by females who are engaged in petty trading with low profit margins and presumably have less money to save.

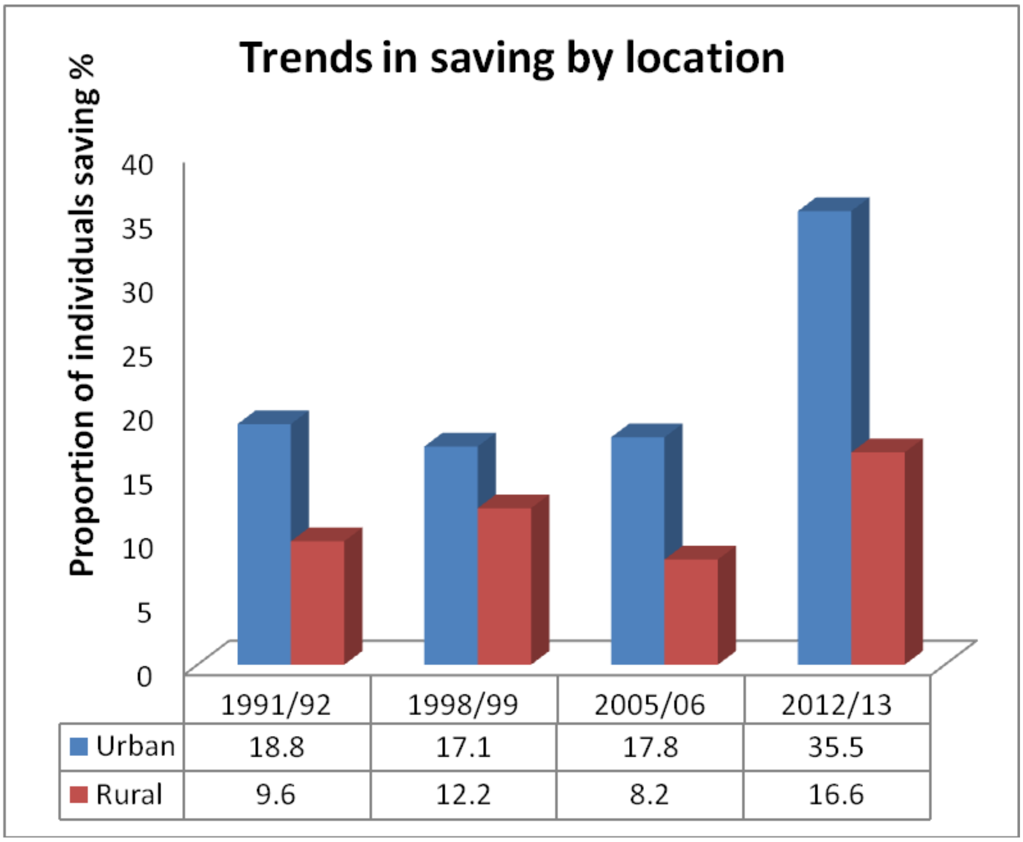
It is, however, interesting to note that over the years, the gap in male to female proportion of savers narrowed. This implies that the proportion of females saving increased at a relatively rapid rate over the years. This can be attributed to the introduction of microfinance savings programs which targeted women with the aim of empowering them, and also the growing attention given to women's access to financial services (Kato & Kratzer, 2013). In Ghana and many developing countries, microfinance institutions target traders at market centres, who are invariably females, and mobilise deposits from them.

5.6.2 Trends in Saving by Location, 1991-2013

The proportion of individuals that saved by location is shown in figure 5.10. Generally, a lower proportion of residents in rural locations saved. In the 1991/92 survey period, 19% of residents in urban setting saved as against 9.6% of residents in rural areas that saved. Thus there was a gap of 9.2 percentage points between the proportions that saved in urban areas and rural areas. In 1998, there was a gap of 4.8 percentage points and in 2005; there was a gap of 9.6 percentage points. In 2012 there was a large gap of 19 percentage points between the proportion of individuals in urban areas and rural areas that saved.

The results indicate that the gap in the proportion of savers between rural and urban settings widened between 1991 and 2012. This observation, together with the low level of saving among rural households has an implication for the development of the financial sector and financial inclusion. Using similar data, Akpandjar et al. (2013) observed that shocks experienced by rural households negatively affected their demand for savings. They acknowledged that in the absence of good insurance programs that will benefit rural households, the rate of saving by rural households is likely to decline and poverty is likely to increase. The situation of low level of saving among rural residents may be attributed to low level of economic activity as employment opportunities are low in rural areas. In addition, a gap in infrastructure results in a limited supply of financial institutions in rural areas.

Figure 5.10: Trends in Saving by Location, 1991-2013



Source: GLSS 3, GLSS 4, GLSS 5 and GLSS 6

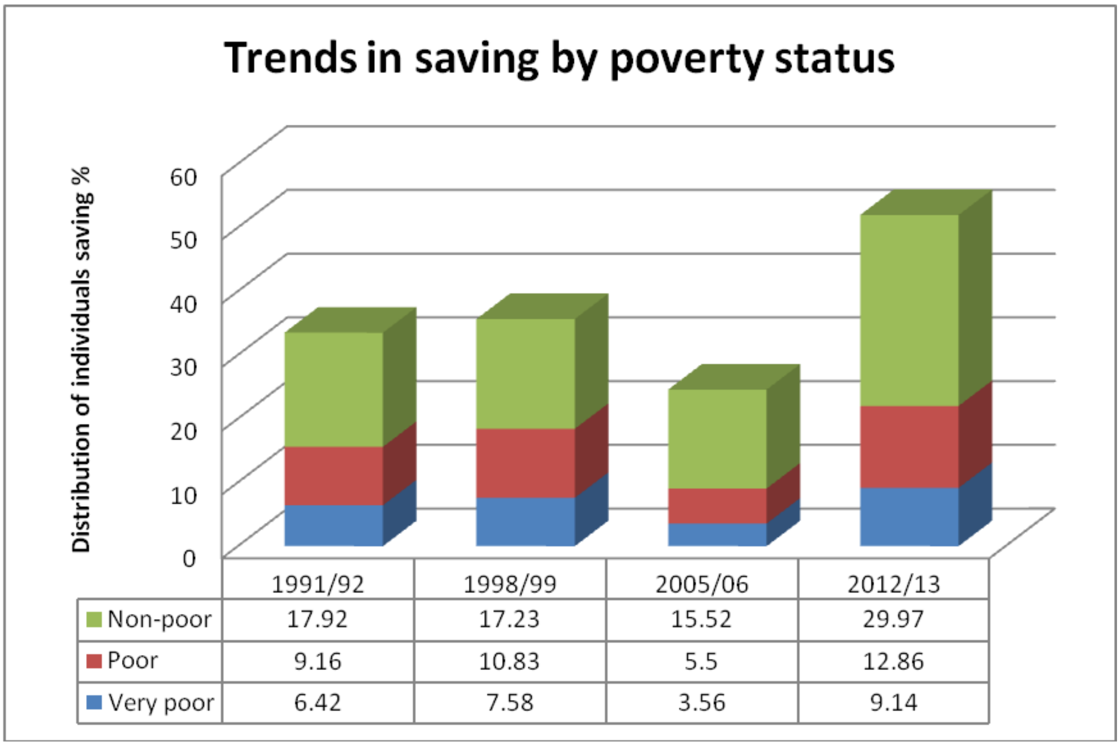
It is also interesting to note that the gap in saving between urban and rural areas narrowed in 1998. This is contributed by the efforts of RCBs in offering innovative deposit products to residents of rural areas. Some RCBs established linkages with *susu* collectors and also introduced the concept of Mobile Banking, by which officers visit rural markets on market days to facilitate deposit collection and provide loans. These innovative methodologies served as commitment mechanisms for saving among rural residents. Many informal saving groups are patronized by rural households, following the nature of commitment mechanisms in place which encourages members to save, and prevents the wasteful use of funds (Steel & Andah, 2003; Gugerty, 2007).

5.6.3 Trends in Saving By Poverty Status, 1991-2013

Figure 5.11 represents trends in saving among poverty groups. Generally, a greater proportion of the non-poor saved over the years as compared to the poor and very poor. In the 1991/92 survey period, 18% of the non-poor saved in any kind of institution. Over the years there was a slow growth in the proportion that saved among the very poor as compared to the non-poor. This finding is explained by the fact that the very poor have insufficient funds to save and are also faced with barriers when they decide to save. One barrier in the formal sector is transaction costs. These are observed as minimum account opening balances. When the very poor decide to save with the informal sector, the issue of trust also poses as a barrier. Karlan et al. (2014) illustrates the barriers that the poor encounter in saving.

The permanent-income hypothesis implicitly assumes that all can save once income is earned. However, at some minimal income levels, where consumption surpasses income, saving is negative. It is even more difficult for the extremely poor to save when they depend on remittances for their consumption needs. Lack of saving in effect prevents the poor from investment in education, and this reinforces their vulnerability (Lusardi & Mitchell, 2014).

Figure 5.11: Trends in Saving by Poverty Status, 1991-2013

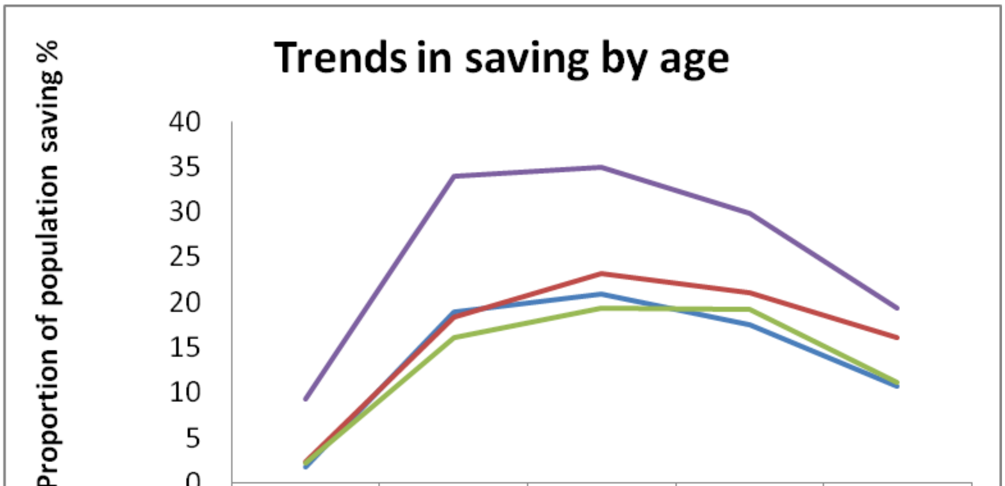


Source: GLSS 3, GLSS 4, GLSS 5 and GLSS 6

5.6.4 Trends in saving by age, 1991-2013

Figure 5.12 exhibits the distribution of savers by age group. In the 1991/92 survey period, only 2% of respondents within the age group of 15 to 24 years saved in any kind of institution, as against 19% for respondents in the 25-40 year group, and a peak of 21% for respondents aged 41 to 50years. The figure declined to 17% for older respondents aged 51 to 60 years and further declined to 10.8% for the aged above 60years.

Figure 5.12: Trends in Saving by Age, 1991-2013



	15-24yrs	25-40yrs	41-50yrs	51-60yrs	61-99yrs
1991/92	1.82	18.97	20.87	17.44	10.76
1998/99	2.31	18.36	23.12	21.03	16.1
2005/06	2.24	16.11	19.4	19.2	11.19
2012/13	9.25	33.93	34.94	29.9	19.38

Source: GLSS 3, GLSS 4, GLSS 5 and GLSS 6

The age-saving pattern follows an inverted U-shaped pattern, and this observation is consistent with the life-cycle hypothesis. Thus for all the surveys, the proportion of young adults who saved were lesser and the proportion increased as individuals aged and peaked up at mid-life. Saving rates declined among individuals approaching retirement and those that were retired. Chamon et al. (2013) made a different observation on saving by urban households in China. They observed a U-shaped pattern in the saving-age profile as a result of high income uncertainty among young adults and also income shocks among older people due to pension reforms. In their study, they concluded that the motive for the high rate of saving among young adults and the aged is precautionary due to shocks experienced by these socio-economic groups.

The motives for saving among Ghanaians are unclear. Browning and Lusardi (1996) stated nine motives of saving in reference to the eight motives of John Maynard Keynes. From this study, it is unlikely that the general motive for saving among Ghanaians is precautionary. As the pattern of saving follows the life-cycle hypothesis it reflects the balance between income and the needs of individuals at each stage of the life-cycle.

The shape of the inverted U is flatter for the first three survey periods, than for the 2012/13 survey period when the U pattern is steeper. This implies that saving among the various age groups progressed at a slow rate for the first three survey periods, while saving progressed at a fast rate in the 2012/13 survey period. There was also a sharp increase in the distribution of savers between the young adults and adults in the 2012/2013 survey. This indicates financial deepening and a good sign of financial inclusion in the last survey period.

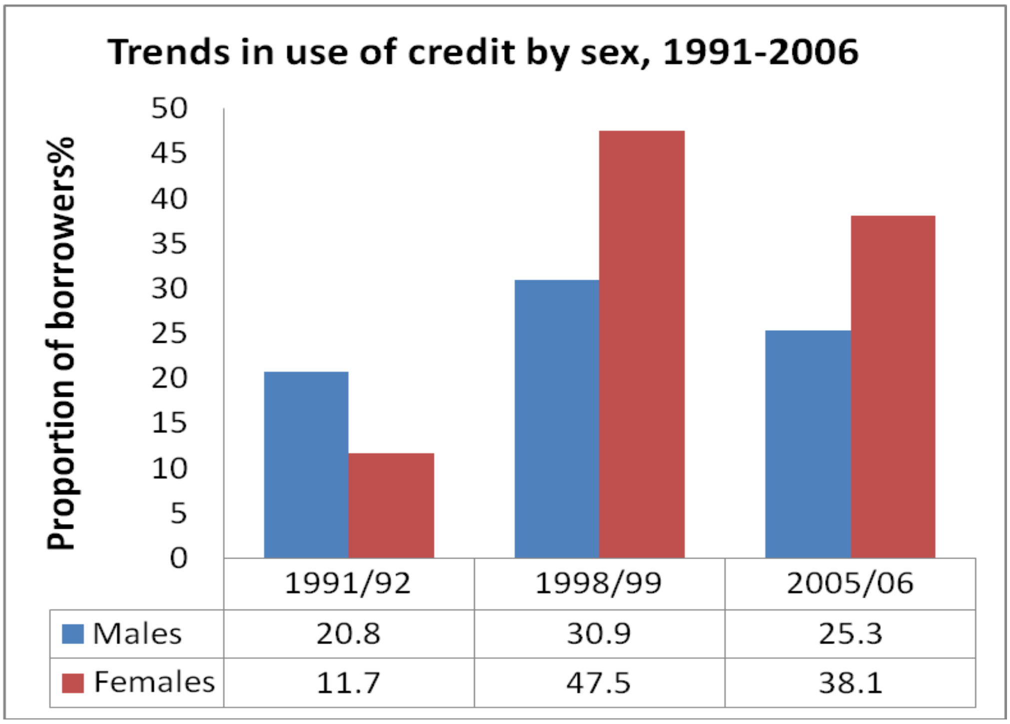
5.7 Analysis of Borrowing by Demographic Characteristics

Analysis of the use of credit by sex, location, poverty status and age group, using the GLSS data, is provided in this section. Results on other variables such as education level and household size show no conclusive relationship and hence are not presented.

5.7.1 Trends in Use of Credit by Sex, 1991-2014

The trends in the proportion of individuals who used credit by sex are shown in figures 5.13 and 5.14. The results indicate that in 1991, a larger proportion of males borrowed than females. However, in 1998 and 2005, the proportion of females that borrowed surpassed that of males. The results suggest that as at 1991, the credit market favoured males. However, as at 1998 and 2005, the credit market favoured females.

Figure 5.13: Trends in Use of Credit by Sex, 1991-2006

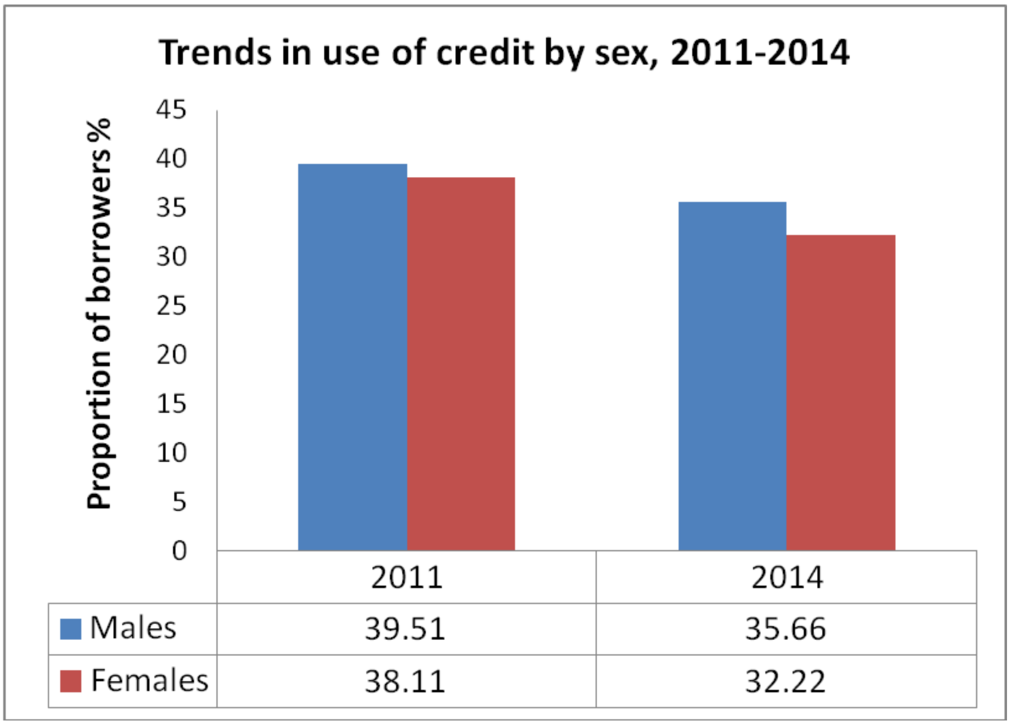


Source: GLSS 3, GLSS 4, GLSS 5

Recent results from the Global Findex data also show a pattern of access to credit that favours males (figure 5.14). These results also suggest that in recent times males are favoured in the credit market relative to females.

The increase in access to credit by females in 1998 and 2005 is contributed by the activities of S&Ls such as WWBG and NGOs such as Sinapi Aba Trust that focused on women in their credit programs. Also, the activities of some RCBs in serving rural markets through Mobile Banking increased access to credit by females in the rural areas. The S&Ls focused on women in urban and peri-urban areas whereas RCBs and NGOs focused on rural areas relatively more than urban areas. These institutions took advantage of existing women groups, and adopted microfinance methodologies such as group lending in loan administration. Through group lending, a larger number of women had access to credit of small amounts (Steel & Andah, 2003).

Figure 5.9: Trends in Use of Credit by Sex, 2011-2014

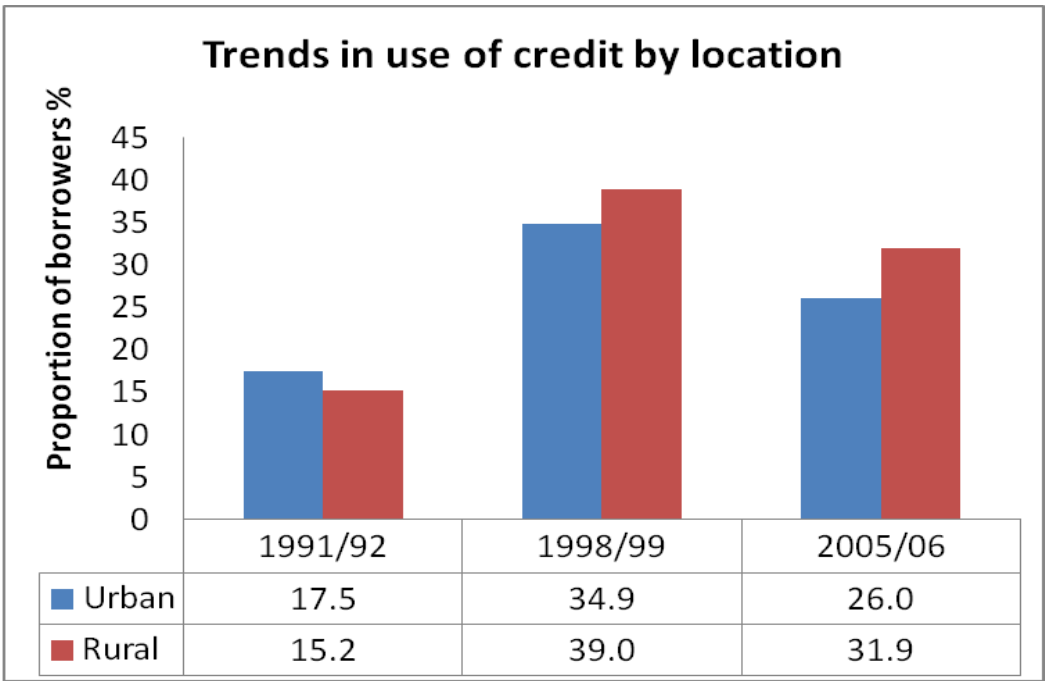


Source: Global Findex 2011, 2014

5.7.2 Trends in Use of Credit by Location, 1991-2006

Figure 5.15 presents the results of the trends in credit use by location. The results suggest that in 1991, individuals in urban areas had greater access to credit relative to the rural areas. This pattern changed in 1998 and continued in 2005 as residents of rural areas had greater access to credit than those in the urban areas. This pattern reflects an inclusion of rural residents in the credit market in 1998 and 2005. The increase in access to credit by rural residents is contributed by the growth of RCBs and NGOs which served rural markets relatively more than urban areas, and, relatively more than other financial institutions. The adoption of a more commercial approach and innovative programs by RCBs from the 1990s throughout the 2000s resulted in an increase in access to credit by rural residents in 1998 and 2005. However, recent information shows an increasing growth in S&Ls, which suggest an increasing access to credit by residents of urban and peri-urban areas (Steel & Andah, 2003; GHAMFIN, 2014; Steel, 2016).

Figure 5.10: Trends in Use of Credit by Location, 1991-2006

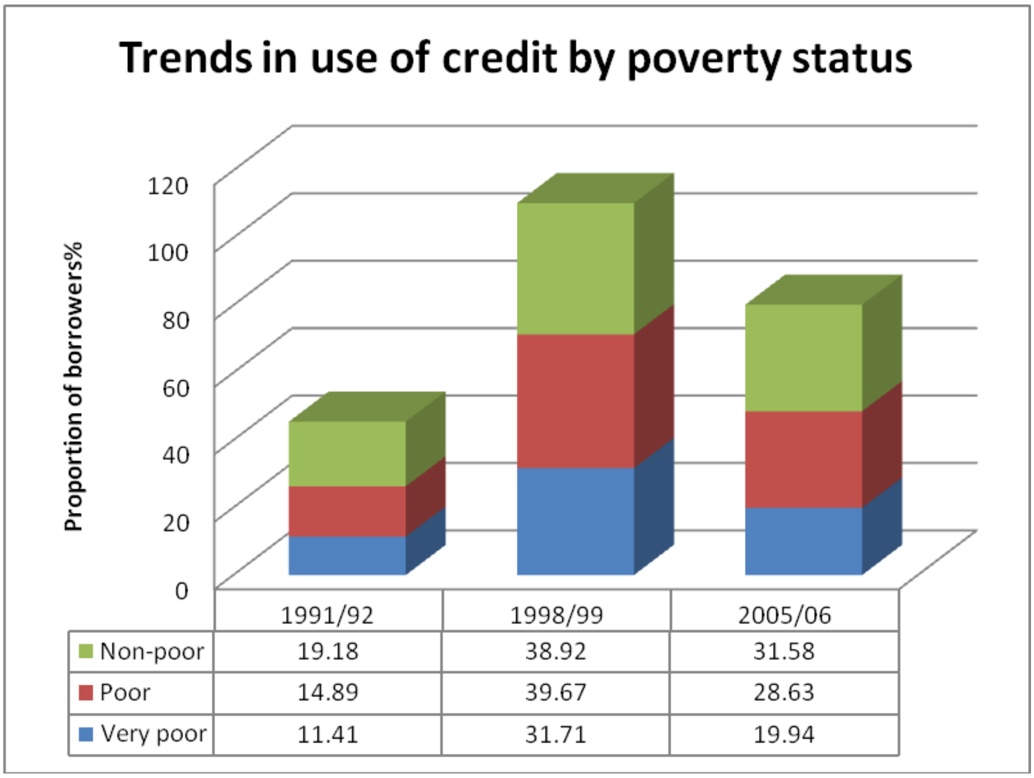


Source: GLSS 3, GLSS 4, GLSS 5

5.7.3 Trends in Use of Credit by Poverty Status, 1991-2006

Figure 5.16 shows trends in the proportion of individuals that used credit by poverty status. The non-poor had greater access to credit, while the very poor had the least access to credit. Between 1991 and 1998, there was an improvement in access to credit by all socio-economic groups. The proportion of the poor that borrowed increased by 24.8 percentage points (166%), while the proportion of the non-poor that had access to credit increased by 19.7 percentage points (103%). The proportion of the very poor that borrowed also increased by 20.3 percentage points (177.9%). Again it can be said that the activities of RCBs, S&Ls and NGOs that expanded credit delivery to females and rural residents in the mid-1990s also increased access to credit by the poor. Invariably, rural residents and females fall within the domain of the poor (Steel & Andah, 2003).

Figure 5.16: Trends in Use of Credit by Poverty Status, 1991-2006



	1991/92	1998/99	2005/06
Non-poor	19.18	38.92	31.58
Poor	14.89	39.67	28.63
Very poor	11.41	31.71	19.94

Source: GLSS 3, GLSS 4, GLSS 5

The results also suggest a lower access to credit by the very poor. It is expected that the very poor will have high demand for credit for consumption-smoothing purposes and for income-generating activities. However, access to credit is based on several factors that affect repayment ability. Several studies indicate the exclusion of the very poor in microfinance programs (see for example Navajas, Schreiner, Meyer, Gonzalez-Vega and Rodriguez-Meza, 2000) and also exclusion of the very poor from the informal credit market (see for example Yuan and Xu, 2015; Shoji, Aoyagi, Kasahara, Sawada, and Ueyama, 2012). The very poor have prevailing consumption-smoothing needs and invariably borrow to meet consumption need. Attempts to borrow for investment purposes usually results in defaults as loans are diverted to meet consumption needs. This creates bad credit reputation and affects future access to credit from both formal and informal sources. Thus one contributing factor to the generally low use of credit among the very poor, is credit constraints in both formal and informal credit markets.

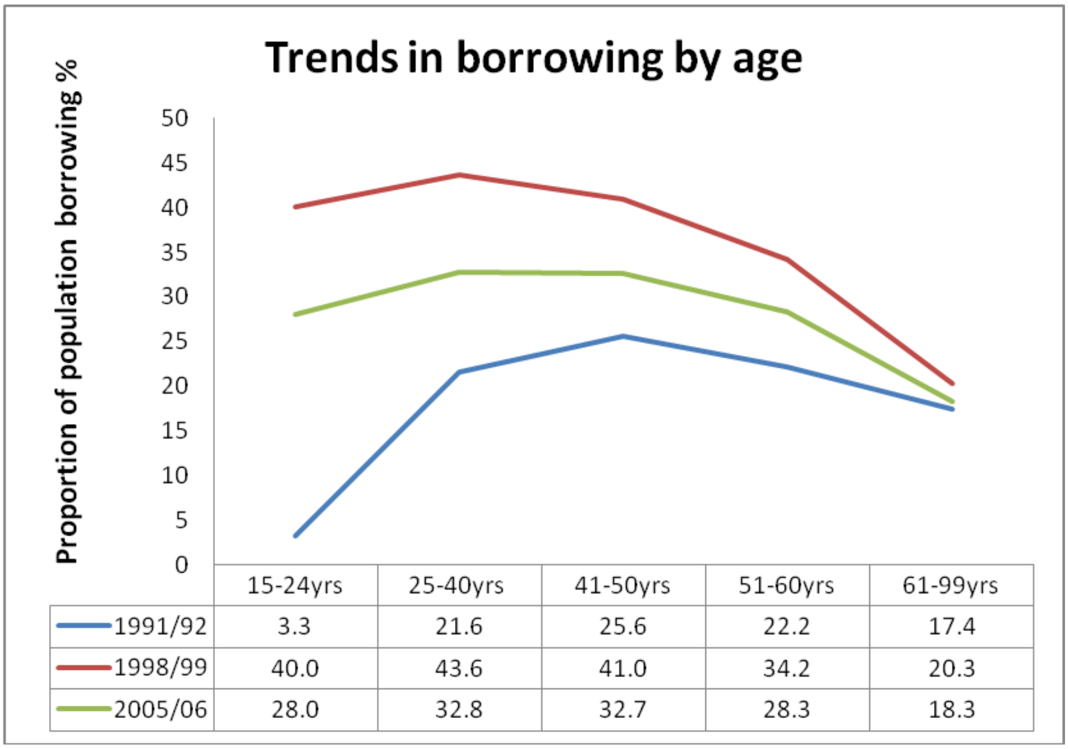
The observation from this study also suggests risk-aversion among the very poor, which results in low demand for credit. This is a self-exclusion issue. The very poor may exhibit risk-aversion attributes towards borrowing from the formal sector in fear of the consequences of default and to avoid transaction costs. Furthermore, due to lack of collateral, the very poor may not attempt to borrow from the formal sector as they anticipate being rationed. One therefore expects a high demand for credit from uninstitutionalised sources such as kinsmen and neighbours, where the transaction costs are minimal.

5.7.4 Trends in Use of Credit by Age, 1991-2006

The pattern of borrowing among different age groups is exhibited in figure 5.17. A small proportion of individuals within the ages of 15 and 24 years borrowed from all kinds of institutions. As individuals aged, borrowing increased up to a point and declined as retirement age approached and further declined after retirement.

The age-credit use profile is consistent with the intergenerational transfer model. Transfers received by the youngest age group from older generations provide support for consumption needs such that there is least borrowing. In the same way, the retired age group also depend on transfers from the middle-aged group and this reduces the level of borrowing.

Figure 5.17: Trends in Use of Credit by Age, 1991-2006



Source: GLSS 3, GLSS 4, GLSS 5

The middle-aged group have more financial responsibilities following life-cycle events such as marriage, childbirth, raising children and care of the older people. Consequently they borrow for consumption-smoothing. They are also active in the labour force and require credit for production activities.

5.8 Summary of findings

This chapter analysed the trends in saving and use of credit from 1991 to 2014. Using the GLSS data, a relatively stable trend in saving was observed for the first three survey years, and a large increase was experienced in the fourth survey year in 2012/13. Using the Global Findex data, a further increase in saving was observed between 2011 and 2014. However, there was an increase in the proportion that saved through informal sources and a decrease in the proportion that saved through formal sources. Although the general increase in the proportion that saved lately has good implications for financial inclusion, the balance in the proportion that saved through formal versus informal sources leaves much concern.

There was an oscillating pattern in the proportion of individuals that used credit over the years. Although a larger proportion of borrowers used credit from informal sources, a good indication for financial inclusion is the increasing share of formal credit and a decreasing share of informal credit over the years. The dependence of credit from informal sources indicates kinship support, which is maintained by the intergenerational transfer model. However, there is a possibility of this model being contested in the future, considering the decline in use of credit from this source. This provides an opportunity to intensify financial inclusion efforts through formal financial intermediation.

In the 1998/99 survey period, there was a greater access to credit in the total population. The sub-groups that were favoured in access to credit include females, rural residents and the poor. This was attributed to activities of NBFIs such as RCBs, S&Ls and NGOs.

Sub groups that saved less include females, rural residents and the very poor. This reflects to some extent a lack of saving devices that meets the needs of these socio-economic groups. These socio-economic groups are perceived as disadvantaged in development circles, and the low level of saving has the possibility of reinforcing their vulnerability. The pattern of saving and borrowing by age followed the pattern of the life-cycle hypothesis. Thus the use of financial services by the middle-age group is higher than that of the other age groups.

Factors that contributed to the large increase in the proportion that saved lately include improvements in macroeconomic conditions and the expansion of the formal financial sector. A large increase in GDP growth rate in 2011 contributed to a large increase in the proportion that saved in 2012. New domestic banks and the entrance of foreign banks with aggressive deposit mobilization approaches and attractive savings products stimulated the level of savings in 2012. In addition, a restructuring of the microfinance industry also paved the way for the establishment of new non-bank financial institutions that target low-income earners and rural areas. Prior to 2012, there was also a re-organization of rural banks with the establishment of the ARB Apex Bank to take up oversight responsibilities. This also increased access to savings products on the market.

The large increase in the proportion that saved in 2012, when macroeconomic conditions were good, following a high economic growth in 2011, validates the demand-following hypothesis of the finance-growth relationship in Ghana (Quartey & Prah; 2008; Adu et al., 2013). This hypothesis maintains that the relationship between economic growth and financial sector development is observed by economic growth paving the way for growth of the financial sector. In this study, economic growth in 2011 paved the way for financial deepening in 2012/2013.

CHAPTER SIX

RESULTS AND DISCUSSION: DETERMINANTS OF USE OF FORMAL VERSUS INFORMAL FINANCIAL SERVICES

6.1 Introduction

Several studies on the determinants of use of financial services have lumped together formal and informal saving, borrowing and insurance (see for example Akpandjar et al., 2013; Shem et al., 2012). This has yielded mixed findings, which has not helped in resolving existing debates on some key variables that affect the use of financial services. More so, the various components of financial services, namely, savings, credit and insurance are distinct, and have different factors that influence their use. Consequently, this chapter examines the factors that influence saving, borrowing and insurance participation, distinguishing between formal versus informal sources. The key variables for investigation are financial literacy and education. The models controlled for demographic characteristics, income, employment type, negative experiences with financial institutions and financial liberty, which is a proxy for having one's own money that one can use as desired.

The chapter begins with summary statistics of the data with respect to respondents who save, borrow or have insurance. A further description of the demographic characteristics of respondents is made. The chapter finally provides regression estimates of the covariates. The chapter concludes with a summary of findings.

6.2 Summary Statistics of the Finscope Data

Table 6.1 presents the level of participation of respondents in the various financial services.

Table 6.1: Summary Statistics: Use of credit, savings and insurance participation

Dependent Variable	Frequency	Percentage
Savings		
Yes	2,323	63.8
No	1,320	36.2
Total	3,643	100.0
Forms of Saving		
Formal only	468	20.2
Informal only	1,294	55.7
Dual (Formal and Informal)	561	24.2
Total	2,323	100.0
Use of Credit		
Yes	722	19.8
No	2,921	80.2
Total	3,643	100.0
Forms of Credit		
Formal	198	27.4
Informal	477	66.1
Dual (Formal and Informal)	47	1.3
Total	722	100.0
Insurance Participation (Incl. NHIS)		
Yes	2,291	63.0
No	1,346	37.0
Total	3,637	100.0
Insurance Participation (Excl. NHIS)		
Yes	968	41.8
No	1,346	58.2
Total	2,314	100.0
Insurance Participation (Exc. NHIS)		
Formal only	360	37.2
Informal only	249	25.7
Dual (Formal and Informal)	359	37.1
Total	968	100.0

Source: Author's computation based on Finscope 2010 data

Generally, a majority of respondents (64%) saved in all kinds of institutions, and a much lesser proportion (19%) borrowed money from any kind of institution. The majority who did not borrow provided reasons such as not having the need to borrow and fear of default. A large proportion of individuals had insurance (63%) when including the government provided National Health Insurance Scheme (NHIS). In excluding those who had only NHIS from the sample, 42% of the respondents had private insurance.

Fifty-six percent of the respondents who saved did so exclusively through informal sources such as *susu* collectors/*susu* groups, at home or in secret hiding places, with friends and family members, and other informal channels. Twenty percent of savers saved exclusively through formal sources such as banks, credit unions, co-operatives, savings and loans companies, microfinance companies and other formal financial institutions. Twenty-four percent also saved through a combination of formal and informal saving mechanisms.

A majority of borrowers (66%) borrowed exclusively from informal sources such as moneylenders, family members, friends and neighbours, churches and community groups, employers, business/market associations and other informal sources. A lesser portion (27%) borrowed exclusively from formal sources such as banks, savings and loans companies, microfinance institutions, credit unions, co-operative unions, government institutions, financial non-governmental organisations and other formal sources. A small proportion of borrowers (1.3%) borrowed from both formal and informal sources (Table 6.1). This reflects a high level of segmentation of the credit market, as a majority of individuals exclusively borrowed from either formal or informal sources. To some extent, this reflects exclusion, as those who borrowed exclusively from informal institutions may have been denied credit from the formal sector (involuntary exclusion), or preferred informal institutions (voluntary exclusion). It is less likely that those who borrowed exclusively from formal institutions were denied credit out rightly from the informal sector or were given insufficient funds; it is more likely that they preferred borrowing from formal rather than informal sources, for several reasons (Aryeetey, 2005; Guirkinger, 2008).

Insurance participation was generally high due to massive subscription unto the National Health Insurance Scheme (NHIS), which is a social insurance scheme provided by the

Government of Ghana. In the full sample, 63% of the respondents were insured as against 37% who were not insured. The focus of the study is on decision making on financial services, and individuals who were insured exclusively through the NHIS were excluded from the sample in order to focus on individuals insured through private insurance. Participation in the NHIS carries no cost for the aged and is mandatory for some groups that are beneficiaries of government welfare programs. Generally, the cost of insurance is highly subsidized by the government, and many participants who have no other options are obliged to subscribe unto the NHIS. There were 1,323 of such individuals. In excluding them, it came up that 42% of respondents were insured through private insurance, as against 58% who were not insured. Out of those who were insured through private sources, 37% were insured through only formal sources and 26% were insured through only informal sources. The proportion that was insured through both formal and informal sources was 37% (Table 6.1).

Formal insurance refers to provisions made to cover oneself financially against negative events through insurance companies and other formal financial institutions. Products include funeral policies, travel insurance, medical insurance, auto insurance, personal life policies, property insurance and other products. Informal insurance refers to provisions made to cover oneself financially against negative events through savings groups and informal societies. Informal risk-sharing arrangements such as funeral societies, welfare groups, savings clubs and others are accepted as informal insurance in the literature on risk-sharing (Fafchamps & Lund, 2003; Besley, 1995).

In order to map out differences in the determinants of using financial services from formal versus informal institutions, the category of, individuals that used both sources of financial services were excluded from the analyses to avoid ambiguities. The number of households that had individuals saving through dual sources was 561. Forty-seven households had individuals borrowing from both formal and informal sources, and 359 households had individuals insuring from both formal and informal sources. The analyses were conducted on two levels, namely, the full sample and the sub-sample or restricted sample levels. The full samples consisted of the total number of households in the data, excluding those who use dual sources of financial services. However, due to missing data points for some of the variables, the number of observations in the full sample for the analyses on saving and borrowing were 2,351 households and 2,735 households respectively. Furthermore, in the analysis of use of insurance, the full sample reduced to 1,464 households, since individuals that were exclusively insured through the NHIS were not included. The full samples for saving and borrowing were divided according to rural or urban locations to obtain the sub-samples. However, the full sample for the insurance model was not divided into sub-samples due to insufficient observations.

6.3 General Characteristics of Respondents

Table 6.2 presents the summary statistics on financial literacy, age and household size of respondents. Financial literacy score, which indicates a composite knowledge of financial concepts and products, ranged from 0 to 2, with a mean score of 0.6. The mean age of a respondent was 38 years and the mean household size was 3.

Table 6.2: Summary Statistics - Financial Literacy Score, Age and Household size

Summary Statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
Financial Literacy Score	3,641	0.6	0.5	0	2
Age	3,628	37.6	16.0	15	99
Household size	3,643	2.8	1.8	1	15

Source: Author's computation based on Finscope 2010 data

Table 6.3 shows that 58% of respondents resided in rural areas as against 42% that resided in urban settings. The sample constituted 45% males and 55% females. A larger proportion of respondents were married (55%), while 15% were previously married but were divorced or widowed as at the period of survey. A majority of respondents (42%) belonged to the age group between 25 and 40 years.

A larger proportion (35%) had no education and an equal proportion (18%) had primary and secondary and above education. Quite a large proportion (30%) of respondents had some secondary education. Approximately 67% of the respondents were engaged in non-salaried employment, which includes engagement in businesses owned by respondents. Ten percent of the respondents were employed in wage or salaried employment. Twenty-three percent of the respondents were not employed.

A majority of the respondents (63%) earned monthly income of less than GHS200 and 22% earned above GHS200.00. The proportion of individuals that did not earn any monthly income was 16%. A small portion of respondents (3%) reported that their households did not earn any income while 43% reported that their household income was less GHS200.00 per month. A majority of respondents (56%) reported that they lived in residences that they personally owned or which belonged to their families, for which reason no rent was paid. Twenty-six percent of the respondents lived in rented accommodation and 18% occupied accommodation for which rent was not paid and which did not belong to them or their family members.

Table 6.3: General Characteristics of Respondents

Variable	Categories/Response	Percent.	Obs.
Location	Urban	42.0	1,531
	Rural	58.0	2,112
Sex	Male	45.1	1,643
	Female	54.9	2,000
Marital status	Married	54.6	1,972
	Never married	30.2	1,093
	Previously married	15.2	548
Age	15-24 years	22.5	815
	25-40 years	42.4	1,539
	41-62 years	26.1	946
	63-99 years	9.0	328
Education qualification	No education	34.7	1,254
	Primary education	17.8	642
	Some secondary education	9.6	1,069
	Secondary and above	17.9	647
Employment status	Not employed	23.1	840
	Wage/Salaried employment	10.0	364
	Non-salaried employment	67.0	2,439
Personal monthly income	No income	15.7	493
	Less than GHS200	62.6	1,963
	Above GHS200	21.6	678
Household monthly	No income	2.6	69
	Less than GHS200	42.7	1,122
	Above GH200	54.9	1,437
House ownership	Rented	26.1	940
	Family owned	55.7	2,006
	Occupancy without payment	18.1	653
Negative experiences with FI	Yes	12.5	455
	No	87.5	3 ,188
Financial Liberty	Yes	85.3	3,077
	No	14.7	529
Insurance knowledge	Never heard	15.1	545
	Heard but do not understand	10.3	374
	Heard and understand	74.6	2,701

Source: Author's computation based on Finscope 2010 data

A little over 12% of the sample population had experienced negative occurrences such as loss of funds with financial institutions that resulted in the abandonment of financial services. Eighty-five percent of the sample expressed that they had their own money which they can use as desired. A majority of respondents (75%) claimed they had heard and knew of insurance. A lesser proportion (15%) claimed they had not heard of insurance and had no understanding of the concept. A small proportion claimed they had heard of insurance but had no understanding of the concept.

6.4 Determinants of Saving through Formal versus Informal Sources

The multinomial logit (MNL) model was employed in the analysis of the determinants of saving through formal versus informal sources. In saving, four alternatives are available: saving through formal sources, informal sources, a combination of formal and informal sources, and the decision not to save. Before the analysis was made, it was determined whether the assumption of independence of irrelevant alternatives (IIA) held for the model (refer to Chapter 4, section 4.5). The Hausman and Small-Hsiao tests of IIA were conducted on the model to assess the applicability of the MNL model. Results are shown in Table 6.4. The results indicate that the null hypothesis that the alternatives of saving mechanisms are independent of each other cannot be rejected. The results indicate that the choice of using any one of the alternatives does not depend on the remaining two alternatives. This condition justifies the use of the MNL. For effective interpretation of results, and to distinguish between the determinants of use of formal versus informal financial institutions, this study did not include the category of households that saved through a combination of formal and informal institutions.

Table 6.4: Results of Hausman and Small-Hsiao Tests of IIA on Saving Alternatives

Omitted Category	Hausman Test			Small-Hsiao test		
	Test statistic	p-value	evidence	Test statistic	p-value	evidence
Formal saving	1.73	1.00	For IIA	-2556.91	1.00	For IIA
Informal saving	-24.12	- [7]	-	-1340.37	1.00	For IIA
Not saving	-3.22	- [8]	-	-1446.52	1.00	For IIA

Source: Author's computation based on Finscope 2010 data

The results of the multinomial logit estimates of the determinants of saving through formal versus informal sources are presented in Tables 6.5 and 6.6 for the full and sub-samples respectively. In the full sample, financial literacy and education were significant for saving through formal sources. Females were also more likely to save in informal institutions relative to not saving (Table 6.5). The results indicate that individuals that save through formal institutions were similar to those that saved through informal institutions with respect to income and financial liberty. Earning income of any level increases the probability of saving in any kind of institution relative to not saving. Similarly, having financial liberty increases the probability of saving through any kind of institution relative to not saving. Notwithstanding these similarities, there were some distinct characteristics of formal and informal savers. Formal savers were likely to be wage or salaried workers, financially knowledgeable, educated and belonged to larger households. Informal savers were more likely to reside in rural areas, less financially knowledgeable, more likely to reside in rented accommodation and more likely to

[8] No definite conclusion on the hypothesis can be made when the test statistic takes on a negative value. Cheng and Long (2007), argue that this result is an evidence for accepting the IIA hypothesis.

receive local remittances. Those engaged in non-salaried employment were also more likely to save in formal institutions as well as informal institutions (Table 6.5).

The results in Table 6.5 show that holding all other variables constant, living in rural areas increases the probability of saving in informal institutions by 0.15 and decreases the probability of saving in formal institutions by 0.06. This result confirms the findings of Akpandjar et al. (2013) that rural households are more likely to access financial services from the informal sector than urban households, given alternatives of financial services. This observation is explained by the disparity in the distribution of formal financial institutions between urban and rural areas, whereby there is a high concentration of banks, savings and loans, and microfinance institutions in urban areas than in rural areas. In addition, some commercial bank branches that operated in rural areas have closed down their businesses as they were unprofitable (Akpandjar et al., 2013). In formal financial systems, meso level facilities, which consist of financial infrastructure such as network support systems and information technology systems, help to facilitate transactions and reduce transaction cost (Helms, 2006). Such infrastructure is more readily available in urban areas than in rural areas. Consequently, formal financial institutions that require higher scale infrastructure find it costly setting up in rural areas, as the fixed costs tend to be high. As a result, informal saving mechanisms such a susu collectors and/or susu groups thrive in remote rural areas.

Table 6.5: Multinomial Logit Estimates of Saving Through Formal versus Informal Sources (Full Sample)

VARIABLES	FORMAL (AME[9])	INFORMAL (AME)
Age	-0.0004	-0.0029
	(0.0023)	(0.0034)
Age squared/100	0.0019	-0.0013
	(0.0024)	(0.0036)
Rural Location (Ref. urban location)	-0.0569*	0.1537***
	(0.0329)	(0.0425)
Female (Ref. male)	-0.0055	0.0356*
	(0.0130)	(0.0206)
Household size	0.0072**	-0.0054
	(0.0034)	(0.0055)
Marital status		
Married	0.0046	-0.0043
	(0.0177)	(0.0287)
Ever married	-0.0195	-0.0449
	(0.0246)	(0.0399)
Personal Monthly income (Ref. no income)		
Below GHS200 per month	0.0592***	0.1665***
	(0.0187)	(0.0338)
Above GHS200 per month	0.1118***	0.1780***
	(0.0251)	(0.0420)
Financial Literacy Score	0.1319***	-0.1060***
	(0.0137)	(0.0265)
Education qualification (Ref. no education)		
Primary education	0.0195	0.0146
	(0.0198)	(0.0293)
Some secondary education	0.0533***	-0.0032
	(0.0180)	(0.0272)
Secondary and above	0.0666***	-0.1009**
	(0.0244)	(0.0420)
House ownership status (Ref. Family owned)		
Rented	-0.0231	0.0629**
	(0.0152)	(0.0250)
Occupied without payment	-0.0583***	0.0762**
	(0.0175)	(0.0305)

[9] Average marginal effects (AMEs) on the marginal probabilities of each explanatory variable in each of the models are calculated by averaging sample marginal effects.

Receiving remittances		
Foreign remittances	0.0227	-0.0548
	(0.0189)	(0.0363)
Local remittances	-0.0068	0.1594***
	(0.0141)	(0.0234)
Financial liberty	0.0372**	0.0528*
	(0.0180)	(0.0276)
Negative experiences with FI	-0.0124	0.0232
	(0.0172)	(0.0321)
Employment status		
Wage/Salaried employment	0.1160***	-0.0731*
	(0.0298)	(0.0506)
Non-salaried employment	0.0305*	0.1007***
	(0.0180)	(0.0322)
Constant	-4.6957***	-1.2050***
	(0.6566)	(0.3753)
Pseudo R2	0.1850	
Prob > chi2	0.000	
Observations	2,351	2,351

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6.6: Multinomial Logit Estimates of Saving Through Formal versus Informal Sources (Sub-Samples)

	URBAN		RURAL	
	FORMAL	INFORMAL	FORMAL	INFORMAL
VARIABLES	(AME)	(AME)	(AME)	(AME)
Age	0.0008	-0.0066	0.0007	-0.0020
	(0.0053)	(0.0054)	(0.0020)	(0.0044)
Age squared/100	-0.0007	0.0049	0.0012	-0.0038
	(0.0058)	(0.0058)	(0.0019)	(0.0046)
Female (Ref. male)	-0.0070	0.0678**	-0.0000	0.0136
	(0.0267)	(0.0314)	(0.0130)	(0.0272)
Household size	0.0162**	-0.0089	0.0026	-0.0023
	(0.0071)	(0.0086)	(0.0034)	(0.0071)
Marital status				
Married	0.0059	-0.0597	-0.0003	0.0343
	(0.0345)	(0.0427)	(0.0198)	(0.0384)
Ever married	0.0095	-0.1066*	-0.0376*	-0.0005
	(0.0529)	(0.0587)	(0.0219)	(0.0533)
Personal Monthly income (Ref. no income)				
Below GHS200 per month	0.1196***	0.1009***	0.0253	0.2156***
	(0.0371)	(0.0440)	(0.0213)	(0.0491)
Above GHS200 per month	0.1966***	0.0833	0.0633**	0.2538***
	(0.0482)	(0.0561)	(0.0284)	(0.0602)
Financial Literacy Score	0.2154***	-0.1422***	0.0796***	-0.0893**
	(0.0273)	(0.0361)	(0.0137)	(0.0372)
Education qualification (Ref. no education)				
Primary education	-0.0232	0.0934*	0.0366**	-0.0117
	(0.0474)	(0.0518)	(0.0171)	(0.0357)
Some secondary education	0.0394	0.0672	0.0505***	-0.0422
	(0.0394)	(0.0409)	(0.0170)	(0.0353)
Secondary and above	0.0429	-0.0599	0.0663**	-0.0495
	(0.0472)	(0.0518)	(0.0298)	(0.0668)
House ownership status (Ref. Family owned)				
Rented	-0.0473*	0.0728**	-0.0040	-0.0451
	(0.0286)	(0.0322)	(0.0159)	(0.0375)
Occupied without payment	-0.1012***	0.0825**	-0.0222	0.0156
	(0.0344)	(0.0420)	(0.0136)	(0.0328)
Receiving remittances				

Foreign remittances	0.0422	-0.0414	0.0175	-0.0510
	(0.0334)	(0.0412)	(0.0262)	(0.0608)
Local remittances	0.0040	0.0642*	-0.0203	0.2266***
	(0.0294)	(0.0362)	(0.0128)	(0.0296)
Financial liberty	0.0311	0.0167	0.0337**	0.0603*
	(0.0406)	(0.0424)	(0.0148)	(0.0361)
Negative experiences with FI	-0.0279	0.0359	0.0072	0.0126
	(0.0334)	(0.0427)	(0.0202)	(0.0465)
Employment status(Ref. not employed)				
Wage/Salaried employment	0.1353***	-0.0679	0.1878***	-0.0714
	(0.0499)	(0.0546)	(0.0611)	(0.0955)
Non-salaried employment	0.0453	0.0738*	0.0209	0.1241***
	(0.0371)	(0.0437)	(0.0176)	(0.0457)
Constant	-4.0523***	-0.6504	-6.5587***	-0.4788
	(0.8620)	(0.6425)	(1.2665)	(0.5038)
Pseudo R2	0.1759		0.1615	
Prob > chi2	0.0000		0.0000	
Observations	923	923	1,428	1,428

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In the full sample, being a female increases the probability of saving through informal institutions by 0.04 (at 10% significance level) relative to not saving. The results of the sub-samples indicate that this observation was significant in urban areas but not significant in rural areas. In urban areas, being a female increases the probability of saving through informal institutions by 0.07 (at 5% significance level) relative to not saving (Table 6.6). The explanation to the above finding is that the informal labour sector in urban areas is dominated by women, who are mostly engaged in trading activities where cash revenues are received daily (Nordensvard, 2014). The labour sector-gender differential is perpetuated by gender differentials in education. Females are generally less educated and lower-skilled than men, leading to their employment in the informal labour sector, where lower skills are required. On the other hand, males are generally highly educated and end up employed in the formal sector, where high level education and skills are required. Consequently, females are more likely to be employed in the informal sector. Those in the urban areas are more likely to engage in petty trading activities, where there is exchange of funds on a regular basis, which promotes saving at home, or in other informal institutions (Sinha and Nayak, 2008; Nguyen and Wodon, 2014). Besides, leaving the business premises to deposit savings regularly at banks and other formal institutions is inconvenient. Consequently, females prefer to save through mechanisms which are convenient and by which funds can be easily accessed. Hence, saving is more likely to be made with *susu* collectors or *susu* groups and other informal channels.

Secondly, females are concerned with household daily expenditures, and for that reason need to keep some easily-accessible money at home for precautionary motives. The disparities in cost of living between rural and urban areas also contribute to the choice of females in urban areas saving through informal sources. Cost of living and frequency of expenditure are relatively higher in the urban areas than in the rural areas.

Monthly income, whether high or low, was significant for saving in all kinds of institutions. In the full sample, earning monthly income of any level increases the probability of saving in any kind of institution. Earning monthly income below GHS200 increases the probability of saving in formal institutions by 0.06 and the probability of saving in informal institutions by 0.17. In urban households, individuals who earned low monthly income had higher probability of saving in all kinds of institutions than not saving, as in rural households, those who earned middle to high monthly income had higher probability of saving through all kinds of institutions (Table 6.6). In the urban areas, earning below GHS200 as monthly salary increases the probability of saving through formal institutions by 0.12 and through informal institutions by 0.10 than not saving. Earning monthly income of GHS200 increases the probability of saving through formal institutions by 0.20 than not saving.. In the rural sample, individuals who earned below GHS200 are 0.22 more probably to save in informal institutions than not saving. However, individuals who earned above GHS200 as monthly income were 0.06 and 0.25 more probably to save respectively in formal and informal institutions than not saving (Table 6.6).

The finding for the full sample is consistent with the permanent-income hypothesis, which implies that all can save, once income is earned. The results of the sub-samples indicate that middle to high income earners in urban areas have greater attraction to formal institutions, while in rural areas low income earners have greater attraction to informal institutions of saving. This observation supports many studies that expound that income is a significant determinant of saving through formal sources (Yuh and Hanna, 2010; Akpandjar et al., 2013; Efobi et al., 2014). The results of the rural sample also support studies that indicate that income is positively significant for participation in informal savings groups (Elven & LeMay-Boucher, 2016).

Financial liberty, a proxy for having one's own money that one can use as desired, was also significant in the rural sample but not significant in the urban sample (Table 6.6). The results suggest that, in rural areas, individuals who have control over their money have greater ability to save in all kinds of institutions than those who do not have control over their money. In urban areas, there was no significant difference in saving behaviour between individuals who have financial liberty and those who do not have such liberty. This suggests that, in rural areas, younger and older generations who receive transfers from other generations are less likely to save in any kind of institution. Individuals who are income earners and have no restraints from other household members are more likely to save in all kinds of institutions.

Employment status was significant in all the samples. In the full sample, individuals who exclusively received wages or salaries were 0.12 more likely to save in formal institutions than not to save. On the other hand, non-salaried workers were 0.03 (at 10% significance level) more likely to save in formal institutions, and 0.1 (at 1% significance level) more likely to save in informal institutions (Table 6.5). An observation of the sub-samples shows that wage and salaried workers were more likely to save in formal institutions, while non-salaried workers were more likely to save in informal institutions. In urban areas, being a wage and salaried worker increases the probability of saving in formal institutions by 0.14 (at 1% significance level) relative to not saving. On the other hand, being a non-salaried worker increases the probability of saving in informal institutions by 0.07 (at 10% significance level) compared to not saving. In rural areas, being a salaried worker increases the probability of saving in formal institutions by 0.19 (at 1% significant level) over not saving. Contrarily, being a non-salaried worker increases the probability of saving in informal institutions by 0.12 (at 1% significance level) compared to not saving (Table 6.6).

The results suggest an attraction of wage and salary employees to formal institutions of saving. This result is explained by the fact that generally, salaried employees (in the formal labour sector) are required to open accounts with formal financial institutions through which their salaries are paid. Thus there is a tendency to set money aside in the accounts as savings. The results also suggest that non-salaried workers had greater attraction to informal institutions of saving. Non-salaried workers engaged in trading activities receive payments in cash on a daily basis. They also make payments for their trading stock in cash. Those engaged in farming activities, for instance, also receive payments for their produce in cash and purchase their inputs by cash. Thus there are many avenues for receiving and making payments by cash for non-salaried workers, which increases the tendency of keeping money at home as a way of saving or using other informal means of saving.

In the full sample, having secondary education and above increased the probability of saving in formal institutions and decreased the probability of saving in informal institutions (Table 6.5). In the rural sample as well, having education of any qualification increased the probability of saving in formal institutions relative to not saving. This finding is consistent with the *a priori* expectation. The results of the rural sample also indicate that individuals of all education qualifications saved in formal institutions relative to those with no education. These results are consistent with the works of Efobi et al. (2014), who found out that educational attainment informs the desire to save through bank accounts in Nigeria. Yuh and Hanna (2010), also found education as significant for saving as all groups of educated individuals were more likely to save than the uneducated. Their study measured saving as spending less than income. This finding is explained by the fact that an individual with formal education can read and write and will be comfortable dealing with formal financial institutions when it comes to saving money and making investments. Invariably, it is also easier for such people to understand financial language than individuals with no formal education.

Strangely, the results of the urban sample indicate that having primary education increases the probability of saving in informal institutions compared to not saving (Table 6.6). Considering the low education level, it is likely such individuals are employed in petty trading activities and non-salaried activities whereby cash is exchanged on a regular basis and there is a regular need for cash to purchase trading stocks. This increases the tendency to save at home and through other informal avenues where funds can be retrieved easily.

The results of all the samples indicate that financial literacy increases the probability of saving in formal institutions and decreases the probability of saving in informal institutions. For an individual in an urban household, an increase in FLS by one point increases the probability of saving in formal institutions by 0.22 (at 1% significance level) and decreases the chances of saving in informal institutions by 0.14 (at 1% significance level). In rural areas, an increase in FLS by one point increases the probability of saving in formal institutions by 0.08 and decreases the probability of saving in informal institutions by 0.09. Considering the differences in magnitudes of the estimates, the influence of financial literacy on the choice of saving is greater in urban areas than in rural areas.

As individuals obtain knowledge about financial products, they are able to process the knowledge to make informed decisions on the choice of saving. In gaining financial knowledge, an individual is empowered to make decisions on complex saving devices such as opening investment accounts, fixed deposit accounts and also operating variant savings accounts with banks, credit unions, savings and loans companies and other formal institutions. As a result, there is a lesser extent of saving money at home or in secret hiding places or through lending to others, which carry so many risks.

This finding is consistent with the study of Akpandjar et al. (2013), who found out that financial literacy score had a direct positive influence on the use of formal financial services in both urban and rural areas. Heckman and Hanna (2015), using the American Survey of Consumer Finances, did not find financial literacy as significant for saving decision. In their study, financial literacy was mesured from the perspectives of the interviewers, based on how well respondents answered questions on financial knowledge. This may have introduced bias based on interviewer's subjectivity. Also respondents that had financial knowledge but failed to express themselves accurately may be given low scores. Cole et al. (2011), conducting experimental analyses of saving behaviour in Indonesia and India, made interesting findings on the relevance of financial literacy. In their experiment, financial education training did not induce the adoption of formal saving products in the whole sample, but induced saving among individuals who had low initial levels of financial literacy. Also, financial education training did not yield results among the uneducated. The study of Cole et al. (2011) explored the effect of the interaction between education and financial literacy. Consequently, this study focused on the separate effects of education and financial literacy on the choice of formal versus informal sources joint of saving.

6.5 Determinants of Borrowing from Formal versus Informal Sources

The multinomial logit model was employed in analysing the determinants of borrowing from formal versus informal sources.

Table 6.7: Results of Hausman and Small-Hsiao Tests of IIA on Alternatives of Borrowing

Omitted Category	Hausman Test			Small-Hsiao test		
	Test statistic	p-value	evidence	Test statistic	p-value	evidence
Formal credit	-0.397	-[8]	-	-2054.964	1.000	For IIA
Informal credit	0.547	1.000	For IIA	-952.141	1.000	For IIA
No credit use	-113.003	-[10]	-	-1237.239	1.000	For IIA

Source: Author's computation based on Finscope 2010 data

Similar to the model for saving, the Hausman and Small-Hsiao tests of IIA were conducted on the models for borrowing from formal versus informal sources, to assess the applicability of the MNL model. Results are shown in Table 6.7. The results indicate

[10] No definite conclusion on the hypothesis can be made when the test statistic takes on a negative value. (Cheng and Long, 2007) argue that this result is an evidence for accepting the IIA hypothesis

that the null hypothesis that IIA holds cannot be rejected. Consequently as the alternatives are independent of each other, MNL is applicable.

The multinomial logit results on the use of credit from formal versus informal sources are presented in Tables 6.8 and 6.9 for the full sample and sub-samples respectively. In the full sample, there was a life-cycle effect of borrowing from formal sources. The financially literate, those with some secondary education and the employed, whether as salaried workers or non-salaried workers, were likely to borrow from formal institutions. Recipients of local remittances, the less financially literate, low income earners, those who had less financial liberty, and those who had negative experiences with financial institutions are more likely to borrow from informal institutions. Also, those who lived in premises for which no payment was made are more likely to borrow from informal institutions (Table 6.8). The effect of education on borrowing was not as pronounced as with the effect on saving.

Table 6.8: Multinomial Logit Estimates of Determinants of Borrowing from Formal versus Informal Sources (Full Sample)

VARIABLES	FORMAL(AME)	INFORMAL(AME)
Age	0.0072***	-0.0010
	(0.0021)	(0.0025)
Age squared/100	-0.0066***	0.0007
	(0.0023)	(0.0027)
Rural Location (Ref. urban location)	-0.0068	-0.0112
	(0.0212)	(0.0304)
Female (Ref. male)	0.0083	-0.0133
	(0.0093)	(0.0142)
Household size	0.0008	0.0020
	(0.0027)	(0.0037)
Marital status		
Married	0.0035	-0.0075
	(0.0135)	(0.0193)
Ever married	-0.0191	-0.0187
	(0.0164)	(0.0272)

Personal Monthly income (Ref. no income)		
Below GHS200 per month	-0.0088	0.0383*
	(0.0232)	(0.0220)
Above GHS200 per month	0.0213	0.0279
	(0.0257)	(0.0264)
Financial Literacy Score	0.0312***	-0.0359*
	(0.0106)	(0.0176)
Education qualification (Ref. no education)		
Primary education	0.0103	-0.0272
	(0.0133)	(0.0195)
Some secondary education	0.0203*	-0.0179
	(0.0123)	(0.0183)
Secondary and above	0.0195	0.0160
	(0.0160)	(0.0294)
House ownership status (Ref. Family owned)		
Rented	0.0154	0.0011
	(0.0107)	(0.0165)
Occupied without payment	0.0097	0.0343*
	(0.0119)	(0.0189)
Receiving remittances		
Foreign remittances	-0.0162	0.0309
	(0.0110)	(0.0240)
Local remittances	0.0078	0.0578***
	(0.0107)	(0.0174)
Financial liberty	0.0087	-0.0417*
	(0.0138)	(0.0219)
Negative experiences with FIs	0.0085	0.0874***
	(0.0123)	(0.0246)
Employment status		
Wage/Salaried employment	0.0516***	0.0055
	(0.0177)	(0.0292)
Non-salaried employment	0.0333***	0.0218
	(0.0116)	(0.0208)
Constant	-7.9535***	-1.7431***
	(0.9704)	(0.4621)
Pseudo R2	0.0651	
Prob > chi2	0.0000	
Observations	2,735	2,735

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6.9: Multinomial Logit Estimates on Determinants of Credit Use from Formal versus Informal Sources (Sub-Samples)

	URBAN		RURAL	
	FORMAL	INFORMAL	FORMAL	INFORMAL
VARIABLES	(AME)	(AME)	(AME)	(AME)
Age	0.0097**	0.0080*	0.0052**	-0.0043
	(0.0040)	(0.0048)	(0.0023)	(0.0028)
Age squared/100	-0.0090**	-0.0131**	-0.0047*	0.0035
	(0.0042)	(0.0057)	(0.0025)	(0.0029)
Female (Ref. male)	0.0030	-0.0000	0.0163	-0.0155
	(0.0170)	(0.0216)	(0.0111)	(0.0186)
Household size	0.0014	-0.0081	0.0010	0.0072
	(0.0049)	(0.0064)	(0.0028)	(0.0045)
Marital status				
Married	0.0021	-0.0452	0.0003	0.0199
	(0.0232)	(0.0285)	(0.0174)	(0.0248)
Ever married	-0.0077	-0.0189	-0.0289	0.0055
	(0.0326)	(0.0457)	(0.0182)	(0.0356)
Personal Monthly income (Ref. no income)				
Below GHS200 per month	-0.0395	-0.0123	0.0323***	0.0746**
	(0.0446)	(0.0379)	(0.0053)	(0.0252)
Above GHS200 per month	-0.0014	-0.0365	0.0614***	0.0742**
	(0.0492)	(0.0419)	(0.0121)	(0.0334)
Financial Literacy Score	0.0024	-0.0313	0.0486***	-0.0324
	(0.0195)	(0.0252)	(0.0114)	(0.0244)
Education qualification (Ref. no education)				
Primary education	0.0216	0.0223	0.0050	-0.0399*

	(0.0272)	(0.0387)	(0.0131)	(0.0228)
Some secondary education	0.0179	-0.0330	0.0177	-0.0030
	(0.0219)	(0.0297)	(0.0132)	(0.0239)
Secondary and above	0.0387	0.0060	0.0173	0.0407
	(0.0295)	(0.0409)	(0.0197)	(0.0469)
House ownership status				
(Ref. Family owned)				
Rented	0.0206	-0.0019	0.0109	-0.0029
	(0.0180)	(0.0216)	(0.0141)	(0.0254)
Occupied without payment	0.0037	0.0645**	0.0051	0.0098
	(0.0227)	(0.0329)	(0.0120)	(0.0228)
Receiving remittances				
Foreign remittances	-0.0131	0.0196	-0.0172	0.0516
	(0.0198)	(0.0281)	(0.0131)	(0.0433)
Local remittances	-0.0054	0.0748***	0.0193	0.0428*
	(0.0185)	(0.0266)	(0.0130)	(0.0228)
Financial liberty	-0.0037	-0.0565	0.0140	-0.0373
	(0.0287)	(0.0356)	(0.0136)	(0.0269)
Negative experiences with FI	-0.0048	0.0692**	0.0184	0.1013***
	(0.0203)	(0.0320)	(0.0156)	(0.0365)
Employment status(Ref. not employed)				
Wage/Salaried employment	0.1146***	0.0130	-0.0003	-0.0043
	(0.0353)	(0.0354)	(0.0166)	(0.0538)
Non-salaried employment	0.0431*	0.0464	0.0247*	-0.0027
	(0.0208)	(0.0299)	(0.0145)	(0.0309)
Constant	-6.7196***	-2.2568**	-23.6516	-2.1287***
	(1.2416)	(0.8327)	(876.329)	(0.6270)
Pseudo R2	0.0837		0.0794	
Prob > chi2	0.0000		0.0000	
Observations	1,122	1,122	1,613	1,613

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The results show that in urban areas, an increase in age results in an increase in borrowing from all kinds of institutions. In rural areas, an increase in age results in an increase in borrowing from informal institutions. Age in the higher order terms was also significant with a negative sign. This suggests that in urban areas, borrowing from all kinds of institutions tends to decline at old age, while in rural areas, borrowing from formal institutions tend to decline at old age. These results reflect a life-cycle effect of age on borrowing from both formal and informal institutions in urban areas and from formal institutions in rural areas. The negative sign of age squared also depicts a concave relationship between borrowing and age (Table 6.9).

These results support the findings of Togba (2012) who established similar results of age in its linear terms and in higher order terms for borrowing from formal sources in Cote d'Ivoire. The positive relationship between age and borrowing from formal sources is explained by the fact that, as people age, the financial responsibilities increase when family life sets in. Thus there is a need for loans for income-generating activities and consumption-smoothing purposes. The negative sign of age squared is also explained by the fact that the elderly receive financial support from younger generations and are less likely to borrow. These results support the intergenerational transfer model, which assumes that individuals borrow less in their old age as they maintain constant utility with transfers from younger generations.

Remittances from local sources increase the probability of borrowing from informal institutions in both rural and urban areas. In urban and rural areas, receiving local remittances increases the probability of borrowing from informal institutions by 0.07 (at 1% significance level) relative to not borrowing. In rural areas, receiving local remittances increases the probability of borrowing from informal institutions by 0.04 (at 10% significance level). The results suggest a low active demand for formal credit by recipients of local remittances. This finding is similar to that of Ambrosius and Cuecuecha (2016), who found out that among Mexican households, foreign remittances do not drive the demand for formal credit but rather informal credit. This could possibly result from the purpose of borrowing among recipients of local remittances. If the credit is used for consumption-smoothing purposes, borrowers would not be interested in the rigor of assessing credit from formal sources. Studies have indicated that formal sector loans are invariably used for business investment purposes and informal sector loans are used for consumption-smoothing purposes (Guirkinger, 2008; Barslund & Tarp, 2008; Menkhoff & Rungruxsirivorn, 2011).

The experience of negative occurrences with both formal and informal financial institutions increased the probability of borrowing from informal institutions in both rural and urban areas. In urban areas, negative experiences such as the loss of funds with a financial institution increased the probability of borrowing from informal institutions by 0.07 and in rural areas by 0.10 relative to not borrowing. The results indicate that individuals who experienced negative outcomes with informal institutions continued borrowing from the informal sector. It may be that individuals may not necessarily borrow from the form of informal institution where the negative outcomes were experienced or that the loan was taken from that particular form of institution before the negative outcomes were experienced. Nevertheless, the results indicate an affinity for borrowing from informal institutions.

Employment status was also significant for borrowing from formal institutions. Individuals employed in any way, whether as salaried workers or non-salaried workers were more likely to borrow from formal institutions than not to borrow. In urban areas, wage and salaried workers were 0.11 (at 1% significance level) more likely to borrow from formal institutions than not to borrow, as non-salaried workers were 0.04 (at 5% significance level) more likely to borrow from formal institutions than not to borrow. The results suggest that in urban areas, both salaried workers and non-salaried workers had access to credit from formal institutions. The results reflect access to credit by individuals engaged in all kinds of economic activities. This is a good indication of financial inclusion, as loans from formal financial institutions are used by individuals in all kinds of economic activities, once repayment is assured.

The difference in magnitudes indicates that wage and salaried workers had greater access to credit from formal institutions than non-salaried workers. People in salaried employment are required to open accounts with formal financial institutions through which their salaries are paid. In so doing, financial institutions have control over their salaries and usually deduct loan repayments from their accounts before they access their salaries. Moreover, the salaries are used as collateral to secure loans from banks. Thus salaried workers have higher chances of accessing credit from formal institutions.

Interestingly, in rural areas, non-salaried workers were more likely to borrow from formal institutions relative to those not employed. Being a wage or salaried worker in the rural area was not significant for borrowing from any kind of institution. In rural areas, farmers, especially those cultivating cocoa have access to credit from RCBs and other formal institutions. Furthermore, through the Rural and Agricultural Finance Program, there has been an increase in access to credit for farming and other economic activities in rural areas.

In the full sample, financial literacy influenced borrowing from formal institutions positively, and from informal institutions, negatively. Financial literacy was also significant for the rural sample but not significant for the urban sample. In rural households, gaining a point in financial literacy score increases the probability of borrowing from formal institutions by 0.05 than not borrowing. This result is explained by the fact that, as individuals obtain knowledge about financial products, they are empowered to demand financial services from formal institutions and hence borrow less from informal institutions. Although financial literacy was not significant for the urban sample, the signs show that financial literacy was positive in favour of formal institutions of borrowing. The results suggest that the influence of financial literacy on borrowing is stronger in rural areas than in urban areas.

Education was significant in the full and rural samples, but not significant in the urban sample. In the full sample, those who had some secondary education were 0.02 more likely to borrow from formal institutions than not borrowing. In the rural sample, those with primary education were 0.04 less likely to borrow from informal institutions than not to borrow. The results suggest that the effect of education on borrowing from formal versus informal institutions is minimal. The results of the urban sample is consistent with the findings of Togba (2012), who found that education, represented by whether or not household head had some literacy level, was not significant for borrowing from formal sources. Contrarily, Barslund and Tarp (2008) found that number of years of education negatively influenced borrowing from informal sources but was not significant for borrowing from formal sources.

Monthly income was significant for borrowing from all kinds of institutions in rural areas, but not significant for borrowing in urban areas. The results indicate that in rural areas, earning income of any level increases the probability of borrowing from all kinds of institutions relative to not borrowing. When it comes to borrowing from formal institutions, monthly income provides an evidence of repayment ability. Thus income earners are more likely to access credit from formal institutions relative to those who do not earn income. Individuals earning incomes are also respected by their neighbours, friends and family members and also stand a chance of receiving loans from informal sources.

6.6 Determinants of Participation in Formal versus Informal Insurance

Similar to the other financial services, the multinomial logit model was employed in assessing the factors that influence decision to insure through formal and informal sources. The exclusion of those insured exclusively through the NHIS reduced the sample size, which made it impossible to carry out the analyses based on rural and urban locations. First of all, tests of IIA were conducted on the model to assess its application. Results are shown in Table 6.10. The test results suggest that the null hypothesis that IIA holds cannot be rejected. Thus the MNL was appropriate for the estimation.

Table 6.10: Results of Hausman and Small-Hsiao Tests of IIA on Insurance through Formal versus Informal Sources

Omitted Category	Hausman Test			Small-Hsiao test		
	Test statistic	p-value	evidence	Test statistic	p-value	evidence
Formal insurance	1.418	1.000	For IIA	-1730.32	1.000	For IIA
Informal insurance	-4.943	-[8]	-[8]	-447.182	1.000	For IIA
No insurance	4.365	1.000	For IIA	-806.701	1.000	For IIA

Source: Author's computation based on Finscope 2010 data

Table 6.11 presents the estimates of the determinants of insurance participation through formal versus informal sources. The results indicate that individuals who participate in formal insurance are distinct from those who participate in informal insurance. Individuals having secondary education and above, and those who have understanding of the concept of insurance are more likely to participate in formal insurance. In addition, wage and salaried workers, the married and recipients of local remittances are more likely to insure with formal institutions. On the other hand, individuals who participate in informal insurance are more likely to engage in non-salaried economic activities. Age was significant for participation in both formal and informal insurance but with different effects. The results show that females were more likely to participate in insurance from any kind of institution when compared to males.

Table 6.11: Multinomial Logit Estimates of Participation in Insurance through Formal versus Informal Sources

VARIABLES	FORMAL (AME)	INFORMAL (AME)
Age	-0.0035	0.0064*
	(0.0035)	(0.0037)
Age squared/100	0.0063*	-0.0078*
	(0.0036)	(0.0042)
Rural Location (Ref. urban location)	0.0043	0.0004
	(0.0443)	(0.0374)
Female (Ref. Male)	0.0450**	0.0723***
	(0.0209)	(0.0183)
Household size	0.0084	0.0042
	(0.0056)	(0.0051)
Marital status		
Married	0.0671**	-0.0035
	(0.0271)	(0.0264)
Ever married	0.0618	-0.0364
	(0.0404)	(0.0328)
Personal Monthly income (Ref. no income)		
Below GHS200 per month	-0.0330	0.0379
	(0.0389)	(0.0340)
Above GHS200 per month	0.0159	0.0584
	(0.0464)	(0.0401)
Insurance knowledge (Ref. not heard and do not understand)		
Heard but do not understand	-0.0625**	-0.0073
	(0.0303)	(0.0292)
Have understanding	0.0536**	0.0097
	(0.0272)	(0.0233)
Education qualification (Ref. no education)		
Primary education	0.0095	-0.0134
	(0.0289)	(0.0262)
Some secondary education	0.0298	-0.0188
	(0.0269)	(0.0235)
Secondary and above	0.0797**	-0.0537*
	(0.0387)	(0.0285)
House ownership status (Ref. Family owned)		
Rented	0.0180	-0.0119
	(0.0263)	(0.0217)
Occupied without payment	-0.0589**	0.0193

	(0.0240)	(0.0242)
Receiving remittances		
Foreign remittances	0.0500	-0.0391
	(0.0343)	(0.0274)
Local remittances	0.0688***	0.0097
	(0.0259)	(0.0225)
Financial liberty	-0.0346	0.0211
	(0.0299)	(0.0249)
Employment status		
Wage/Salaried employment	0.1265**	0.0327
	(0.0515)	(0.0349)
Non-salaried employment	-0.0056	0.0842***
	(0.0264)	(0.0228)
Constant	-2.4438***	-4.6217***
	(0.5926)	(0.8112)
Pseudo R2	0.0781	
Prob > chi2	0.0000	
Observations	1,464	1,464

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Knowledge of insurance was significant for participation in formal insurance. Hearing of insurance without understanding the concept decreases the probability of insuring through formal institutions relative to not insuring. Furthermore, having an understanding of the concept of insurance increases the probability of insuring through formal institutions relative to not insuring. This finding is consistent with studies that show an increase in the uptake of formal insurance as understanding and knowledge of insurance increases (Giné et al., 2008; Akotey et al., 2011; Ackah & Owusu, 2012; Akpandjar et al., 2013). As knowledge of insurance increases, individuals are empowered to make informed decisions on buying insurance products that suit their needs as they also derive utility from the products. Consequently, they insure less through informal groups.

Education was significant for participating in formal insurance. Having secondary education and above increases the probability of participating in formal insurance by 0.0 (at 5% significance level) relative to not insuring. In the same way, having secondary education and above decreases the probability of insuring through informal institutions by 0.05. The results suggest that higher education is important for the adoption of formal insurance products. The explanation to this finding is that individuals with higher education are able to process knowledge of insurance better and are empowered to make decisions on insurance products which meet their needs. Besides, there are higher chances of gaining information on the insurance market for people with education. This reduces the level of asymmetry in information, at least on the side of the consumer.

Previous studies have revealed mixed effects of education on adoption of formal insurance. Giné et al. (2008), studying factors determining the adoption of rainfall insurance in rural India, did not find number of years schooling as significant, but rather, familiarity with the insurance product affected decision on uptake. In the study of factors that influence the uptake of microlife insurance and other financial services in Ghana, Giesbert et al. (2011) found that the number of years of schooling was significant for the adoption of microlife insurance. The implication from these studies and the result of this thesis is that having average education may not be a strong influence on adoption of formal insurance, however, having higher education enables the adoption of formal insurance.

Females insured through all kinds of institutions. Females were 0.05 more likely (at 5% significance level) to insure through formal institutions and 0.07 (at 1% significance level) more likely to insure through informal institutions than not insuring. The difference in magnitudes indicates that females have a greater affinity to informal insurance. This result is explained by the differences in risk preferences between males and females. Females are shown to be more generally risk-averse than males and hence are more likely to participate in insurance of any kind (Croson & Gneezy, 2009). The benchmark model of insurance consumption in the full information setting suggests that risk-averse persons are more likely to insure. However, recent studies yield findings that are inconsistent with the benchmark model, suggesting that risk-averse persons are less likely to participate in insurance due to uncertainty (Giné, et al., 2008; Giesbert et al., 2011). It can be argued that in the presence of asymmetric information and uncertainty of insurance outcomes, risk averse persons are less likely to participate in insurance. Consequently, in the case of knowledge on insurance and certainty of insurance outcomes, risk averse people are more likely to participate in insurance.

The results suggest that age had a life-cycle effect on participating in informal insurance. An increase in age by one year results in an increase in informal insurance participation by 0.6%. Age in the higher order terms had a negative sign which means although the tendency to participate in informal insurance increases with age, at advanced ages, there is a decline in informal insurance participation. A similar pattern was identified by LeMay-Boucher (2012) for participation in informal insurance groups in Benin. The explanation to this finding is that after older years, the motivation for joining informal insurance groups is lessened as there are fewer life-cycle needs. LeMay-Boucher (2012) recounts the benefits of informal insurance groups in meeting life-cycle needs such as marriage ceremonies, the birth of a child, baptism of a child and other social events. As people grow older, such needs in their lives decreases. The effect of age on formal insurance participation was different. Age in the linear form was not significant, but age in the higher order terms was positively significant. This means the aged are more likely to participate in formal insurance. The effect of age here suggests that people are more concerned about insurance in their old age. Following the studies of Arun et al. (2012), who found a negative effect of age squared on participation in micro life insurance, this result suggest a bequest motive as the driving force for participation in insurance, as the desire to leave a bequest for dependants is greater during old age.

Being a married person increases the probability of participating in formal insurance by 0.07 relative to not insuring. A few studies find marital status significant for formal insurance participation. This finding is consistent with the study of Akpandjar et al. (2013), who observed that married household heads had higher demand for formal financial services, which include insurance. This finding is explained by reckoning that married individuals are more likely to have dependants, and they therefore have the need to leave bequests for their dependants (Arun et al., 2012).

Recipients of local remittances were 0.07 (at 1% significance level) more likely to insure through formal sources than not insuring. Studies on foreign remittances reveal that remittances provide insurance and help to reduce the impact of shocks. Furthermore, remittances have been found to increase when shocks increase (Yang & Choi, 2007; Quartey, 2006). This informed the *a priori* expectation that individuals receiving any form of remittances should be the least likely to participate in insurance. The results however, turned out to be different, and suggest that local remittances may not directly provide support from shocks but provide a constant flow of funds to enable formal insurance participation. This enables a forward-looking behaviour among recipients.

Being a wage or salary earner increases the probability of insuring in formal institutions by 0.13 relative to not insuring. . Insurance from the formal sector is commercial and market-based, and premiums are paid regularly and are non-negotiable (Loewe, 2006). Consequently, the wage earner who has a regular source of income can afford premium payment in the formal sector.

On the other hand, being a non-salaried worker increases the probability of insuring through informal institutions by 0.08 relative to not insuring. As a result of irregularity and instability of income, non-salaried workers are more likely to join associations and form groups through which they can receive support during shocks. Such informal groups are ubiquitous among petty traders, market women, hairdressers, artisans, farmers, fishermen and other vocations. Some of these groups have rules and regulations for *ex ante* contributions and coverage of support. Others also provide *ex post* contributions to support members when they encounter shocks. Social networks are also built around risk-sharing arrangements, from which other forms of support are derived (Bhattamishra & Barrett, 2010). One disadvantage of such groups is that members tend to belong to the same vocation and where there is a risk associated with the vocation, it affects all members and it becomes difficult to pay insurance benefits to all members. For instance market women groups face challenges when there is a fire outbreak at the site of their business that affects a large number of members in the group. For such reasons, formal insurance is superior to informal insurance. The fact that non-salaried workers were more likely to engage in informal insurance also suggest a bottleneck in marketing insurance products to these groups, and the lack of products that suit their needs.

6.7 Summary of Findings

This chapter examined the factors that determine the use of formal versus informal financial services within the framework of financial inclusion, which forms the anchor of the conceptual framework. In the full samples, factors such as financial literacy (knowledge of insurance in the case of insurance), education, wage or salaried employment and local remittances were significant for the consumption of all three financial services. The financially literate, educated and wage or salaried workers were more likely to consume formal financial services. This has an implication for financial inclusion, as these socio-economic groups have a relatively higher chance of inclusion in the formal financial system. The results also indicate that the less educated, less financially literate, and those engaged in non-salaried employment are more likely to consume financial services from informal institutions. These groups can also be considered as having higher chances of exclusion from the financial system, which has poverty reduction implications.

The results of the sub-samples show that financial literacy was significant in both urban and rural households in the decision on saving. However, in the case of borrowing, financial literacy was significant for rural households only (Appendix I). This indicates that financial education programs that seek to enhance financial inclusion in terms of saving must focus on both urban and rural areas as programs that seek to enhance borrowing from the formal sector focus on rural areas. The results also suggest that adequate knowledge of insurance is relevant for participation in formal insurance (Table 6.11). Having heard of insurance without understanding the concept decreases the probability of insuring in formal institutions. This indicates that financial education programs that seek to improve financial inclusion in terms of access to insurance must provide sound education on insurance beyond the creation of awareness. The implication of these findings for policy is that specific policy on the various components of financial services is required.

The influence of education in the rural and urban samples varied for decisions on saving and borrowing. In rural areas having any qualification of formal education increases the probability of saving through formal institutions relative to not saving. Interestingly, in urban areas, having primary education increases the probability of saving through informal institutions relative to not saving. The effect of education on borrowing was not significant in urban areas and minimally significant in rural areas, where people with primary education were less likely to borrow from informal institutions (Appendix I). These results suggest that having education of any level increases the chances of inclusion in formal saving institutions in rural areas. Individuals with secondary and above education also stand a chance of inclusion in formal insurance markets. The implication of these findings is to identify groups that are likely to be excluded (voluntarily or involuntarily) in formal financial systems for policy on financial inclusion.

In all the financial services, wage and salaried workers were more likely to use formal institutions, while non-salaried workers had affinity to informal institutions in most cases. Wage earners consistently borrowed, saved and insured through formal institutions. The fact that wage earners consumed all financial services from formal sources confirms the assertion that the use of formal financial services is interconnected such that the use of one service creates opportunities for one to benefit from other related services (Giesbert et al., 2011; Goodstein & Rhine, 2017). As wage earners receive their salaries through formal institutions, it creates an opportunity to save part of their monthly income, which serves as a security for borrowing from the financial institution. Wage and salary workers can also insure with affiliated insurance agencies. The results suggest that wage and salary earners are likely to benefit from multiple financial services.

Considering the choice of institution of saving, females and those with primary education in urban areas were more likely to use informal saving institutions. In both urban and rural areas, recipients of local remittances and non-salaried workers were more likely to use informal institutions of saving. In rural areas, those who earned monthly income below GHS200 were also more likely to use informal institutions of saving (Appendix I).

As these groups were more likely to use informal institutions of saving, it creates an opportunity to increase access to formal savings products to these groups.

Concerning the credit market, in both rural and urban areas, recipients of local remittances and those that had negative experiences with financial institutions were more likely to borrow from informal institutions. In urban areas, the aged were less likely to borrow from either formal or informal institutions. In rural areas, the aged were less likely to borrow from formal institutions. In urban areas, both salaried workers and non-salaried workers had access to credit from formal institutions. This is a good indication of financial inclusion.

In the formal insurance market, non-salaried workers were more likely to insure through informal means. Those that were more likely to insure through formal institutions include those with somewhat higher education, those financially literate on the concept of insurance, the aged, married and recipients of local remittances. Females tend to be included in both the formal and informal insurance markets.

The results indicate that recipients of local remittances are more likely to use informal institutions of saving and credit (Appendix I). However, this group is more likely to insure through formal sources (Table 6.11). In this observation, the channel of receipt of remittances is questioned. If remittances are received through formal institutions, the chances of using formal institutions to save would be high. This will in turn increase the chances of accessing credit from formal institutions. If remittances are received through informal sources, they end up being saved in informal sources. The recent increase in the use of the mobile money transfer platform for receiving remittances has consequences on saving behaviour. Recipients of remittances are likely to withdraw part of their remittances and save the rest on their mobile money wallets. Whilst this constitutes saving, its effect in terms of financial inclusion is limited, as recipients are prevented from the benefit of other formal financial services such as access to credit. The observation that recipients of local remittances insure through formal institutions indicate some preference for formal institutions. An entry point for financial inclusion is to develop flexible services of receiving local remittances through formal financial institutions with attractive credit products.

Age was significant for insuring and borrowing from all kinds of institutions, in most cases. Participation in informal insurance increased with age and declined at old age. In addition, the aged were more probably to insure through formal institutions. Similarly, in urban areas, borrowing from either formal or informal institutions increased with age and declined at old age. In rural areas, a similar observation was made with borrowing from formal institutions. However, age was not significant for saving in any kind of institution in urban and rural areas, which suggests that the young and the aged equally saved through all kinds of institutions. Furthermore, income of all levels was significant for saving in all kinds of institutions in both urban and rural areas. When it comes to insurance, income was not significant. Thus it can be concluded that all can save in all kinds of institutions, once income is earned, but not all can borrow nor insure.

CHAPTER SEVEN

RESULTS AND DISCUSSION: DETERMINANTS OF CREDIT CONSTRAINTS

7.1 Introduction

Credit is the least used financial service out of the three components being studied. Whilst this may indicate a low level of active demand among households, it also indicates credit constraints. This section examines the factors that determine households' probability of facing credit constraints from formal and informal institutions. A pooled dataset comprising of GLSS 3, GLSS 4, GLSS 5 and GLSS 6 was used in this analysis to obtain a larger number of observations on households that were credit constrained. As the data did not provide information on the source of credit request, it was not possible to distinguish between factors that determine credit constraints in the formal versus informal sectors. In this study, a household is defined as credit constrained if it had both applied for a loan (from formal or informal sources) and had the loan application denied. As the data did not provide information on latent demand for credit, the analysis was limited to active credit demand, which is captured in the definition of credit constraints.

7.2 Summary Statistics

Table 7.1 presents a description of the sample used for analysis from the various GLSS data, as well as the pooled dataset. A few of the statistics varied from those of the total population as a result of missing data points through merging of files. For the pooled data, 25% of households made credit requests, out of which 12 % had their loan requests denied. Over the years, there was a decline in the proportion of households that made credit requests. The proportion that was denied credit was greatest in 1991. The average age of a household head was 45 years and the average household size was 4. A majority (an average of 59%) of households resided in rural areas and a majority (an average of

71%) of households were headed by males. The proportion of household heads with tertiary education and the proportion with no formal education declined consistently over the years. Between 1991 and 2013, the proportion of household heads without education declined by 48% and the proportion that had tertiary education increased by 114%. This reflects an improvement in education over the years. Poverty status reduced over the years: between 1991 and 2013, the proportion of households that was very poor declined by 40% and the proportion that was non-poor increased by 27%. Over the years, there was a decline in the proportion of household heads that worked.

Table 7.2 presents a chi-square test on the profile of households that were credit constrained and those that were not credit constrained. The results show that, apart from location and poverty status, the two groups of households differed statistically from each other in terms of household size and characteristics of household head such as age, sex, marital status, education qualification and employment status.

Table 7.1: Summary Statistics: Factors Influencing Credit Constraints

Variable	Measures	Response/Categories	GLSS 3 1991/1992	GLSS 4 1998/1998	GLSS 5 2005/06	GLSS 6 2012/13	Pooled data
Observations	Households		4,480	5,709	8,621	16,756	35,566
Dependent Variable:							
Credit request	Whether or not a household	Yes (%)	43.5	40.2	31.4	11.7	25.0
	head made a credit request	No (%)	56.5	59.8	68.6	88.3	75.0
Dependent Variable:							
Credit constrained	Whether or not a household	Yes (%)	18.5	9.0	12.8	9.5	12.4
	head was refused upon a credit request	No (%)	81.6	91.0	87.2	90.5	87.6
Independent Variables							
Age (Average in years)	Age of household head		44.2	45.0	45.4	45.8	45.4
Location	Location of household head	Urban	34.6	35.6	41.6	44.4	41.1
		Rural	65.4	64.4	58.4	55.6	59.0
Sex	Sex of household head	Female	32.2	33.1	28.0	28.2	29.4
		Male	67.8	66.9	72.0	71.8	70.6

Household size (Average)	Number of individuals in a household		4.5	4.3	4.2[11]	4.3[10]	4.3
Marital status	Marital status of household head	Married	72.0	67.7	67.8	67.5	68.2
		Never Married	21.2	24.7	22.6	22.0	22.5
		Ever Married	6.9	7.6	9.6	10.5	9.3
Education level	Highest education attained by household head	No formal educ.	61.9	53.8	55.8	32.1	45.1
		Primary educ.	28.5	32.8	29.8	49.1	39.2
		Secondary educ.	6.0	7.4	7.5	11.1	9.0
		Tertiary educ.	3.6	5.9	7.0	7.7	6.7
Worked	Whether or not household head did some work within seven days prior to survey	Yes	89.7	87.3	85.1	83.6	85.3
		No	10.3	12.7	14.9	16.4	14.7
Hospitalization	Household member admitted at the hospital for at least a night.	Yes	2.3	2.6	6.9	2.7	3.6
		No	97.7	97.4	93.1	97.3	96.4
Poverty status	Whether or not household head was poor with respect to poverty line.	Poor	39.9	32.0	24.0	23.9	27.2
		Not poor	60.1	68.0	76.0	76.1	72.8

Source: GLSS3, GLSS4, GLSS5 and GLSS6

[11] Average household sizes recorded are for the sample used for the analysis. These figures differed slightly from that which is recorded for the general population, resulting from loss of data points as a result of merging.

Table 7.2: Profile of Credit Constrained and Unconstrained Households

Variable	Credit constrained	Unconstrained	Chi-Square (X^2 0.05)
Number of observations (households)	1,099	7,800	
Average household size	5.2	4.7	-160(0.000)***
Average age (years)	42.9	44.2	-310(0.000)***
Sex (% Females)	25.8	30.3	9.0 (0.003)***
Education level (%)			
No education	47.8	47.1	
Basic education	41.1	37.2	20.5 (0.000)***
Secondary education	6.5	7.5	
Tertiary education	4.7	8.2	
Marital status			
% Presently married	76.1	73.0	5.2 (0.075)*
% Never married	18.2	21.1	
% Married before	5.6	5.9	
Household Poverty status			
Poor	26.4	24.7	1.1(0.298)
Non-poor	74.6	75.3	
Location			
% Urban	36.8	38.6	1.3 (0.250)
% Rural	63.2	61.4	
Employment status (% working)	92.5	89.1	11.6 (0.001)***

Source: GLSS 3, GLSS 4, GLSS 5 and GLSS 6

7.3 Determinants of Credit Constraints

The Heckman probit estimation was employed in the analyses of the determinants of credit constraints. Two equations, the selection equation (credit request) and the outcome equation (credit constraint), were estimated simultaneously. The sample was selected based on the household's decision to request for credit. Since the decision to request for credit might be related to unobserved factors that also affect the incidence of credit constraints, endogenous selection may occur, which may result in sample selection bias. This source of selection bias is addressed by using the Heckman probit model, which allows a simultaneous estimation of two models. Another possible source of sample selection bias is due to the fact that credit constraints cannot be observed for households that did not make credit requests. This was also corrected by including an exclusion restriction variable (Wooldridge, 2009).

Following the studies of Barslund and Tarp (2008), Menkhoff and Rungruxsirivorn (2011) and Akpandjar et al. (2013), a dummy variable indicating the experience of shocks was included in the selection model as an exclusion restriction variable. In the data, the admission of any member of the household at the hospital for at least a night served as a proxy for the head of household experiencing shocks. It is expected that the probability of demanding credit from any kind of institution would be highly correlated with such an experience Although the NHIS in Ghana takes care of a limited number of days on admission at Government hospitals and a few private hospitals, operationally, the admission of household members comes with additional financial demands on the household head. It is expected that this is correlated with the chances of requesting credit. However, the probability of being refused or granted credit requests will not be correlated with the experience of shocks. An additional variable that is likely to affect borrowers' repayment ability which is observable to lenders was included in the outcome model. In this respect, a dummy variable indicating whether or not the household head was working was included in the outcome equation. The analysis was carried out on two levels. The first level analysis was carried out on the full sample which consists of all households in the sample. The second level of analysis was carried out on the sub-samples, which were made up of households in urban and rural areas respectively. Results of the Heckman probit estimates of the determinants of credit constraints for the full and sub-samples are presented in Tables 7.3 and 7.4 respectively.

Table 7.3: Heckman Probit Estimates of Determinants of Credit Constraints (Full Sample)

Variables	Credit Constrained (AME)	Credit Request (Coeff.)
Age	-0.0028	0.0179***
	(0.0022)	(0.0035)
Age squared/100	0.0035	-0.0245***
	(0.0024)	(0.0034)
Female (Ref. male)	-0.0727**	0.0198
	(0.0282)	(0.0497)
Household size	-0.0067**	0.0527***
	(0.0033)	(0.0038)
Marital status (Ref. Never married)		
Married	-0.0137	0.0195
	(0.0150)	(0.0251)
Ever married	0.0658***	-0.2446***
	(0.0230)	(0.0396)
Rural location(Ref. Urban)	-0.0230	0.1097***
	(0.0149)	(0.0311)
Highest education (Ref. No educ.)		
Primary education	-0.0151	0.1023***
	(0.0124)	(0.0230)
Secondary education	-0.0195	0.0136
	(0.0201)	(0.0351)
Tertiary education	-0.1290***	0.2642***

	(0.0244)	(0.0397)
Survey Year (Ref. Round 3 - 1991/92)		
Round 4 (1998/99)	-0.0805	-0.2769***
	(0.0629)	(0.1012)
Round 5 (2005/06)	-0.0261	-0.4392***
	(0.0618)	(0.0938)
Round 6 (2012/13)	0.0811	-1.1427***
	(0.0872	(0.0904)
Female * Round 4 (1998/99)	0.0001	0.1233*
	(0.0330)	(0.0650)
Female * Round 5 (2005/06)	0.0415	0.0569
	(0.0342)	(0.0614)
Female * Round 6 (2012/13)	0.0808**	0.0306
	(0.0396)	(0.0588)
Poor (Ref. Non-poor)	0.0624***	-0.3442***
	(0.0165)	(0.0261)
Worked (Ref. Not working)	0.0337*	
	(0.0180)	
Hospitalization		0.2448***
		(0.0372)
Constant		-0.6503***
		(0.1007)
Test: Independence of equations	Wald test $\rho = 0$	
	p value 0.0001	
Uncensored observations	8866	8866
Observations	35,480	35,489

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 7.4: Heckman Probit Estimates of Determinants of Credit Constraints (Sub-Samples)

	URBAN		RURAL	
VARIABLES	Credit Constrained (AME)	Credit Request (Coeff.)	Credit Constrained (AME)	Credit Request (Coeff.)
Age	-0.0086**	0.0277***	0.0003	0.0124***
	(0.0039)	(0.0060)	(0.0028)	(0.0043)
Age squared/100	0.0083**	-0.0346***	0.0014	-0.0188***
	(0.0049)	(0.0060)	(0.0029)	(0.0042)
Female (Ref. male)	-0.1054	-0.0451	-0.0447	0.0351
	(0.0679)	(0.0790)	(0.0325)	(0.0636)
Household size	-0.0037	0.0490***	-0.0083**	0.0546***
	(0.0089)	(0.0069)	(0.0033)	(0.0046)
Marital status (Ref. Never married)				
Married	-0.0577	-0.0028	0.0134	0.0363
	(0.0398)	(0.0379)	(0.0208)	(0.0340)
Ever married	0.0127	-0.2541***	0.0900***	-0.1977***
	(0.0536)	(0.0567)	(0.0348)	(0.0574)
Highest education (Ref. No educ.)				
Primary education	-0.0000	-0.0672*	-0.0275	0.1962***
	(0.0225)	(0.0383)	(0.0172)	(0.0293)
Secondary education	-0.0229	-0.1641***	-0.0249	0.2020***
	(0.0496)	(0.0488)	(0.0298)	(0.0529)
Tertiary education	-0.1187***	0.1145**	-0.1433***	0.3990***
	(0.0508)	(0.0532)	(0.0326)	(0.0619)
Survey Year (Ref. Round 3 - 1991/92)				
Round 4 (1998/99)	-0.0539	-0.5346***	-0.0855	-0.1822
	(0.1418)	(0.1645)	(0.0720)	(0.1262)
Round 5 (2005/06)	-0.0739	-0.6504***	-0.0123	-0.3686***
	(0.1626)	(0.1566)	(0.0665)	(0.1184)
Round 6 (2012/13)	0.0759	-1.2037***	0.1089	-1.1655***
	(0.1929)	(0.1487)	(0.0983)	(0.1155)
Female * Round 4 (1998/99)	0.0045	0.2169**	-0.0084	0.1018
	(0.0656)	(0.1024)	(0.0385)	(0.0820)

Female * Round 5 (2005/06)	0.0972	0.0609	0.0060	0.1054
	(0.0775)	(0.0947)	(0.0410)	(0.0804)
Female * Round 6 (2012/13)	0.0964	0.0278	0.0555	0.0649
	(0.0748)	(0.0900)	(0.0479)	(0.0784)
Poor (Ref. Non-poor)	0.0420	-0.2321***	0.0679***	-0.3561***
	(0.0334)	(0.0496)	(0.0178)	(0.0300)
Worked (Ref. Not working)	0.0222		0.0395	
	(0.0269)		(0.0249)	
Hospitalization	-	0.2183***	-	0.2580***
		(0.0558)		(0.0515)
Constant		-0.5957***		-0.5466***
		(0.1169)		(0.1198)
Test: Independence of equations	Wald test $\rho = 0$		Wald test $\rho = 0$	
	p value 0.0659		p value 0.0005	
Uncensored observations	3,397		5,473	
Observations	14,555	14,560	20,925	20,929

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The Heckman probit estimates of the full sample and sub samples are provided in Tables 7.3 and 7.4 respectively. The Wald test of independence for the full sample was significant at 1% (p=0.0001) and for the urban sample it was significant at 10% (p = 0.066). For the rural sample, the Wald test was significant at 1% (p = 0.001). This means the null hypothesis of independence of the two equations must be rejected. Thus the two equations are dependent and the Heckman Probit model is appropriate for such an analysis. The results of the full sample (Table 7.3) show that being a female household head reduces the probability of experiencing credit constraints by 0.07 (at 5% significance level) than being a male. This indicates that in the entire population, females had greater access to credit relative to males. However, in the sub samples, the effect of sex was not significant. This finding is consistent with the study of Barslund and Tarp

(2008) who noted that females had greater access to credit. Other studies that focussed on firm-level credit constraints, such as Hansen and Rand (2014a), and Oduro et al. (2016) also establish that female-owned microenterprises experienced less credit constraints relative to male-owned microenterprises.

The above result is explained by several factors. First of all, the worldwide enthusiasm for the inclusion of women in national development redirected the focus of many governments and financial institutions in the early 1990s, and this paved the way for women to engage in income-generating activities. This gave the impetus for the extension of microcredit to women as a tool for poverty alleviation and empowerment. This resulted in the establishment of non-bank financial institutions that offered credit to women. One example is the Women's World Banking, which was formerly an NGO, and was licensed in 1994 as a Savings and Loans Company with a focus on women (Helms, 2006; Steel & Andah, 2008; Osei-Assibey, 2011). Another example is the Sinapi Aba Trust (SAT), an NGO, which was established in 1994, and in 2013, set up a Savings and Loans outlet known as Sinapi Aba Savings and Loans (Steel & Andah, 2003).

Another contributing factor is the general perception of society concerning females, which seem to work in their favour when it comes to loan approvals. Females are perceived as more risk-averse than men and thus less likely to engage in risky economic activities that will result in loan defaults. Furthermore, females are perceived as trustworthy and lending to female household heads has many social benefits in addition to economic benefits (Hansen & Rand, 2014a; Croson & Gneezy 2009; Aggarwal, Goodell & Selleck, 2015). In addition, evidence showing that females were less likely to default in loan repayment, also reinforced the chances of extending loan offers to women upon request. Consequently, financial institutions preferred to offer loans to females than males (Armendàriz & Morduch, 2010; D'espallier, Guérin & Mersland, 2011).

The results also indicate that female household heads in the full sample were more likely to experience credit constraints in 2012 relative to 1991. A female household head is 0.08 more likely to experience credit constraints in 2012 than in 1991 (Table 7.3). However, in the sub samples, there were no significant differences in the experience of credit constraints by females over the years. These results are explained by possible loan defaults by female household heads in recent times. Micro finance loans from either formal or informal sectors are known to be fungible, whereby their uses can be easily interchanged within the household. Loans that are meant for business purposes may end up used for household consumption purposes and this may increase the incidence of default (Armendàriz & Morduch, 2010; Kotir & Obeng-Odoom, 2009). Recent studies also suggest high default rates among female borrowers of non-bank financial institutions in Ghana (see for example Afrane and Adusei, 2014). As S&Ls and other NBFIs and banking institutions increased access to credit by females over the years, defaults may have set in, which may have resulted in stricter credit approval processes that tended to reduce access to credit by females in recent years.

Another contributing factor to the recent decline in access to credit by female household heads is the increased competition in the credit market following financial sector reforms. The expansion of the financial sector due to the entrance of many financial institutions increased competition in the financial sector, notably in the microfinance industry, and resulted in increased access to credit by excluded groups such as women (Steel & Andah, 2003; Zhao et al., 2010). It has been argued theoretically that an increase in competition in the credit market results in an increase in access to loans by households and micro enterprises that were initially excluded from the credit market. A further increase in competition has an adverse effect on access to credit by households that are information-intensive as lenders would have to invest in information search on such households (Claessens, 2009). Consequently the competion in the credit market that started in the 1990s increased access to credit by women in the 1990s. Further competion in the 2000s may have resulted in the exclusion of female household heads in the credit market as they are likely to engage in petty trading activities and tend to be information - intensive (Steel & Andah, 2003; Zhao et al., 2010).

In all the samples, the results show a consistent decline in credit request over the years relative to the reference year, 1991. From the full sample, for instance, in 1998, the probability of requesting credit decreased by 28% relative to 1991. In 2005, this decreasd by 44%, and in 2012, the probability of requesting credit decreased by 114% relative to 1991. This reflects a persistent lack of interest in borrowing from either the formal or informal sector. There is some reason to believe that this lack of interest in borrowing is towards the informal sector, as this study shows a decline in use of credit from informal sources, and an increase in use of credit from formal sources, using the same data (refer to Chapter 5). However, considering the fact that use of credit reflects the proportion of individuals with debt stocks, it could mean that the proportion of individuals who paid off their debts in the informal sector increased over time. The financial climate is very complex and many unobserved factors influence the decision of households when it comes to the use of financial services, especially, credit. It is also possible that over time, households decided not to borrow from any kind of institution because of the perception of being denied loan requests. This usually occurs with the formal sector. After loan applicants spend time filling loan application forms and providing all necessary requirements, they are denied credit, and this serves as a disincentive to make further loan requests. This brings to relevance the concept of discouraged borrowers. Again, as households gain knowledge of the financial system overtime, they are able to evaluate their credit requests and predict to some extent the possibility of being denied loan requests. Consequently, they are less likely to pursue with loan requests when the probability of denial is high.

Results from the GLSS 6 data (Appendix II) indicate that a majority of household heads (62%) did not request for credit because they had no need for credit.[12] A large proportion of household heads (19%) also indicated that they did not request for credit because of high interest rates. With improvements in macroeconomic conditions, resulting in increasing income, household heads have no need for credit for consumption-smoothing purposes. However, as macroeconomic conditions improve, it creates the need to expand business activities. The high interest rates on loan prevents enterprises from borrowing. Ghana has high lending rates when compared to other countries in the sub region. Appendix III shows the average lending rates of Ghana and a few countries in the sub region. The average lending rate for the period 1991 and 2013 for Ghana was 59.48% per anum, while the figure for Botswana was 14.3%. With high interest rates, potential borrowers who need small amounts to smoothen their income will not be compelled to borrow as they may end up paying more in the long-run. Similarly, households that require credit for business purposes will not be compelled to borrow when the cost of credit exceeds the expected returns from their investments. Thus high interest rates on loans also contribute to the lack of interest in borrowing overtime.

[12] Reasons for not trying to obtain credit were provided only in GLSS 6 and not in previous GLSS data.

The results of all the samples indicate that having tertiary education reduces the probability of experiencing credit constraints relative to being uneducated. Tertiary education also increases the probability of requesting credit. With tertiary education, the probability of experiencing credit constraints reduces by 0.12 for household heads in urban areas and by 0.14 for those in rural areas, relative to the uneducated. Furthermore, in urban areas, they are 11% more likely to request credit and in rural areas, they are 20% more likely to request credit from either formal or informal institutions relative to the uneducated. These results are consistent with the findings of Barslund and Tarp (2008) and Ali et al. (2014) who found education of household heads to be negatively related to credit rationing. Education is a reflection of human capital, which is a function of permanent income in the Permanent-Income Hypothesis. Thus education is an indication of repayment ability. Highly educated household heads are perceived as having high permanent income and therefore credit worthy. They also stand a greater chance of having gainful employment. In their communities, they are respected by their neighbours, friends and family members and also stand a chance of receiving loans from informal sources. More so, they are likely to form networks with wealthy individuals who can offer informal loans.

Theoretically, credit rationing arises from asymmetric information in the credit market, whereby lenders have incomplete information on borrowers, and borrowers also have incomplete information on the lender's decision (Stiglitz & Weiss, 1981; Hoff & Stiglitz, 1990; Atieno 2001). Education increases consumers' access to information on the credit market and the lending process, and in effect increases the chances of accessing credit. Thus education tends to decrease the incidence of credit constraints.

The results indicate that the incidence of credit constraints among the uneducated was high relative to those with high education. People with no education usually have low skills and have less opportunity of gaining employment in the formal sector. Consequently, they end up engaged in micro enterprises or not employed. They also tend to have limited information on the credit market, which increases their chances of facing credit constraints. Lack of access to credit tends to limit opportunities for starting new businesses and increases poverty among those not employed. Lack of access to credit also limits the growth of existing enterprises. This affects the productive capacity of the uneducated and reinforces poverty. This underscores the relevance of investment in human capital (Aterido et al., 2013; Banerjee & Duflo, 2014).

The results show a life-cycle effect on demand for credit in all the samples. Demand for credit from formal or informal sources increased with age and declined at old age. The interpretation of these results is that younger household heads have just begun family life and have fewer family responsibilities. Consequently, they have lower demand for credit. At mid-life and after mid-life, household heads are predominantly active in economic activities that require capital investment. They also have high demand for credit due to increased family responsibilities and the need to transfer resources to older generations. Thus there is high demand for credit for both investment purposes and consumption-smoothing purposes. After retirement, household heads engage in fewer economic activities and also receive transfers from younger generations. Thus there is a decline in demand for credit for both consumption-smoothing and investment purposes among the aged.

Age had no effect on credit constraints in the full sample (Table 7.3). However, in the urban sample, age in both the linear form and the higher order terms had effects on the experience of credit constraints and credit request (Table 7.4). The results show that, in urban areas, the probability of requesting credit increases with age and declines at old age, and the probability of experiencing credit constraints declines with age and increases at old age. An increase in age by one year reduces the incidence of credit constraints by 0.01. At old age, an increase in age by one year increases the probability of experiencing credit constraints by 0.01. The effect of age on credit constraints was not significant in rural areas. The interpretation of these results is that younger household heads (who have lower demand for credit), have lower income, as they have just entered the labour market and have less work experience. They also have inadequate assets to use as collateral. Thus their creditworthiness is low, and this increases the incidence of credit constraints in the formal sector.

At mid-life and after mid-life, household heads (who have high demand for credit due to increased family responsibilities), acquire assets that can be used as collateral and their income level also increases. Consequently, they are rated as highly credit worthy. Furthermore, around mid-life, household heads are likely to build networks of friends who can offer informal loans. They are also more likely to gain respect and trust from friends, family members and neighbours, and are more likely to receive loans from informal sources. Thus the incidence of credit constraints is reduced during this period of life.

After retirement, there is a decline in income level for household heads in both formal and informal employment. Those in formal employments no longer receive salary that can be used as collateral to secure loans in the formal sector. Those in informal employment have less strength to carry out their income-generating activities. Thus they are rated low for creditworthiness and tend to face credit constraints in the formal sector.

For prudential reasons, most commercial banks do not offer loans to retired individuals as they do not receive salary. In the informal sector, retirees are likely to face credit constraints as their network of friends are also retirees with lower income and cannot offer informal loans. Consequently, the incidence of credit constraints in both the formal and informal sectors increases at old age.

The increase in the incidence of credit constraints among the aged in urban areas has an implication for financial inclusion. It reveals the relevance of intergenerational transfers. Studies have shown that, in urban areas, there is a decline in material support for the aged (Aboderin, 2004). Considering the increase in the probability of experiencing credit constraints among the aged, this has a tendency to reinforce the vulnerability of the aged in urban areas and has policy implications. It is interesting to note that the effect of age on credit constraints was not significant in rural areas where household heads are predominantly engaged in farming activities. Those engaged in cash crops for instance have access to formal sector loans from rural and community banks and other micro finance institutions. Furthermore, proceeds from cash crop farming are relatively stable for a longer period of the life-cycle when compared to proceeds from petty trading in the urban areas. As these are used as collateral to secure loans, there seem to be stability in access to credit in the rural areas.

In the full sample, household heads that had married before, and were either divorced or widowed were less likely to make a credit requests and were more likely to experience credit constraints relative to household heads that had never married (Table 7.3). An observation of the sub-samples indicates that this scenario occurred among rural households (Table 7.4). The experience of credit constraints is likely to result from a lower household income, as these household heads that are either widowed or divorced lack the support of their spouses. The experience of credit constraints by this socio-economic group has a tendency of increasing their vulnerability, especially for those in rural areas, where poverty rates are high.

From the results of the full sample, households that lived below the poverty line were less likely to make credit requests and when they made requests, they were more likely to experience credit constraints relative to those who lived above the poverty line (Table 7.3). In observing the sub-samples it was found out that this incidence was common with rural households. In rural areas, poor households were 36% less likely to borrow from formal and informal institutions and the probability of experiencing credit constraints is increased by 0.07 relative to non-poor households. This finding is consistent with the study of Ali et al. (2014), who found out that land size, an indicator of wealth, reduced the incidence of credit constraints. Barslund and Tarp (2008) did not find assets and land ownership as significant in reducing credit constraints. The poor have inadequate wealth to be used as collateral to secure loans from the formal sector. Since their income level is low, their expected loan repayment is low, and they are consequently denied loans from the informal sector. Literature on development finance asserts that, due to lack of collateral, the poor access credit from informal sources (Guirkinger, 2008). However, recent studies (see for example Yuan and Xu, 2015) found out that the poor were denied access to credit in the informal credit market. Therefore it cannot be concluded that the poor have outright access to credit from the informal sector. Credit approval in the informal sector is based on trust, goodwill and altruism. In the informal credit market, poor household heads that are consistent defaulters are denied credit from moneylenders, friends, family members and neighbours. Barslund and Tarp (2008), established that bad credit history is positively related to the incidence of credit constraints. Poor households stand a greater chance of defaulting due to low income, and this may affect their credit history. Consequently, this limits the chances of the poor in rural areas in receiving credit. This is a reflection of exclusion in the credit market, which has an implication for deepening the vulnerability of poor households in rural areas, and requires institutional attention for social protection.

In the full sample, the probability of experiencing credit constraints increased by 0.03 for household heads that worked (at 10% significance level) relative to those who did not work (Table 7.3). However, in the sub-samples, this was not observed (Table 7.4). In this study, demand for credit was from both formal and informal sources, and it is likely that household heads that were not employed borrowed from informal sources. Credit requests from informal sources such as friends and family members are granted based on goodwill, trust and altruism. Results on the trends in use of financial services, using the same data, suggest that a majority of individuals borrowed from informal sources such as family members, friends and neighbours (refer to Chapter 5). Although the data did not allow the disaggregation of the sources of credit demand for those who were refused credit, there is a strong reason to believe that a large proportion of household heads that faced credit constraints attempted borrowing from informal sources such as family members, friends and neighbours. Thus it is likely that household heads that were not working were granted informal loans. This reflects the role of social support in providing credit needs of vulnerable groups such as people not working. Results from trends in use of credit indicate a declining use of credit from informal sources such as family members; friends and neighbours (refer to Chapter 5). This suggests that such social support is not sustainable. It is not surprising that the effect of work was not significant in the sub-samples.

7.4 Summary of Findings

This chapter examined the factors that determine the incidence of credit constraints among household heads. The results provide evidence of the life-cycle effect on demand for credit. This indicates that there is an increasing demand for credit among young and middle aged household heads. However, at old age, there is a decline in demand for credit.

In the total population, being a female household heads reduces the probability of experiencing credit constraints relative to being a male household head. However, in 2012, they faced greater credit constraints relative to 1991. The greater access to credit by female household heads relative to males is possibly due to the intensification of activities of S&Ls, RCBs and other NBFIs that targeted women. The recent decline in access to credit by women is possibly due to high default rates of women in recent times. This trend is worrisome and has an implication for increasing the vulnerability of female household heads.

Having tertiary education reduces the probability of experiencing credit constraints. This reflects lack of access to credit by the uneducated, which has implications for financial exclusion and poverty reduction. This provides a reason for investment in human capital.

There was a declining trend in demand for credit from formal and informal sources relative to 1991. The cause of this is inconclusive and requires further study. Surprisingly, for the full sample, household heads that were working were more likely to face credit constraints relative to those not working. In the sub-samples, this observation was not made; which means household heads were not constrained based on employment status.

Some socio-economic groups are more likely to experience credit constraints. Being poor, separated, divorced or widowed in a rural setting increases the probability of encountering credit constraints. Furthermore, the aged in urban areas are more likely to experience credit constraints. These groups are also less likely to demand credit. These are vulnerable groups, and lack of access to credit has a tendency to increase their vulnerability, and this has policy implications.

CHAPTER EIGHT

SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS

8.1 Introduction

This chapter presents a summary of the study and also concludes on the main findings of the study. It also provides policy recommendation to improve the use of formal financial services by households, and eventually improve financial inclusion efforts. This chapter also recommends areas for further research based on findings for this study.

8.2 Summary

The study set out to examine the use of credit and credit constraints, savings and insurance participation at the household level. The specific objectives were as follows:

1. To examine the trends in saving and use of credit between 1991 and 2014.

2. To examine the determinants of saving, borrowing and insuring through formal versus informal sources.

3. To investigate the determinants of credit constraints among household heads.

8.2.1 Trends in Saving and Use of Credit from 1991 to 2014

The study was guided by the evolutionary theory in assessing the trends in use of credit and saving from formal versus informal sources. Using the GLSS data and the Global Findex data, the results indicate a declining trend in the use of credit from informal institutions, and an increasing trend in the use of credit from formal institutions. This finding is consistent with the extinction and innovation premises of the evolutionary theory. The study also tested the life-cycle hypothesis over time by examining the use of financial services by age. The patterns of the age-saving and age-credit use profiles were consistent with the life-cycle hypothesis. The study also examined the use of financial services by demographic characteristics. The results indicate that a greater proportion of males and residents of urban areas saved when compared to females and rural residents, respectively. In addition, females and residents of rural areas had greater access to credit in 1998 and 2005 relative to 1991.

The results indicate a relatively stable trend in saving between 1991 and 2005. However, there has been an increasing trend in saving in recent times, notably in 2012. The proportion of respondents that borrowed over the years followed an oscillating pattern. Using the GLSS data, 16.9% of respondents borrowed from any kind of institution in 1991. In 1998, the figure increased to 37.5%, and in 2005 it declined to 29.5%. Using the Global Findex data, 38.8% of respondents borrowed from all kinds of institutions in 2011 and this figure decreased to 34% in 2014. The large increase in the proportion that saved in 2012 and 2014 was attributed to economic growth and the expansion of the formal financial sector, among other factors. This supports the demand-following hypothesis of the finance-growth relationship in Ghana (Quartey and Prah; 2008; Adu et al., 2013). This hypothesis maintains that the relationship between economic growth and financial sector development is observed by economic growth paving the way for growth of the financial sector. In this study, economic growth in 2011 can be said as serving as a precursor for financial deepening in 2012.

8.2.2 Determinants of Use of Formal versus Informal Sources of Saving, Credit and Insurance

The determinants of use of formal versus informal financial services were examined within the framework of financial inclusion, which together with the theoretical framework, guided the conceptual framework. The study found out that in the use of all financial services, having financial literacy increases the use of formal institutions. Furthermore, being a wage or salaried worker increases the probability of participation in insurance and saving in formal institutions, while non-salaried work increases the probability of saving and insuring in informal institutions. Education increases the probability of insuring in formal institutions and saving in formal institutions in rural areas.

Certain socio-economic groups have a high tendency of using informal institutions of saving, credit and insurance. When it comes to saving, this includes females and those with primary or basic education in urban areas, low income earners in rural areas, recipients of local remittances and non-salaried workers in both urban and rural areas. In both urban and rural areas, those who had negative experiences with financial institutions and recipients of local remittances also have a high tendency of borrowing from informal institutions. Non-salaried workers also have a high tendency of insuring through informal institutions. Consequently, there are opportunities for targeting these groups in financial inclusion programs.

In the urban areas, the aged were less likely to borrow from either formal or informal institutions. In rural areas, the aged were less likely to borrow from formal institutions. The aged were also less likely to insure through informal institutions. Females were more likely to insure through either formal or informal institutions. Low income earners in urban areas and middle to high income earners in rural areas were more likely to save in either formal or informal institutions.

The life-cycle hypothesis was also tested cross-sectionally, and the results show evidence of the hypothesis on the use of formal and informal credit in urban areas, formal credit in rural areas as well as informal insurance.

8.2.3 Determinants of Credit Constraints

The results provided evidence of the life-cycle effect on demand for credit in both urban and rural areas, indicating that there is high demand for credit among young and middle-aged household heads and a low demand for credit among the aged. In urban areas, the probability of experiencing credit constraints increases among the aged, although there is low demand for credit.

The results of the full sample indicate that female household heads were generally less constrained in both formal and informal credit markets relative to males. Nevertheless, in 2012, female household heads in the entire population were more credit constrained than in 1991. The greater access to credit by females relative to males resulted from active expansion of credit programs within the NBFIs industry that targeted women. The recent decline in access to credit by women is possibly due to stricter loan approval processes, following high default rates.

The poor and those who were separated, divorced or widowed in rural areas were less likely to demand credit, and also more likely to face credit constraints from any kind of institution. This has a tendency of increasing their vulnerabilities and deepening poverty among these groups. Institutional attention is therefore required to support these groups.

High education qualification reduced the incidence of credit constraints in both urban and rural areas. Theoretically, obtaining information on the credit market reduces the level of asymmetry in information, limiting the chances of credit rationing. The uneducated have lower skills and are usually not gainfully employed or are engaged in micro enterprises. Due to the low level of education, they tend to lack information concerning the credit market, and stand a chance of facing credit constraints. This limits access to credit to start new businesses, continuing the cycle of poverty. Lack of access to credit for existing enterprises also limits the growth of the businesses, resulting in low income. In effect lack of access to credit by the uneducated reduces their productive capacity and reinforces the position of poverty (Aterido et al., 2013; Banerjee & Duflo, 2014).

8.3 Conclusions

The study concludes that, generally, financial literacy is relevant for the use of all financial services. Education is also relevant for saving and insuring through formal versus inormal institutions. Education also increases creditworthiness and access to credit. Wage or salaried employment encourages saving and insuring through formal institutions, while non-salaried employment encourages saving and insuring through informal institutions. . The study also concludes that over the years, the poor, rural residents and females generally saved less in all kinds of institutions than the non-poor, urban residents and males respectively. Over the years, the poor also borrowed less than the non-poor. Females in urban areas are more likely to save with informal institutions relative to males. Although in the full sample females generally had greater access to credit than their male counterparts, there is a recent decline in access to credit by females relative to previous years. This has implications of enhancing the cycle of poverty among female household heads in recent times.

The results reflect the opportunity for focusing on some socio-economic groups in financial inclusion programs, as these groups are more likely to use informal institutions (an indication that they are less likely to use formal institutions), and/or are more likely to experience credit constraints or less likely to engage in the financial services being studied. This generally includes rural residents, especially females, as they tend to save less[13]. In rural areas, very poor household heads and those who were previously married, such as the widowed, divorced or separated, are also included, as being in any of these socio-economic groups in rural areas increases the probability of facing credit constraints. In urban areas, this includes the aged, as they are more likely to experience credit constraints. Females in urban areas are also included, as they tend to save in informal institutions. In both urban and rural areas, non-salaried workers who tend to save and insure through informal institutions, as well as recipients of local remittances, who tend to save and borrow from informal institutions are also included..

8.4 Policy Recommendations

One major focus of the financial sector reforms was to broaden access to formal financial services by households and micro enterprises that were excluded from the financial system. Due to the importance of access to formal financial services in poverty reduction at the household level and financial development and macroeconomic growth, the

[13] Although the study concludes that females tend to save in cash less relative to males, it acknowledges the ability of females to save in human capital, physical assets and other avenues that increase household welfare.

Alliance for Financial Inclusion (AFI) was founded in 2008.[14] In 2011, the AFI took an intiative to increase access to financial services by groups that have been excluded from the financial system in developing countries. This initiative was known as the Maya Declaration, to which Ghana subscribed in 2012. To this end, financial inclusion is taken seriously globally. Consequently, situating this study in the framework of financial inclusion gives it a global acceptance.

From the study, financial literacy is important for the use of all formal institutions. An entry point for financial inclusion as a government is to promote financial education. The introduction of financial education programs in the curricula of schools, whether at the primary, secondary or tertiary level, would be one means of increasing financial literacy. One other avenue for increasing financial literacy is through adult education programs. There are existing programs such as the *Youth Save* program which has a focus of inducing a saving habit among older children and teenagers. In collaboration with financial institutions, a complete financial literacy curriculum that provides awareness and knowledge of different financial products and the computation of interest rates for instance is required. The need for a deliberately planned financial literacy program is relevant in these days when financial transactions are a button away on mobile phones and computers. Usually, many people receive financial education through interactions with officials of banks as they visit their branches. As financial transactions are carried out on-line, this avenue for financial education will be lost. Thus financial education is strongly needed in recent times. Considering recent scandals in so called microfinance

[14] This is a global network of financial policymakers founded in 2008 as a Bill and Melinda Gates Foundation-funded project, supported by the Australian Agency for International Development Aid. The mission of AFI is to empower policymakers to increase access to quality financial services for the poorest populations.

companies, where depositors lost their deposits, financial education is important for the consumer in making decisions on which entities to deposit savings. Financial education is also needed to make decisions that support efficient use of loans in order to avoid loan defaults.

From the study, education is important for insuring and saving through formal institutions. Furthermore, having tertiary education also reduces the incidence of credit constraints. This study underscores the relevance of education and the need to promote higher education. Expanding access to higher education in both urban and rural areas is a good policy option for increasing financial inclusion when it comes to access to saving and insurance facilities.

The study noted the opportunity for targeting some socio-economic groups in financial inclusion programs in various financial services. Generally, rural residents need to be targeted in savings programs. In rural areas, the specific groups for targeted credit programs include the poor and those who are divorced, separated or widowed. These groups are associated with vulnerability, and residing in rural areas also deepens their vulnerability. The policy recommendation here is to intensify the activities of RCBs and existing financial institutions in rural areas. The Rural and Agricultural Finance Program (RAFiP) that ended in 2016 must be replaced with a similar program to build capacity of existing rural financing institutions and linking farmers to these institutions. Existing financial institutions need to be encouraged to set up branches in rural areas. The Central Bank may have to introduce concessions for licensing new financial institutions that would set up branches in rural locations. This will increase access to saving and loans products in rural areas.

Furthermore, there is the need to target females in urban areas as well as non-salaried workers in both urban and rural areas in saving programs. The extension of mobile banking services to non-salaried workers who invariably do not receive their income through formal institutions, will promote financial inclusion among this group. There is also the need to target the aged in urban areas in credit programs. The aged in urban areas are exposed to high cost of living, unlike the aged in rural areas. As the study revealed that they are more probably to face credit constraints, there is the need to develop credit programs that suit the needs of the aged, considering the decline in material support.

The results indicate that a majority of individuals borrowed from informal sources, particularly from friends, family members and neighbours. Loans from such sources are invariably small amounts for consumption-smoothing purposes. This reflects the demand for consumer loans. The study also found out that there was a decline in the proportion of individuals that had stocks of debts from informal sources and an increase in the proportion that owed from formal sources. This shows an increasing affinity for formal sector loans. The implication for financial inclusion is to increase access to consumer loans that are flexible and can be processed faster. Government has been playing the role of capacity building, and the Central Bank has its role of supervision of a number of formal financial institutions. As at 2016 year ending, there were 29 deposit mobilization banks, 62 NBFIs, 139RCBs and 564 MFIs that provide consumer loans over the country (BoG, 2016b). These institutions require the support of the Central Bank to provide credit effectively to Ghanaians.

8.5 Areas of Further Research

This study has so far focused on the direction in use of formal versus informal financial institutions as well as the characteristics of individuals within each of these two institutions in order to draw insights for financial inclusion. However, the relative importance of formal versus informal financial institutions in terms of welfare to households is also important for financial inclusion. Further research should consider analysing the welfare of groups that use formal financial institutions versus groups that do not use formal financial institution in order to provide empirical evidence of the relative importance of each institution.

The causes of the declining trend in demand for credit and the recent decline in access to credit by females is also an area for further studies that need to carry out a stakeholder analysis, looking at supply-side and regulatory issues.

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Appendix I: Multinomial Logit Estimates of Determinants of Use of Credit and Saving from Formal versus Informal Sources

	SAVING				CREDIT USE			
	URBAN		RURAL		URBAN		RURAL	
	FORMAL	INFORMAL	FORMAL	INFORMAL	FORMAL	INFORMAL	FORMAL	INFORMAL
VARIABLES	(dy/dx)	(dy/dx)	(dy/dx)	(dy/dx)	(dy/dx)	(dy/dx)	(dy/dx)	(dy/dx)
Age	0.0008	-0.0066	0.0007	-0.0020	0.0097**	0.0080*	0.0052**	-0.0043
	(0.0053)	(0.0054)	(0.0020)	(0.0044)	(0.0040)	(0.0048)	(0.0023)	(0.0028)
Age squared/100	-0.0007	0.0049	0.0012	-0.0038	-0.0090**	-0.0131**	-0.0047*	0.0035
	(0.0058)	(0.0058)	(0.0019)	(0.0046)	(0.0042)	(0.0057)	(0.0025)	(0.0029)
Female (Ref. male)	-0.0070	0.0678**	-0.0000	0.0136	0.0030	-0.0000	0.0163	-0.0155
	(0.0267)	(0.0314)	(0.0130)	(0.0272)	(0.0170)	(0.0216)	(0.0111)	(0.0186)
Household size	0.0162**	-0.0089	0.0026	-0.0023	0.0014	-0.0081	0.0010	0.0072
	(0.0071)	(0.0086)	(0.0034)	(0.0071)	(0.0049)	(0.0064)	(0.0028)	(0.0045)
Marital status(Ref. never married)								
Married	0.0059	-0.0597	-0.0003	0.0343	0.0021	-0.0452	0.0003	0.0199
	(0.0345)	(0.0427)	(0.0198)	(0.0384)	(0.0232)	(0.0285)	(0.0174)	(0.0248)
Ever married	0.0095	-0.1066*	-0.0376*	-0.0005	-0.0077	-0.0189	-0.0289	0.0055
	(0.0529)	(0.0587)	(0.0219)	(0.0533)	(0.0326)	(0.0457)	(0.0182)	(0.0356)
Personal Monthly income								
Below GHS200 per month	0.1196***	0.1009***	0.0253	0.2156***	-0.0395	-0.0123	0.0323***	0.0746**
	(0.0371)	(0.0440)	(0.0213)	(0.0491)	(0.0446)	(0.0379)	(0.0053)	(0.0252)
Above GHS200 per month	0.1966***	0.0833	0.0633**	0.2538***	-0.0014	-0.0365	0.0614***	0.0742**
	(0.0482)	(0.0561)	(0.0284)	(0.0602)	(0.0492)	(0.0419)	(0.0121)	(0.0334)
Financial Literacy Score	0.2154***	-0.1422***	0.0796***	-0.0893**	0.0024	-0.0313	0.0486***	-0.0324
	(0.0273)	(0.0361)	(0.0137)	(0.0372)	(0.0195)	(0.0252)	(0.0114)	(0.0244)
Educ. qualification (Ref. no educ.)								

Primary education	-0.0232	0.0934*	0.0366**	-0.0117	0.0216	0.0223	0.0050	-0.0399*
	(0.0474)	(0.0518)	(0.0171)	(0.0357)	(0.0272)	(0.0387)	(0.0131)	(0.0228)
Some secondary education	0.0394	0.0672	0.0505***	-0.0422	0.0179	-0.0330	0.0177	-0.0030
	(0.0394)	(0.0409)	(0.0170)	(0.0353)	(0.0219)	(0.0297)	(0.0132)	(0.0239)
Secondary and above	0.0429	-0.0599	0.0663**	-0.0495	0.0387	0.0060	0.0173	0.0407
	(0.0472)	(0.0518)	(0.0298)	(0.0668)	(0.0295)	(0.0409)	(0.0197)	(0.0469)
House ownership status								
(Ref. Family owned)								
Rented	-0.0473*	0.0728**	-0.0040	-0.0451	0.0206	-0.0019	0.0109	-0.0029
	(0.0286)	(0.0322)	(0.0159)	(0.0375)	(0.0180)	(0.0216)	(0.0141)	(0.0254)
Occupied without payment	0.1012***	0.0825**	-0.0222	0.0156	0.0037	0.0645**	0.0051	0.0098
	(0.0344)	(0.0420)	(0.0136)	(0.0328)	(0.0227)	(0.0329)	(0.0120)	(0.0228)
Receiving remittances								
Foreign remittances	0.0422	-0.0414	0.0175	-0.0510	-0.0131	0.0196	-0.0172	0.0516
	(0.0334)	(0.0412)	(0.0262)	(0.0608)	(0.0198)	(0.0281)	(0.0131)	(0.0433)
Local remittances	0.0040	0.0642*	-0.0203	0.2266***	-0.0054	0.0748***	0.0193	0.0428*
	(0.0294)	(0.0362)	(0.0128)	(0.0296)	(0.0185)	(0.0266)	(0.0130)	(0.0228)
Financial liberty	0.0311	0.0167	0.0337**	0.0603*	-0.0037	-0.0565	0.0140	-0.0373
	(0.0406)	(0.0424)	(0.0148)	(0.0361)	(0.0287)	(0.0356)	(0.0136)	(0.0269)
Negative experiences with FI	-0.0279	0.0359	0.0072	0.0126	-0.0048	0.0692**	0.0184	0.1013***
	(0.0334)	(0.0427)	(0.0202)	(0.0465)	(0.0203)	(0.0320)	(0.0156)	(0.0365)
Employment status(Ref. not employed)								
Wage/Salaried employment	0.1353***	-0.0679	0.1878***	-0.0714	0.1146***	0.0130	-0.0003	-0.0043
	(0.0499)	(0.0546)	(0.0611)	(0.0955)	(0.0353)	(0.0354)	(0.0166)	(0.0538)
Non-salaried employment	0.0453	0.0738*	0.0209	0.1241***	0.0431*	0.0464	0.0247*	-0.0027
	(0.0371)	(0.0437)	(0.0176)	(0.0457)	(0.0208)	(0.0299)	(0.0145)	(0.0309)
Constant	4.0523***	-0.6504	6.5587***	-0.4788	6.7196***	-2.2568**	-23.6516	-2.1287***

	(0.8620)	(0.6425)	(1.2665)	(0.5038)	-1.2421	-0.8361	-689.141	-0.6279
Pseudo R2	0.1759		0.1615		0.092		0.0834	
Prob > chi2	0.000		0.000		0.000		0.000	
Observations	923	923	1,428	1,428	1,122	1,122	1,613	1,613

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Source: Samples from Finscope 2010 data as described in main text

Appendix II: Reasons for not Obtaining Credit

Reasons	Frequency	Percentage
No need for credit	9,396	61.66
Interest rate too high	2,826	18.55
Demand for collateral	1,416	9.29
Cannot obtain the amount needed	795	5.22
Already has too much debt	253	1.66
Other reasons	552	3.62
Total	15,238	100.00

Source: GLSS 6

Appendix III: Lending Rates of Sub-Saharan African Countries, 1991-2013

Country	1991	1993	1995	1997	1999	2001	2003	2005	2007	2009	2011	2013	Average
Ghana	58.30	58.70	58.52	58.06	57.76	57.94	58.60	59.54	60.50	61.26	61.75	62.13	59.42
Gambia	26.50	26.08	25.04	25.50	24.00	24.00	29.33	34.92	27.92	27.00	28.00	28.00	27.19
Nigeria	20.04	31.65	20.23	17.80	20.29	23.44	20.71	17.95	16.94	18.36	16.02	16.72	20.01
Sierra Leone	56.25	50.46	28.83	23.87	26.83	24.27	20.00	24.58	25.00	22.17	21.00	20.56	28.65
Malawi	20.00	29.50	47.33	28.25	53.58	56.17	48.92	33.08	27.72	25.25	23.75	46.01	36.63
Botswana	11.83	14.92	14.42	13.95	14.78	15.75	16.40	15.74	16.22	13.76	11.00	10.19	14.08

Source: World Development Indicators, 2016