CREDIT DEMAND AND CREDIT RATIONING IN THE INFORMAL FINANCIAL SECTOR IN UGANDA

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DECLARATION

I, the undersigned, hereby declare that the work contained in this dissertation is my own original work and that I have not previously in its entirety or in part submitted it at any university for a degree.

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Date

ABSTRACT

This study was motivated by the need to determine the key factors that influence credit demand and credit rationing in the informal financial markets so as to contribute to policy formulation to improve access for the poor in Uganda to the broader (formal and informal) financial sector.

The results of the study suggest that credit demand in the informal financial sector is positively and significantly influenced by capacity related variables (education level, and household expenditure) at the household level, and the informal lenders' credit rationing behaviour is also negatively and significantly influenced by household wealth factors (asset values). The same variables have similar effects in the models for credit demand and credit rationing in the broader financial sector.

Since households demand credit for both investment and consumption smoothing, improved access to the broader financial sector will enable them to acquire more wealth, and move out of poverty in the long run.

The policy options to improve small borrower access to the broader financial sector include provision of incentives to banks to serve the smaller borrowers, development of credit reference bureaus, provision of innovative insurance products to the poor, and broader economic policies that enable households to acquire more wealth. In addition appropriate linkages need to be developed between the formal and informal financial sectors so as to broaden the financial system.

OPSOMMING

Hierdie studie is gemotiveer deur die behoefte om die sleutelfaktore te identifiseer wat die vraag na krediet en kredietrantsoenering in die informele finansiële markte beïnvloed ten einde 'n bydrae te kan maak tot beleid om beter toegang vir die armes tot die breë (formele en informele) finansiële sektor in Uganda te bewerkstellig.

Die resultate van die studie dui aan dat die vraag na informele krediet 'n betekenisvolle en positiewe verwantskap toon met kapasiteitsverwante veranderlikes (vlak van opvoeding en huishoudelike besteding) op die huishoudingvlak. Informele uitleners se kredietrantsoeneringsoptrede toon 'n betekenisvolle en negatiewe verwantskap met huishoudings se vlak van rykdom (batewaardes). Dieselfde veranderlikes toon soortgelyke verwantskappe in die geval van die modelle vir kredietvraag en kredietrantsoenering in die breë finansiële sektor.

Huishoudings se vraag na krediet is vir beide investeringsdoeleindes en om 'n meer egalige verspreiding van verbruik te verkry. Daarom sal verbeterde toegang tot die breë finansiële sektor hulle in staat stel om meer rykdom te bekom en so uit armoede in die langer termyn te ontsnap.

Die beleidsopsies om kleiner leners beter toegang tot die breë finansiële sektor te bied, sluit in voorsiening vir insentiewe aan banke om klein leners te bedien, die ontwikkeling van kredietverwysingsburo's, die voorsiening van innoverende versekeringsprodukte aan die armes, en breër ekonomiese beleid wat huishoudings in staat sal stel om meer rydom te bekom. Toepaslike skakeling tussen die formele en informele finansiële sektore moet ook ontwikkel word ten einde 'n verbreding van die finansiële sektor te bewerkstellig.

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CHAPTER 1: BACKGROUND TO THE STUDY

1.1 Introduction

The informal (the unregulated) financial sector, which is part of the broader financial system, mobilizes and allocates resources to economic agents that do not have access to formal (regulated) sector services (Bouman, 1995). The constrained access to formal sector credit by smaller borrower households is argued to be due to both institutional and household level factors (Nwanna, 1995). At the institutional level, the banks incur high information costs to assess the creditworthiness of small borrowers, and low returns due to the small loan amounts involved. This motivates the formal lenders to adopt strict collateral requirements as a screening mechanism to minimize default risk, hence rationing out the small borrowers from the formal credit market. At the household level, the low levels of income and asset accumulation, widespread poverty, highly skewed income and asset distribution render the small households to have a high risk profile which makes them less attractive to the formal lenders.

The small borrowers with no access to formal sector credit have to revert to the informal financial sector to meet their credit demand. This constitutes the demand side of the informal credit markets (Montiel et al, 1993). Informal credit is demanded for both productive investment (agricultural production or business) and consumption smoothing. Production credit facilitates the purchase of needed inputs for the production process, thereby increasing the productivity of the household. The increased output has the potential effect of increasing household income, other factors being constant. Business credit enhances the establishment or expansion of existing businesses (such as the marketing of agricultural products, general trade in goods and services) thereby raising the income level of the households and also generating employment opportunities. Credit therefore enables

poor people who are not risk-averse to overcome their liquidity constraints, undertake some investments, increase productivity to boost income levels and create employment opportunities. In the process credit contributes to poverty alleviation among low-income households (Binswanger and Khandker, 1995).

Consumption credit (such as for food, health care, education of children, housing) enables poor people to smooth out consumption patterns during the lean periods of the year (Heidhues, 1995). This is particularly important for households whose main source of livelihood is the income from the agricultural sector which is characterized by high variability due to production and price shocks. Consumption credit therefore helps to maintain the productive capacity of poor rural households and in this way consumption credit is argued to be productive in the long-run (World Bank, 1989b).

In the Ugandan situation, Musinguzi and Smith (2000) argued that formal financial institutions have not developed to meet the expectations of the rural population. Chemonges (1999) further argued that formal banks are mainly urban-based, leaving most of the population with inadequate access to formal financial services. For this reason, the Ministry of Finance, Planning and Economic Development (MFPED, 2001c) argued that the informal financial sector is an "engine of growth" for the poor. Musinguzi and Smith (2000) further argued that policies to promote economic development and to alleviate poverty (which include promotion of macro-economic stability, the liberalization of trade and deregulation of domestic markets) are necessary, but not sufficient conditions to achieve the stated objectives. Improved access to financial markets is a sufficient condition to enable the poor to share in national economic progress through the generation of new income earning opportunities.

On the supply side of informal credit markets, the major players are the relatives, friends, moneylenders, and informal institutions (such as co-operative savings and credit societies/unions, rotating savings and credit associations, and non-government organizations). In the process of supplying credit to the deficit economic agents, informal lenders have to take care of the possibilities of default risk which reduce the profitability of lending operations. To minimize the default risk, informal lenders collect as much information as possible to assess the creditworthiness of the potential borrowers. In addition, informal lenders have developed collateral substitutes (such as joint liability contracts and tied credit contracts) to hedge against default risk. Furthermore, based on the lender's perception of the risk profile of the borrower, the lender may respond by rationing the borrower's loan demand.

Mohieldin and Wright (2000) observed that informal credit in Egypt tends to be mainly used for consumption smoothing while formal credit is mainly for investment. This raises the importance of improving small borrowers' access to the broader financial sector, thereby leading to an improvement in their welfare and movement out of poverty. By improving the creditworthiness of the borrowers, their probability of being credit rationed in the formal and informal credit markets is reduced, hence an understanding of the factors that influence the lenders' credit rationing behaviour helps in the design of appropriate policies to increase the borrowers' creditworthiness. Creditworthiness is influenced by borrowers' specific characteristics and exogenous factors. The borrowers' specific characteristics include income, savings, asset holding, profitability of business enterprises, and the willingness to pay. The willingness to pay is especially rooted in the moral hazard problems due to information asymmetry which is inherent in credit markets. The exogenous factors beyond the control of the borrower may include production and price shocks faced by agricultural households.

Because of the central role of informal finance as an instrument for poverty alleviation in Uganda, the questions that arise are "What household factors influence credit demand and credit rationing in the informal credit markets? What can be done to improve small borrowers' access to the broader financial markets?" Seeking to provide empirical answers to the above questions motivated this study. Specific policies are proposed to improve small borrowers' access to the broader financial sector.

1.2 Research Problem

Available evidence in Uganda suggests that poor households are constrained in their access to credit (MFPED, 2001a; MFPED, 2001b; MFPED, 2001c). The informal financial sector has a key role in the Ugandan economy as it serves the largest section of the population, but little research has been done on the factors that influence credit demand at household level. An understanding of the factors that influence household credit demand is important because it will guide the policy formulation process to enhance the welfare of the households through credit access.

Though some government interventions have targeted the improvement of the supply of credit to especially rural households both in the formal and informal sectors (for example direct allocation of formal sector credit under the economic regulation era, and targeted government credit schemes such as Entandikwa[1] and Youth Entrepreneurship schemes), credit rationing remains a feature of both formal and informal financial sectors. An understanding of the factors that influence the households being credit rationed is important because they will highlight the specific interventions necessary to raise the creditworthiness

[1] *"Entandikwa" in one of the local languages in Uganda means "start-up capital" which was used to codename the government credit programme that was intended to enable the low income households to start income generating projects*

of the households. This will be to the advantage of both the financial institutions and the households. From the institutional side, an improvement in the credibility of the borrowers will lead to less default risk, higher profitability, and financial sustainability. From the household side, increased credibility will mean increased access to credit, which may lead to more investment income, and a movement out of poverty. But given the fact that the formal financial sector mainly provides investment credit while the informal financial sector provides mainly consumption smoothing credit, the issue is to enhance the households' access to the services of the broader financial sector.

1.3 Objectives of the study

The aim of the study was to investigate the determinants of credit demand and credit rationing within the informal financial sector in Uganda. The specific objectives of the study were:

(i) To analyze the determinants of household credit demand in the informal financial sector in Uganda.

(ii) To investigate the factors affecting informal lenders' credit rationing behaviour.

(iii) To derive policy implications to improve households' access to the services of the broader financial sector (both formal and informal financial markets) in Uganda.

1.4 Research Design and Methodology

The study used the primary data from the Uganda National Household Survey (UNHS) 1999/00. Most of the variables of interest for this study were captured by this data set with the exception of credit price related variables such as interest rates and transaction costs. The study used the analysis of variance (ANOVA) for the descriptive statistics, the logit model for estimation of the factors that influence the households' borrowing behaviour, the Heckman probit model with sample selection for estimation of the factors that influence

lenders' credit rationing behaviour, the Heckman two-step selection model for estimation of determinants of the value of credit demanded and supplied, and the multinomial logit model for estimation of the determinants of the borrowers' choice between formal and informal sector credit, and choice between different informal institutions.

1.5 The organization of the rest of the chapters

In chapter two, an overview of the functions of the financial sector (in terms of resource mobilization and allocation) and financial sector regulation is discussed. The rationale for doing this is that the informal financial sector is part of the broader financial system. The informal financial sector is the unregulated component of the financial sector. In effect a study of informal credit demand and informal credit rationing is actually an analysis of how the informal financial sector allocates resources to deficit economic agents with no access to formal sector credit. The deficit economic agents who have a need for credit express it by applying for a specific amount of loan. The informal lender then undertakes a risk assessment of the potential borrower to guide the lending decision on how much credit to extend to the borrower, which may be characterized by credit rationing. The credit rationing is therefore a product of the complex screening process as part of the default risk management strategy. This makes the review of the functions of the financial sector in chapter 2 to be relevant within the overall context of this study.

Chapter 3 gives an insight of the theoretical arguments that explain the emergence and co-existence of the informal financial sector alongside its formal sector counterpart. A detailed exposition of the informal financial sector in terms of the different types of informal lenders, their characteristic features, the products provided, the terms for the products and the risk management strategies are also provided.

Chapter 4 gives on overview of Uganda's financial sector and how it has evolved through the various policy regimes of economic regulation (1962 – 1986), financial sector liberalization (1987 – to date), and their implications for the informal financial sector. The non-market oriented monetary and financial policies involved government interference in financial markets using instruments such as control of interest rates, credit allocation by regulation, and government management of public sector banks. The market oriented monetary and financial policies, which were advocated by McKinnon (1973) and Shaw (1973), were geared towards liberalization of the formal financial sector. In the case of Uganda, the market oriented policies were part of the financial sector reforms introduced in 1987 with support from The World Bank and the International Monetary Fund (IMF). This chapter is important to this study because it highlights how the various policy regimes influenced the emergence and co-existence of Uganda's informal financial sector.

Chapter 5 provides the theoretical framework for informal credit demand as well as empirical evidence from other studies. This chapter is central to this study because it identifies the various determinants of credit demand and the alternative models that were used for analytical work in previous research.

In chapter 6, the determinants of informal credit rationing are discussed both from the theoretical perspective and the empirical evidence. Just like chapter 5, this chapter forms the basis for identification of the variables and the econometric models that were used for empirical estimation of the factors that influence informal lenders' credit rationing behaviour in Uganda.

Chapter 7 specifies the particular variables and econometric models for the analytical work. Though many variables that influence credit demand and credit rationing were identified

from the literature survey, the analytical work had to be done within the confines of the available primary data from the Uganda National Household Survey (UNHS) 1999/2000. The chapter details how the variables were measured and the specification of the econometric models (Logit model, the Heckman probit model with sample selection, Heckman two-step Selection model, and the multinomial logit model) that were used for empirical work.

Chapter 8 provides a discussion of the descriptive statistics of the sample. The sample was decomposed into three distinct categories by borrowing status: non-borrowers (those who had not applied for any loan in the last 12 months prior to the study), formal sector borrowers, and informal sector borrowers. The Analysis of Variance (ANOVA) technique was used to compare the differences of means of the various socio-economic variables between the various borrower categories at the national, regional and rural/urban levels. This is a bivariate analysis that gives only the direction of association between the various variables but does not give the exact relationship, hence providing the motivation for multivariate analysis.

Chapter 9 discusses the results of the multivariate analysis for the determinants of informal credit demand and credit rationing. The econometric analysis was done for the full sample (combining formal and informal financial sectors) and then specifically for the informal financial sector. The motivation for this approach was to see how the estimates for the broader financial sector compare with those of the informal financial sector, as one of the objectives of the study was to identify ways of improving households' access to the broader financial sector. The models were estimated at the national, regional, and rural/urban levels.

Chapter 10 gives a summary of the key findings of the study and proposes policy recommendations to improve households' access (especially small borrowers) to financial services from the broader financial sector.

CHAPTER 2: THE FUNCTIONS OF THE FINANCIAL SECTOR

2.1 Introduction

The financial sector is herein broadly defined to include the formal and informal financial sectors whose primary role is the intermediation of resources. The arguments for the co-existence of the formal and informal financial sectors are provided by the financial repression hypothesis as advanced by McKinnon (1973) and Shaw (1973), and the structuralist hypothesis as advanced Hoff and Stiglitz (1990). Although the rest of the chapter focuses on the financial sector in general, the research referred to has been done with reference to the formal financial sector. The informal financial sector will be discussed in chapter 3.

The financial sector undertakes to mobilize resources from the surplus economic agents as discussed in section 2.2 and allocates them to the deficit economic agents as discussed in section 2.3. The deficit economic agents demand credit from the financial sector for both productive investments and consumption smoothing, which demand is influenced by enterprise and borrower socio-economic characteristics (to be discussed in section 5.4). As part of the resource allocation role, the financial sector undertakes a risk-return assessment of all potential investment projects and an analysis of borrowers' likely behaviour. The motivation for the risk-return assessment is to minimize loss of resources through default risk. The risk-return assessment process involves analysis of enterprise characteristics (e.g. profitability levels) and socio-economic characteristics of the borrowers, which enables the lenders to make financing decisions on borrowers' loan demand. Based on the lenders' assessment of the borrowers' probability of default, some of the borrowers end up by being credit rationed. The specific household characteristics that influence the lenders' credit rationing behaviour are discussed in section 6.4. This is part of the financial sector's

resource allocation process to investment, thereby promoting economic growth as discussed in section 2.4. To enhance the functioning of the financial sector, financial regulation is undertaken with the key objective of maintaining the stability of the financial system and consumer protection (discussed in section 2.5).

It can be argued that a study of determinants of informal credit demand and informal credit rationing is a reflection of the process through which the informal financial sector allocates the scarce resources to deficit economic agents. This makes the exposition of functions of the financial sector relevant to this study.

2.2 The Financial Sector and Savings Mobilization

One of the key functions of the financial sector is the mobilization of savings from surplus economic agents. The financial sector influences the savings behaviour of economic agents by: affecting the level of their income, the interest rate paid for savings, the transaction costs it levies, its success in the transformation of credit/default risk, the efficiency of the payment system and the effectiveness of corporate governance (Levacic and Rebmann, 1982:30).

2.2.1 Income

The incomes of the economic agents determine their level of savings. Savings, which is defined as the difference between disposable income and consumption, is positively correlated with income. The wealthier economic agents have a higher marginal propensity to save (a_1). The savings function can be expressed as follows:

$S = f(Y,i)$ ..... *(1)*

$S = a_0 + a_1Y + a_2i$ ..... *(2)*

Where:

S = *Savings*

Y = *Income*

i= *deposit interest rates*

a_0, a_1, a_2= *parameters* $(a_1>0, a_2>0)$

The income (Y) to economic agents is derived from both human and non-human sources. The human sources of income are from wages, where the wage is a function of the skills of the worker. The higher the skills of a worker, the greater the likelihood of earning higher wages. Human capital formation (skills acquisition) may be financed either by the savings of economic agents or by borrowing from the financial sector. Where the latter source is predominant, the financial sector can be argued to be contributing to the enhancement of human capital skills, which increases labour productivity. In addition the financial sector increases the probability of the skilled labour to earn higher wages, hence having a positive effect on labour income. Non-human income sources on the other hand are earnings from financial assets (such as fixed deposits, bonds and shares), income from resource ownership (land, rents) and profits. The financial sector creates investment opportunities in financial assets, which raises income levels of economic agents. This explains why economic agents in countries with highly developed financial markets have high income and savings levels. The financial sector can therefore be argued to have a positive effect on savings through its effects on income.

However what is argued to be more critical in influencing the savings behaviour of rational economic agents is permanent income as opposed to current income (Levacic and Rebmann, 1982:212). Permanent income is the discounted wealth stream over the lifetime of the economic agent, at a given discount rate. According to the permanent income hypothesis (PIH), a rational economic agent is expected to use all available information to predict as

correctly as possible the expected wealth stream. The permanent income is derived as follows:

$$Y_t = W_t/(1+r)^t \quad \ldots\ldots (3)$$

Where:

Y_t = Permanent income

W_t = Wealth stream (from both human and non-human sources)

r = Discount rate

t = time period in years (t = 1, 2, …., n)

Any deviations between the actual income and permanent income at any time period is the transitory income that arises out of unexpected changes such as short business cycles and windfall profits (which may either be negative or positive):

$$y_m = y_t + y_z \quad \ldots\ldots (4)$$

Where:

y_m = Actual income

y_t = Permanent income

y_z = Transitory income

By contributing to the permanent income of economic agents through the wealth stream in equation 3, the financial sector promotes the savings rate as in equation 2. Evidence by Gupta (1987:310) using pooled and cross-sectional data for twenty-two countries in Asia and Latin America for the period 1967 – 1976 suggested a positive and significant relationship between permanent income and savings. Similar findings of the positive relationship between savings and income were also reported by Vinieris and Gupta (1986) and Wilson (2000).

2.2.2 Interest Rates

The interest rate is one of the variables through which the financial sector influences savings levels. As postulated in equation 2, there is a positive relationship between savings levels and interest rates. The financial sector plays a key role in the determination of interest rates in a liberalized environment. Interest rates influence the savings behaviour of economic agents through three main channels: income, cost of consumption and portfolio choice. The effect of interest rates on income was discussed in section 2.2.1, where an increase in interest rates lead to an increases in income from financial assets, thereby increasing the rate of savings.

The second channel through which interest rates affect savings is the cost of current consumption. According to the utility maximization theory, the behaviour of rational economic agents is geared towards realigning lifetime consumption to the expected income stream (Levacic and Rebmann, 1982:26). Economic agents are therefore continuously faced with two intertemporal choices: the proportion of income to allocate for current consumption (which is simultaneously a savings decision) and the portfolio choice of the stock of financial assets to hold, both of which decisions are influenced by interest rates. An increase in interest rates increase the opportunity cost of current consumption, which results in a reduction in current consumption in favour of future consumption, thereby increasing the level of savings.

Interest rates also influence the economic agents' portfolio choice, which have implications for the savings rate. The portfolio choice refers to the various combinations of financial assets that the economic agent will choose to store the value of savings, either in the form of liquid assets (money) with zero rates of return or in the form of interest bearing illiquid financial assets such as bonds and fixed deposit investments (Levacic and Rebmann,

1982:33). An increase in interest rates increases the opportunity cost of holding money as a store of value, thereby increasing the demand for financial assets. As more economic agents hold their wealth in illiquid interest bearing financial assets, the level of financial savings increases. A fall in the interest rates on the other hand will result in changes in portfolio combinations with a greater preference to hold money thereby having a negative effect on the savings level. However what is argued to be more critical in influencing the savings behaviour are the real interest rates as compared to nominal interest rates. Positive real interest rates have a positive effect on savings behaviour while negative real interest rates tend to act as a disincentive to savings.

It was against the background of the important role played by market interest rates in the savings decision process that financial repressive policies were condemned in favour of financial sector liberalization. Financial repressive policies entail the control of interest rates, sectoral allocation of credit, government management of public sector banks and restriction of entry to the banking sector (McKinnon, 1973; Shaw, 1973). Government control of interest rates was argued to have a negative effect on savings through two main channels. First these interest rates, which are administratively fixed below the market rates, hinder financial intermediaries from exploiting their full potential from intermediation. This therefore constrains the ability of financial intermediaries to pay high deposit interest rates to savers, acting as a disincentive to saving. Secondly, in an inflationary situation, the fixed interest rates may even be negative in real terms, thus negatively affecting savings. Through a policy of financial sector liberalization positive real interest rates are expected to be realized, hence leading to higher savings levels. The removal of barriers to entry into the banking sector is expected to increase competition within the financial sector. This would motivate the financial intermediaries to pay high deposit interest rates, hence induce

increased domestic savings rates. The positive relationship between savings and interest rates was reported by, among others, Asilis and Ghosh (2002:25) and Pryor (2003:555).

2.2.3 Minimization of Transaction Costs

The financial sector also influences savings levels by minimizing transactions costs for economic agents. Economic agents face transaction costs in the process of saving their surplus funds with financial intermediaries and/or investing them in interest bearing financial assets. High transaction costs act as a disincentive for savings (Bain, 1992). The transaction costs include financial and non-financial costs. The financial costs include transport costs to the intermediary and fees/commissions charged by the intermediary for services rendered. The non-financial costs are the opportunity costs measured in terms of the waiting time taken from time of arrival at the financial intermediary and receiving the service. It is for this reason that financial intermediaries try as much as possible to spread their branch networks so as to move their services closer to the clients, streamline their processes and improve service delivery through introduction of new products such as the automatic teller machines so as to minimize client transaction costs. Through minimizing transaction costs for economic agents, the financial sector induces an increase in the level of financial savings.

2.2.4 Transformation of Credit Risk

The financial sector also influences the savings behaviour of economic agents through the transformation of risk. The financial sector transforms credit risk by dealing with a large number of economic agents, thus effectively spreading the risk. In addition the financial sector undertakes to evaluate all investment projects to determine their profitability so as to minimize default risk. The financial sector also bears any default risk, which it covers

through its intermediation margins, without passing default risk to the surplus economic agents whose funds were lent to the deficit economic agents. By bearing the risk of default for all categories of savers in financial assets, the financial sector positively influences household savings behaviour (Blake, 1990).

2.2.5 The Payment System

The financial sector also influences savings levels in an economy by providing an efficient payment system (Chemonges, 1999). As argued by Chami et al (2003:20), banks in the developing country context play a dominant role in the payment system on whose credibility the performance of the market economy depends. A payment system includes the procedures, rules, standards, instruments, institutions and technical means involved in exchanging value between two parties discharging an obligation. The exchange of value between any parties can either be in the form of cash or financial instruments, which choice is influenced by transaction and/or opportunity costs. While the opportunity costs of cash transactions include transport costs and/or risks of cash loss, the costs related to transactions through the financial intermediaries include the commissions charged on financial instruments, the time taken to effect the transaction and potential loss through fraud.

The higher the opportunity cost of cash transactions, the higher will be the incentive for economic agents to rely on the financial institutions to manage the financial transactions, hence leading to an increase in the level of financial savings. This can be realized if the financial system has the following attributes: speed, certainty, reliability, safety/security and low transaction costs. The speed with which value is exchanged by the payment system enhances the users' confidence in the financial system as any prolonged delays are associated opportunity costs in terms of creating uncertainty of payment, risk of loss of value in case of inflationary situations and potential loss of investment opportunities.

Certainty and reliability of the payment system enhances the broadening of the financial sector, that is creation of diversified financial assets such as credit cards, automatic teller machines and bonds. An efficient payment system must also portray itself to be dependable, safe and secure in terms of issues like fraud control, credit risk control and adequate arrangements to guard against unauthorized access to data. Transaction cost effectiveness is also a critical component of an efficient payment system, such that the lowest cost possible is borne by all the parties involved in the transaction.

From the above discussion, it can be argued that the development of an efficient payment system will raise the financial savings rates in the economy through the following channels: raising the opportunity cost of cash transactions, enhancing the public confidence in the system, minimization of transaction costs, and broadening the financial sector.

2.2.6 Corporate Governance

Financial sector development creates a mechanism for exerting corporate governance on financial institutions. Corporate governance is defined as the relationship among various stakeholders in determining the strategic direction and performance of institutions. The primary stakeholders include the shareholders, board of directors and management. Through corporate governance, the managers will be induced to maximize firm value through improved efficiency. The improved efficiency will in turn motivate savers to save more with the financial intermediary thereby increasing savings levels within an economy.

2.3 The Financial Sector and Resource Allocation

The financial sector undertakes the allocation of resources to investment and/or consumption through the market forces of demand and supply (King and Levine, 1993). The deficit economic agents express their demand for additional investment resources, premised on the assumption that the first sources of funds are own accumulated savings or retained earnings. This therefore constitutes the demand side of the credit market, as discussed further in chapter 5.

The financial sector in turn responds to credit demand by supplying the needed resources, thus constituting the supply side of the credit market. But because of the likelihood of default risk, the financial sector does not automatically supply all the resources demanded by the deficit economic agents at the ruling price. The financial sector undertakes a number of processes to determine the amount of resources to be supplied to economic agents, which include the evaluation of the proposed investment projects to determine their viability and analysis of the socio-economic characteristics of economic agents to determine their likelihood of default. This analysis forms the basis for the lender to either grant the full amount of resources demanded by the economic agents or to ration their loan demand, which is further discussed in chapter 6. The financial sector also sets up monitoring systems for financed projects so as to minimize default risk. The financial sector's role is allocating resources to their most productive uses results in long-term economic growth and is discussed in the next section.

2.4 The Financial Sector and Economic Growth

2.4.1 Overview of the Debate

The debate on the role of the financial sector in the economic development process dates back to the initial work of Schumpeter (1911) whose arguments pointed out to productivity and growth enhancing effects of the services provided by a developed financial sector. The debate focused on whether the financial sector plays a causal role in economic development or if the financial sector merely follows the developments in the real sector. While the latter view was propounded by Robinson (1952), Goldsmith (1969) stressed the propulsive role the financial sector can play in the process of economic development. The causality question has remained an important issue in the debate.

In the 1960's and 1970's many governments tried to generate economic growth through artificially low interest rates and inflationary monetary policies, referred to as financial repression. This policy stance followed the theoretical works of Keynes (1936) who advocated for government interference in credit markets. McKinnon (1973) and Shaw (1973) argued against such financial repressive policies on the grounds that they act as disincentives to savings mobilization, which negatively affect long-run economic growth. The policy advice based on the McKinnon – Shaw models was that governments should abolish interest rate ceilings and stop raising seignorage through inflationary monetary policies. Through the policy of financial sector liberalization, implemented widely throughout the world since the middle 1970's, real interest rates were expected to rise to their equilibrium levels to clear the markets. This would in turn influence higher savings levels that can be used to finance investment and thus accelerate the long-run economic growth process.

Neostructuralists made counter arguments against the McKinnon-Shaw school of thought and predicted that financial liberalization may even slow down long-term economic growth. Stiglitz (1989) criticized financial liberalization on the theoretical ground of market failures in financial markets.

2.4.2 The Financial Sector and Endogenous Growth

The endogenous growth theory that positively links financial sector development and economic growth emerged in the 1990s (Eschenbach, 2004:10). This theory, which follows the Schumpeter's argument, emphasizes the role of the financial sector in promoting innovations and the speed of technological progress, thus contributing to long-term economic growth (King and Levine, 1993). The endogenous growth literature argues that the financial sector fosters capital accumulation and productivity growth by facilitating trading, hedging, diversifying, and pooling of risks; mobilizing savings; allocating resources; monitoring managers and exerting corporate control; and facilitating exchange of goods and services. The details of the channels are further discussed below.

Endogenous growth model literature argues that there is a two-way causal relationship between financial sector development and long-run economic growth. The financial sector influences long-run economic growth through two main channels: the volume of investment and the efficiency of investment. There are also feedback effects from economic growth to the development of the financial sector (De Gregorio and Guidotti, 1995:435). The causality between financial sector development and long-run economic growth can be as follows (King and Levine, 1993:722):

$Y = K^{\varphi}X$ ..... *(5)*

Where: Y = real per capita Gross Domestic Product (GDP)

K = rate of physical capital accumulation

X = all other determinants of per capita GDP growth

φ = production function parameter

When equation (5) is transformed into logarithm and differentiated, we get:

$\hat{Y} = \varphi(GK) + EFF$ ..... *(6)*

But $FSD = F(\hat{Y})$ ..... *(7)*

Where: $\hat{Y}$ = growth rate of real GDP

GK = growth rate of real physical capital stock

EFF = efficiency of investment

FSD = financial sector development

The variable (*GK*) is the rate of capital accumulation, which is measured by the growth rate of physical capital stock and the investment to GDP ratio. Since capital accumulation may be financed by domestic savings, the financial sector influences long-run economic growth through the channel of increased volume of investment as discussed further in section 2.4.2.1. The variable (*EFF*) is economic efficiency of investment (which is the growth residual after controlling for physical capital accumulation). It captures all other factors that influence growth, such as technology, human capital accumulation and improvement in employment of factor inputs to which the financial sector makes a significant contribution (discussed further in section 2.4.2.2).

Economic growth on the other hand, may influence the level of development of the financial sector by creating the demand for financial services, thereby enabling the creation of new financial products and deepening of the financial system. In this context the development of

the financial sector follows the developments in the real sector. While there is consensus in the literature about the positive effect of financial sector development on long-run economic growth, the main channel of transmission remains debatable, with some economists arguing that it is through the volume of investment (King and Levine, 1993) while others contend that it is the efficiency of investment (De Gregorio and Guidotti, 1995).

2.4.2.1 Volume of Investment

King and Levine (1993) emphasized the role played by the financial sector in mobilization of savings and allocation of credit into highly productive investments, thereby promoting long-run economic growth through the volume of investment channel. Using a number of indicators to measure the level of financial sector development (M2/GDP ratio[2], commercial bank credit as a ratio of total credit, commercial bank credit to private sector as a ratio of total credit, commercial bank credit to private sector as a ratio of GDP) and cross sectional data for 80 countries (for the period 1960 – 1989), King and Levine (1993:730) concluded that the financial sector has a positive and significant effect on economic growth through the volume of investment channel.

Further empirical evidence by Roubini and Sala-i-Martin (1992) based on cross sectional data for a sample of 98 countries for the period 1960 – 1985, suggested that repressive policies have a significant and negative effect on long-run economic growth, which emanates from a decreased volume of savings and investment. The argument was that repressive policies that result in negative real interest rates, high reserve requirement ratios and high inflation tax act as a disincentive to savings, which in turn leads to a lower volume of investment and growth levels. The findings led them to the following conclusion:

[2] *M2 is the broad money supply which includes currency in circulation, demand and time deposits, investments in financial assets (such as treasury bills)*

*"Among the many explanations given in the literature of the weaker growth performance of Latin America, we find that policies that systematically repress the financial sector are among the most convincing" (*Roubini and Sala-i-Martin, 1992:6).

The fundamental argument behind these results is that the development of the financial sector is important because savings are intermediated towards productive investment, thereby increasing the rate of capital accumulation, which is a fundamental determinant of economic growth. However Jappelli and Pagano (1994), in a study of the effect of borrowing constraints on economic growth, argued that relaxation of borrowing constraints through financial sector liberalization might not lead to an increase in the volume of savings. De Gregorio and Guidotti (1995) also argued that the financial sector mainly influences economic growth through its effects on the efficiency of investment rather than the volume of investment. Using cross-sectional data of 100 countries for the period (1960 – 1985) and panel data for 12 Latin American countries, using a six yearly average (1950 – 1985), they asserted that

"Our findings strongly suggest that the main channel of transmission from financial development to growth is the effect on the efficiency of investment, rather than its level" (De Gregorio and Guidotti, 1995:445).

De Gregorio and Guidotti (1995) supported their case by arguing that the real interest rate that McKinnon (1973) and Shaw (1973) used as a proxy for financial intermediation was inappropriate. Based on the Latin American experience, they argued that the real interest rate might be picking other factors that are not related to marginal productivity of capital. The high real interest rates may just be due to a high risk premium due to lack of credibility of economic policies or specific country risks (such as fragile financial markets, lack of a

legal framework to safeguard property rights). In such a scenario, high positive real interest rates may have a negative effect on investment and growth.

However, the causality between savings and investment remains a debatable matter between the classical and Keynesian economists (Palley, 1998: 100). While the classical view is that savings cause investment and that the economy must first save so as to promote economic growth, the Keynesians argue that it is investment that causes savings and that investment is not constrained by savings but by lack of investment incentives such as low profitability due to insufficient aggregate demand, and high real interest rates due to tight monetary policy. But both the classical and Keynesian viewpoints converge at the full employment level of the economy, though with differences in beliefs about the full employment state of the economy. At full employment, additional investment is only possible through savings in the form of either voluntary reduction of private consumption, which results in increased private savings, or reduction in government expenditure that results in increased government savings. Alternatively private consumption can be reduced by higher taxation, which results in increased mandatory savings. However the point of contention between the two viewpoints is that the classicals believe that the economy is at full employment most of the time, while the Keynesians believe that the economy is not at full employment most of the time.

Evidence by Baxter and Crucini (1993: 431) using cross- sectional data for eight OECD[3] countries, suggests a significant and positive relationship between national savings and investment. On the other hand, Levine and Renelt (1992:944) found a positive and robust correlation between the investment /GDP ratio and growth. These findings are important

[3] *Organization for Economic Co-operation and Development (OECD)*

because they underscore the savings and volume of investment channels through which the financial sector influences long-run economic growth.

2.4.2.2 Efficiency of Investment

The financial sector also contributes to economic growth through its effects on the efficiency of investment. This is achieved through the financial sector's function of collecting and analyzing costly information on entrepreneurs/investment projects, allocating credit to its highest productive use, enabling technological advancement, transforming the composition of savings to suit investment, and financing of human capital formation.

Analysis of Potential Investment Projects

The financial sector undertakes to collect information not only on the investment projects but also on the character of the entrepreneurs for the risk-return assessment, which promotes the efficiency of investment through the allocation of resources to their most productive uses. King and Levine (1993:717) argue that the risk-return assessment of investment projects involveS huge fixed research costs that cannot be borne by a single private investor. The risk-return assessment mechanisms include the evaluation of the entrepreneurial skills; market analysis for goods; technological aspects and profitability of the investment. The development of the financial sector therefore enables the emergence of specialized institutions to gather and process information on investment projects and thereby facilitates the spreading of fixed research costs among many private investors. The cost reduction implies that more evaluations can be done, thus maximizing the probability of allocating credit to highly productive projects. This raises the efficiency of investments, which has a positive effect on economic growth.

Cost Efficiency

Competitive financial markets also deliver efficiency gains, forcing financial intermediaries to reduce intermediation margins (the difference between deposit rates and lending rates) up to the point where they earn only normal profits. Competition also forces financial intermediaries to be efficient through the design of cost-effective strategies. By adjusting the equilibrium market lending interest rates to their efficiency levels, the financial sector reduces the investment costs and in this manner increase the profitability of investments. Through this channel, the financial sector promotes economic growth through efficiency of investment (Levacic and Rebmann, 1982: 239).

Transformation of the composition of Savings

The financial sector eliminates the need for economic agents to hold a large proportion of their wealth in unproductive liquid assets (cash) to finance future consumption, thereby encouraging them to hold more of their wealth in interest bearing financial assets. The financial assets may be marketable or non-marketable. Marketable financial assets include bonds, which can be exchanged at a price at any time so that the original lender can get cash without waiting for maturity. Non-marketable financial assets on the other hand include building society shares, post office savings accounts and deposit accounts in commercial banks (Levacic and Rebmann, 1982:26). By guaranteeing economic agents access to their savings deposits at minimum cost when they experience liquidity pressures, financial intermediaries can transform the composition of financial savings to make them more appropriate for capital accumulation. The financial sector therefore determines the proportion of savings to be allocated to investment through its liquidity provision role (Bencivenga and Smith, 1991:207). For example, if the economy has total fixed savings (S_t),

financial intermediaries have a choice of holding them in liquid assets (cash) with low productivity (q_t) to meet future liquidity requirements of economic agents or allocating them to illiquid investment assets, which are riskier but more productive (q_t^*). By dealing with large numbers of savers and borrowers, the financial sector can allocate a high proportion of savings to productive investment (q_t^*/S_t), by economizing on the amount to be held in unproductive liquid reserves (q_t/S_t) to meet the cash withdrawal requirements, thereby promoting efficiency of investment and economic growth. The development of the secondary capital and money markets where existing securities are traded enables economic agents who experience liquidity pressures to convert their bonds into cash. Through the channel of transformation of savings composition, the financial sector enables allocation of resources to the most productive investments while at the same time meeting the liquidity requirements of economic agents.

Eliminating the need for self-financing

By providing investment finance for projects, the financial sector eliminates the need for self-financing which minimizes the risk of premature liquidation of productive investments that arise due to unpredictable future liquidity crises coupled with the slow cycle of returns (Bencivenga and Smith, 1991). Returns from investment projects are characterized by a time lag between making investment expenditures and receipt of profits, and so economic agents who experience unexpected liquidity pressures may be forced to prematurely liquidate their investments especially if they are self-financed. For example, if the returns from an investment project can only be realized in two years' time but the economic agent faces a liquidity crisis in year one, the only option in the absence of financial intermediaries may be to liquidate the investments. Demers (1991) pointed out that premature liquidation of fixed capital investments results in heavy losses due to the irreversibility of investment. This

irreversibility arises from the specialized nature of capital that cannot easily be switched to other uses, as well as the resale value that tends to be lower than the purchase price. By providing investment finance, the financial system eliminates the need for self-financing and allows economic agents to earn the highest return from fixed capital investments, thereby improving the efficiency of investment.

Technological Choice

Financial intermediation also enables economic agents to choose highly specialized technology, which increases the efficiency of investment and economic growth (Saint-Paul, 1992). As the returns from investment projects are subject to demand risks, the choice of technology by firms will be greatly influenced by their expectations of the intensity of future demand for their products. In the absence of well-developed financial and capital markets, economic agents may choose highly flexible technology that allows for product diversification but with low productivity so as to hedge against the demand risk shocks. Highly flexible technology ensures that if the demand of a particular product falls, the same machines may be switched over to produce other goods. The opportunity cost however of less specialized technology is that it promotes inefficient use of resources, which lowers the marginal productivity of capital.

The development of the financial and capital markets enables the choice of highly specialized technology which is more productive but rigid in that it cannot be converted into the production of other goods, in the event that the demand of the products which they were designed to produce falls (Demers, 1991:346). Hulten (1992) also argued that marginal productivity of capital is highest in specialized technology due to the embodied technical change, which increases total-factor-productivity. The development of the capital markets

therefore enables economic agents to diversify their investment risks to insure against the negative demand shocks, and simultaneously to choose the more productive technology, which raises the efficiency of investment and accelerates economic growth.

The financial sector also provides private investors with information not only of the risks of their own investment projects but also the risks that are common to all projects, thus enabling them to diversify the technological shock risks (Greenwood and Jovanonic, 1990:1079). The technological shock consists of two components, namely the risk associated with a specific investment project (idiosyncratic component) and the risk common to all investment projects (systemic component). By providing an accurate breakdown of technological shocks, financial intermediaries enable the investors to diversify the intrinsic risks in private projects thereby enhancing efficiency in resource allocation and promoting economic growth.

Human Capital Formation

The financial sector also promotes human capital formation by easing liquidity constraints through borrowing for educational purposes. Financial arrangements that ease human skill creation in turn accelerate economic growth. This is because a highly skilled labour force will be more productive.

In summary it can be argued that a developed financial sector has a positive effect on long-run economic growth, by increasing the volume of investment (capital accumulation) and/or through increased efficiency of investment. Economic growth also influences the development of the financial system by creating a demand for financial products, hence leading financial sector deepening which in turn promotes further growth. It should be

noted the arguments of causality between financial sector development and economic growth (McKinnon, 1973; Shaw, 1973; King and Levine, 1993) formed the basis for the World Bank/IMF sponsored financial sector reforms which were designed to reduce the role of the state in the management of the economy and make markets more efficient in resource mobilization and allocation (Brownbridge and Kirkpatrick, 2000:6). The financial sector reforms included the deregulation of interest and foreign exchange rates, abolition of credit controls and privatization of public sector commercial banks (Levine, 1997). However the financial crises that rocked the liberalized systems resulted in renewed calls for prudential regulation of the financial sector, discussed in detail in the next section.

2.5 Financial Sector Regulation

2.5.1 Objectives of Financial Regulation

Falkena et al (2001) argued that the ultimate goal of financial regulation is the attainment of a high degree of economic efficiency and consumer protection. The specific objectives of financial regulation include: securing systemic stability in the economy, ensuring safety and soundness of financial institutions, and enhancing consumer protection.

Systemic stability in the economy can be achieved by ensuring that financial markets function smoothly with minimum shocks created by market imperfections (such as ineffective or inefficient trading, weak clearing and settlement systems, and poor market infrastructure). Financial regulation addresses such market imperfections and promotes overall economic efficiency.

Ensuring the safety and soundness of financial institutions is another critical aspect of financial regulation. Financial regulation ensures that individual institutions are profitable,

are sufficiently capitalized to cover overall risk exposure, and have "fit and proper" management and staff.

Consumer protection is important in that consumers may not always have the necessary information with which to make accurate decisions on the choice of financial institutions to deposit their savings. The collapse of such institutions may inflict heavy losses of life-time savings. Financial institutions may also develop exploitative monopoly powers in the form of charging excessively high interest rates, for which the regulatory authorities must offer protection to consumers. By ensuring that various financial services are provided by specialized financial institutions (such as leasing, insurance), financial regulation protects consumers against poor financial advice which can lead to heavy losses.

Schmidt and Willardson (2004:48) identified the protection of consumer information as one of the critical aspects of consumer protection. While financial institutions gather information on their clients for purposes of evaluating their creditworthiness and risk-pricing, the transfer of such information to unrelated third parties constitutes a violation of the rights of the consumer. The problem is compounded when errors are generated in the process of transfer of such information to unrelated third parties, causing innocent consumers to be victimized in the credit markets (by being denied credit) or in the labour markets (by being turned down for jobs).

2.5.2 Components of Financial Regulation

Jordaan (1997) summarized financial regulation into three broad components: prudential regulation, protective regulation, and monetary requirements.

2.5.2.1 Prudential Regulation

Prudential regulation is geared to ensuring that the risk exposure of financial institutions is fixed within tolerable limits so as to minimize the risk of bank failures. The policy instruments for prudential regulation include entry requirements, permissible banking activity, information disclosure, capital adequacy requirements, risk asset limits, and liquidity risk limits.

The main objective of the entry requirements regulation is to ensure that new entrants into the financial sector are sound and have adequate risk management capacity. The entry requirements include, among others, minimum paid up capital, and "fit and proper" management. The permissible business activity regulation involves a separation of activities that the financial institutions can involve in so as to limit the risk exposure. The disclosure of all information regulation enables the assessment of the level of risk assumed and managed by banks, so as to determine appropriate risk-based capial adequacy requirements. By implication, the accuracy and consistency of such information is pivotal to the correct assessment of risk exposure of banks, which brings into play the need for standardization of accounting and reporting systems and imposing additional responsibilities to external auditors (e.g. to disclose the weaknesses in the internal control systems, weaknesses in management).

The capital adequacy requirements regulation provides a disincentive to banks to take on excessive risks, which reduces the probability of bank failures. In addition capital adequacy requirements provide a cushion against losses, thereby minimizing the risk of banks using depositor's funds to meet operational expenses. Capital adequacy requirements include minimum paid-up capital and risk-weighted on-going capital requirements. The risk asset limits regulation includes regulatory stipulations on maximum loan concentration (expressed

either in terms of maximum loan amount to a single customer or as a percentage of the capital base), interest rate risk and exchange rate risk. The liquidity adequacy requirements regulation is geared to ensuring that financial institutions have sufficient funds to meet the liquidity risks faced by consumers. The liquidity risks may arise from factors that include demands for cash withdrawals, unexpected shortfall in earnings. The liquidity requirements regulation also boosts public confidence in the financial system (Jordaan, 1997).

2.5.2.2 Protective Regulation

Protective regulation is designed to protect distressed banks from collapse, especially if they are large and their collapse has a higher probability of ushering in systemic instability to the financial system. Protective regulation consists of crisis management of distressed banks and deposit insurance (Jordaan, 1997). Crisis management regulation includes provision of emergency liquidity assistance and corrective action to the distressed bank. Emergency liquidity assistance entails the provision of temporary liquidity to the distressed bank by the regulatory authority (as a lender of the last resort, or even direct or indirect subsidies). Corrective action may include recapitalization of the distressed bank from existing or new shareholders, change in management, mergers with sound banks or outright liquidation.

Deposit insurance regulation is designed to boost public confidence in the financial system and minimize the risk of financial instability. Mandatory deposit insurance schemes covering the whole banking sector are commonly used in least developed countries (LDCs), which may be flat or risk-weighted premiums.

2.5.3 Monetary Requirements Regulation

Monetary requirements regulation is geared more to the attainment of the broader monetary policy objectives of price stability, employment creation and high economic growth rather than prudential regulation. Monetary requirements instruments may include variations in reserve asset requirements, control of interest rates, credit ceilings and allocation by regulation. It should be noted that direct non-market oriented monetary policy instruments may have profound distortionary effects on the financial sector (Jordaan, 1997).

2.5.4 Global Harmonization of Financial Regulatory Standards

With the globalization of banking business (Giannakoudi, 1999), the need for harmonization of regulatory standards arose to enhance the stability of the global financial system (Chami et al, 2003: 4). This was as a result of the observed banking crises that followed financial sector liberalization in most LDCs, which threatened the stability of the international payment system.

2.5.4.1 Weak Financial Regulation and Banking Crises: Empirical Evidence

Most developing countries experienced banking crises following the implementation of financial sector reforms. Evidence by Kaminsky and Reinhart (1998:10) in a study of 20 countries that had experienced banking crises indicated that 18 of the 26 crises were experienced immediately after liberalization. The time frames ranged between five or less years after the reforms, thus linking financial sector liberalization to emergence of financial crises. Weller (2001:109), using data for 27 emerging economies for the period 1973 – 1988 with univariate and multivariate analysis models, also showed a positive correlation between banking crises and financial liberalization. The argument for this observed phenomenon is that financial liberalization allows more liquidity to enter the emerging economy, especially

to speculative investments, which increases the probability of borrower default. On the other hand, the outflow of international capital becomes more likely after liberalization, especially in response to currency overvaluation, thus having destabilizing effects on the financial system.

Brownbridge and Kirkpatrick (2000:5) argue that developing countries had weak financial regulatory frameworks prior to liberalization due to two main factors: economic regulation and inherited systems. First, government policies prior to the 1980's were geared towards economic regulation through control of interest rates and sectoral allocation of credit to realize the predetermined goals (economic, social and political), implying limited experience in supervising market-based financial systems. Secondly, foreign-owned banks dominated the banking system in most LDCs, which banks were subject to strict prudential controls from their parent banks. The implication here is that LDCs inherited a banking and regulatory system from their colonial masters which needed less domestic regulation. The resultant effect was a weak regulatory framework characterized by understaffed supervisory departments, shortage of skilled supervisors, regulatory forbearance, and obsolete banking laws with low capital requirements which were often eroded by inflation to negligible levels. Regulatory forbearance is the inability or unwillingness of the regulators to rigorously enforce the prudential regulations due to either pervasive political interference and/or corruption. To counter these crises, Brownbridge and Kirkpatrick (2000) argued for further reforms, which include higher capital adequacy standards, explicit rules covering intervention policy in distressed banks, restraints on competition in banking markets and greater use of the market for monitoring banks.

Sau (2003:510) emphasized the role played by the dominance of banks in the financial system and the prevalence of information asymmetry as the main explanation for the

financial crises experienced after financial sector reforms. According to this hypothesis, banks can increase the price of capital that reduces the profitability of the investments, thus reducing the net worth of firms. This therefore reduces the ability of the firms to repay their debts, hence increasing the banks' exposure to risk default. This will be reinforced by the moral hazard behaviour of the borrowers to adopt high-risk projects when faced with high interest rates, which increases their probability of default. On the other hand, the existence of high levels of information asymmetry in LDCs implies that banks adopt credit rationing behaviour that reduces credit to the firms, thus leading to liquidity crisis at firm level. To cope with the liquidity problem, firms may choose the option of reducing or selling off their assets, which in turn leads to a fall in asset prices and a reduction in the net worth of firms. This also increases the banks' exposure to default risk, as firms that have borrowed will not be able to pay due to bankruptcy.

De Gregorio and Guidotti (1995:443) noted that the Latin American financial crisis was due to liberalization of financial systems coupled with inadequate regulatory mechanisms. The public expectation that government would bail out banks in case of a crisis, despite the announced government policy of liberalization, caused the banks to be less circumspect in evaluating projects. This led to over-financing of low productive projects, which could not repay the loans and sparked off the costly banking crisis, where governments had to intervene to refund the depositors' funds. The existence of deposit insurance schemes has also been argued to be a key factor in explaining the occurrence of financial crises after financial liberalization as it acts as an incentive for banker's moral hazard behaviour, as the state undertakes to bear the costs of bank failure. Boyd and De Nicolo (2003:3) also argued that a deposit insurance scheme encourages risk taking behaviour by banks because it generates a pay structure in which large gains go to the bank shareholders and large losses to government. Diamond and Rajan (2003:40) pointed out that poorly targeted government

bailout of banks in the form of recapitalization or deposit insurance can even tip the banking system into a systemic crisis. This is because such interventions affect the availability of aggregate liquidity in the economy. The formulation of a regulatory policy was argued to deter risk-taking by banks through the use of instruments like risk sensitive capital requirements, cash asset reserve requirements and bank disclosure policy. Poirot (2001) showed that lack of effective oversight and regulation was the major cause of the Russian financial crisis.

Dermirguc-Kunt and Detragiache (1998) used data for 53 countries for the period 1980 – 95 to analyze the relationship between effectiveness of regulation, liberalization and banking crises. Using alternative proxies for the regulatory environment such as the degree to which the rule of law is respected, the extent of bureaucratic delay, the quality of contract enforcement, the quality of bureaucracy and the degree of corruption, the results suggested that an improvement in the quality of regulation minimizes the risk that liberalized financial markets will fall into systemic banking crises. Williamson and Maher (1998) in a study of 33 countries that had implemented financial sector reforms during the period 1973 –1995, concluded that countries that had stronger regulatory and supervisory systems experienced less severe financial crises as compared to those with weak regulatory frameworks.

It should also be noted that the financial sector reforms were implemented by most developing economies in the 1970's and 1980's in which the macroeconomic environment was characterized by high and variable inflation, advances in technology and globalization of the banking business which all gave rise to financial instability (Chami et al, 2003:9). The high and variable inflation generated a demand for hedging products, thus inducing savers to seek higher yields and this intensified banking competition. Technological advances in information and communication broke down the traditional demarcations of the banking

industry into banks and non-banks, thus motivating other firms to also enter the banking business. The new technology cut down the financial intermediation costs and facilitated the development of new financial products such as automatic teller machines, and credit cards. The removal of barriers to entry into the banking business further led to globalization of the banking business as domestic banks had to compete against foreign banks and in some cases resulted in mergers. While competition in the banking sector is argued to lead to efficiency in resource mobilization and allocation through minimization of intermediation costs (Belaisch, 2003:20), competition might have negative effects on the stability of the financial system as it motivates banks to take on more risky investments (Weller, 2001).

The conclusion drawn from the empirical research referred to is that a strong financial regulatory framework is important to maintain the stability of the financial system and to prevent costly bank failures. It was for this reason that the Basel Committee of the Bank of International Settlement (BIS) took the lead role in the formulation of international minimum prudential regulation standards upon which all the national government financial regulatory frameworks were to be based.

2.5.4.2 Minimum International Prudential Regulation Standards

The Basel Accord 1 of 1988, among other things, established two categories of minimum capital adequacy ratios: core capital being at least 4% of the risk-weighted assets and total capital being at least 8% of risk-weighted assets. However many banks responded to the Basel Accord of 1988 by engaging in regulatory capital arbitrage whereby they exploited the ambiguity of the Accord in terms of categorization of assets into different risk-weights to economize on the capital to be held. This was through deliberate loading of the riskiest assets in a particular category, thereby minimizing the capital requirement. In addition banks

took on more market and interest rate risk, and even used bank capital to finance lending operations, hence ending up holding low quality assets on their balance sheets.

This resulted in the revised Basle Accord II of 1999, which introduced a three-pillar approach to the regulation of banks (Brownbridge and Kirkpatrick, 2000:6). Pillar I constituted the regulations imposed by the regulators on the banks with regard to capital adequacy requirements. Emphasis was put on a comprehensive risk assessment of the banks so as to determine appropriate capital requirements. Four components of risk were considered: credit risk, market risk, interest rate risk and operational risk. Pillar II focused on supervision of banks to ensure that they have adequate internal procedures for risk assessment and computation of the required amount of capital to hold. The supervision approach envisaged continuous dialogue between the regulator and the banks, but with the regulator empowered to review and intervene. Pillar III underscored the reliance on the market for continuous assessment of banks. Through the market approach, banks were expected to have regular and timely disclosure of information both to the regulators (for effective assessment of risk assumed and managed by banks) and to the public (for continuous monitoring of the performance of the banks by the market).

2.6 Conclusion

The objective of this chapter was to investigate the functions of the broader financial sector in terms of intermediation of resources, and the importance of financial regulation. The relevance of this analysis is that the informal financial sector is part of the broader financial sector.

The conclusion is that the financial sector plays an important role in the mobilization and allocation of resources, thereby promoting long term economic growth. The financial sector

influences domestic savings levels in an economy through the following channels: income, interest rates, minimization of transaction costs, transformation of credit risks, creation of an efficient payment system, and corporate governance. The financial sector influences economic growth through the volume of investment and efficiency of investment channels. By raising the savings levels to finance capital accumulation, the financial sector influences economic growth through the volume of investment channel. The financial sector also increases the efficiency of investment, thereby promoting economic growth through the following channels: provision of an efficient mechanism for evaluation of investment projects that ensures that resources are invested where they get the highest return, diversification of investment risks, diversification of liquidity risks, prevention of premature liquidation of physical capital investment and promotion of specialized technological innovation. Economic growth also influences the development of the financial sector by creating demand for new financial products thereby broadening the financial sector. This in turn stimulates higher growth levels. This is the two-way casual relationship between the financial sector and economic growth highlighted by the endogenous growth literature. The importance of the financial sector in promoting economic growth acted as the basis for the design of the World Bank/IMF financial sector reforms, which were implemented in most LDCs in the 1980's.

Regulation of the financial sector plays a key role in maintaining the stability of the financial system and consumer protection. The components of financial regulation include prudential regulation, protective regulation and monetary requirements regulation. Consumer protection safeguards depositors from the potential loss of funds in case of the collapse of financial institutions, monopoly power exploitation through excessive interest rates, and abuse in the use of clients' confidential information by the financial institutions.

To maintain the stability of the global financial system, the minimum international regulatory standards were developed under the Basel Accord to guide the national governments in the design of their own regulatory frameworks.

CHAPTER 3: THE INFORMAL FINANCIAL SECTOR

3.1 Introduction

This chapter reviews the structure of the informal financial sector in terms of the distinguishing features of each market. The informal financial sector is part of the broader financial system that provides resources to those economic agents with no access to formal financial services. Informal finance, defined to include all financial transactions that take place outside the officially regulated or monitored financial sector, include unregulated savings and credit activities (Montiel et al, 1993:8). These informal savings and credit activities are argued to be a market response of economic agents to their economic environment, which activities are demand driven generated purely by the needs of the market place. While the formal financial sector is subject to regulation and supervision by the monetary authority (the central bank), the unregulated informal financial sector escapes all such regulation.

The informal financial sector plays a key role in resource mobilization and allocation in developing economies. Bouman (1995:373) suggested that in Cameroon approximately 50% of the national savings and 27% of the total credit requirements was provided by the informal sector. Jones et al (1998:105) noted that 55% of all private savings in Ghana are mobilized through informal sources. Timberg and Aiyar (1984:43) estimated that informal credit markets account for approximately 20% of total commercial credit outstanding in India. Bagachwa (1995:10) observed that approximately 55% of the start-up capital for microentreprenuers in urban and rural areas is provided by the informal sector.

The theoretical framework for the emergence and co-existence of the informal financial sector with its formal financial sector counterpart has been provided by two competing theories, namely the repression and structural hypotheses that are discussed in section 3.2.1

and 3.2.2 respectively. The policy of promoting linkages between the formal and informal financial sectors as a strategy for enhancing the broadening of the financial sector is presented in section 3.3, and the types and characteristic informal financial institutions are discussed in section 3.4.

The relevance of this chapter to the study is that it highlights why informal financial institutions exist in the first place, which implies the existence of demand for informal credit. The demand for informal credit is influenced by household socio-economic characteristics and other variables (to be discussed in section 5.4), which is specifically examined by this study in the case of Uganda. Secondly, the findings of this chapter underscore the risk-return assessment mechanisms that are adopted by informal financial institutions to overcome the problems of information asymmetry which are prevalent in credit markets. The risk-return assessment forms the basis for the lender to decide whether to fully grant the loan amount applied for by the borrowers, partially ration the loan amount, or completely reject the loan application. The last two scenarios constitute the lenders' decision to credit ration the borrowers' loan demand, which decision is influenced by the borrowers' socio-economic factors and other factors (to be discussed in section 6.4). An empirical investigation of the factors that influence the informal lenders' credit rationing behaviour forms part of this study.

3.2 Factors that influence the Emergence of the Informal Financial Sector

In most less developed countries (LDCs), informal financial markets operate parallel with the formal financial markets, and in some instances their services play a complementary role. Different reasons have been propounded to explain the emergence and continued co-existence of the formal and informal financial sectors. The conceptual and theoretical underpinnings have been provided based on arguments from two schools of thought: the

financial repression hypothesis (McKinnon, 1973; Shaw, 1973) and the structuralist hypothesis (Stiglitz and Weiss, 1981).

3.2.1 The Financial Repression Hypothesis

The financial repression hypothesis argues that the opportunity for the emergence of the informal financial sector is created whenever there is excessive regulation of the formal financial market in the form of fixed interest rates, sectoral credit allocation, state management of public sector banks and restriction of entry into the banking sector (McKinnon, 1973; Shaw, 1973). The fixed interest rate policy generates excess demand for credit, which conditions the formal banks to use non-price measures such as collateral requirements to ration credit. Arndt (1982:417) argued that the discrimination between borrowers on the basis of collateral and credit rating is a characteristic feature of credit rationing by banks, while government control of interest rates discriminates among borrowers in a socially desirable way. Nissanke (1994) argued that collateral requirements as a rationing device increases the lender's expected return because collateral reduces the incentives to default and shifts the expected loss from the lenders to the borrowers. Coupled with selective or sectoral credit policies, segmented and fragmented credit markets emerge in which favoured borrowers obtain credit at highly subsidized interest rates, while the non-favoured borrowers are rationed out and must obtain funds at high interest rates in informal credit markets.

The conventional development wisdom of the 1960's and 1970's for intervention in formal credit markets was that subsidized credit would lead to rapid rural transformation through adoption of modern agricultural technology that would lead to increased agricultural output and income. It was also expected that these subsidized rural credit programs would lead to poverty alleviation and a more equitable income distribution. Such intervention was

motivated by attainment of social goals, in which governments resorted to use of less direct and more inefficient means of redistributing income by altering relative prices. This was as a result of budget constraints that made direct transfers of income to targeted activities more costly (Riedinger, 1994:301). Most developing countries adopted deliberate policies of directed credit and interest rate controls with a view to increasing access by the rural poor to cheap credit so as to stimulate investments in the agricultural sector and simultaneously break the monopoly power of the moneylenders, who operated in the informal financial sector and were perceived to be exploitative. This was to be achieved in two ways: first through massive rural branch banking where cheap institutional credit was expected to compete away the moneylenders. Secondly, by enabling the moneylenders to have access to cheap institutional credit, it was expected to result in a reduction in the moneylenders' opportunity cost of funds, thereby having a positive trickle down effect by lowering rural interest rates (Bell, 1990; Hoff and Stiglitz, 1990).

However the cheap credit policy failed to achieve its objectives (Braverman and Guasch, 1986:1256). Firstly, there was limited agricultural production response. The fixed interest rate policy distorted the cost of capital, generated poor investment incentives and failed to increase agricultural output cost-effectively. Secondly, the cheap formal credit was accessed mainly by the richer households. Since many developing country governments also taxed agricultural output, the subsidized credit policy that benefited mainly the rich implied that the poor were subsidizing the rich, thus worsening income inequality. The marketing of agricultural output was often handled by State Marketing Corporations where producer prices were controlled, implying a high implicit tax to the farmers. Thirdly, the lender institutions that were created to channel the cheap credit were very inefficient. They were riddled by corruption, high transaction costs and poor loan repayment rates, which created a heavier fiscal burden in terms of continuous subsidization of their operations. Riedinger

(1994:301) also argued that the subsidized credit policy generated important patronage opportunities for the people in power. The politicians simply used cheap credit to reward some people, who in turn reciprocated with electoral support.

The cheap formal credit policy also failed to reduce the high interest rates charged by moneylenders in the rural financial sector. Evidence by Aleem (1990) based on a study of fourteen moneylenders and their clients in Chambar, Pakistan suggested that the moneylenders continued charging high interest rates despite the many years of government intervention in rural credit markets with cheap institutional credit. The interest rates charged by the moneylenders (78.6% p.a.) far exceeded their marginal resource cost (48.0% p.a.), confirming the failure of the cheap formal credit policy to break the moneylenders' monopoly power in the rural credit market. The resource cost analysis included overhead costs, borrower screening costs, costs of pursuing delinquent loans, cost of borrowing funds from the formal sector, and provision for unrecoverable loans.

Further evidence by Siamwalla et al (1990) based on a study of 1600 rural households and 37 money lenders in Thailand, also suggested that informal lenders' interest rates remained relatively high (25% - 60% p.a.) as compared to formal sector rates (12% - 14% p.a.) despite government intervention which injected huge amounts of cheap funds into rural credit markets through the extensive rural branch network. In addition about 75% of all the active households in the credit markets continued accessing credit from informal sources, revealing the unique role played by informal lenders despite the high interest rates charged.

Bose (1998) argued that a cheap credit policy in the formal sector might raise informal sector interest rates and even reduce the volume of credit available. His theoretical model was based within the context of information asymmetry in the informal financial market

with two categories of lenders: the more informed lender [Type 1] and the less informed lender [Type 2]. The more informed lender [Type 1] has more information about the borrowers, can identify the low risk borrowers to whom he lends, has low default rates, low transaction costs and can afford to charge low interest rates. The less informed lender [Type 2] who has very little information about the borrowers, lends to high-risk borrowers, has high default rates, has high transaction costs in terms of contract enforcement and can only survive by charging high interest rates. Even though the more informed and less informed informal lenders both face the same external source of funds (i.e. the formal sector charging interest rate, r), a decrease in r may lead to an increase in interest rate charged by the Type 2 lender. This is because of the negative indirect effect on the Type 2 lender resulting from the response of the Type 1 lender to a fall in r. A fall in r induces Type 1 lender to reduce his interest rate (i_1) and increase his portfolio (n_1) by taking away most of the low risk borrowers (as he has more information for screening borrowers). This leaves the Type 2 lender with mainly high-risk borrowers. This results in the adverse composition effect for Type 2 lender, which increases the probability of default and high enforcement costs. The Type 2 lender will respond by increasing the interest rate charged to clients (i_2) and reducing the volume of the portfolio (n_2). Hence the cheap credit policy in the formal financial sector may result in an increase in informal sector interest rates and a decrease in the volume of credit.

Financial repression is therefore argued to create financial dualism that has negative effects on economic development (Germidis, 1990). In the first instance, financial dualism leads to the creation of regional and sectoral disparities through its effects on resource mobilization and allocation especially when savings from the rural sectors are siphoned for investment in urban sectors. This scenario occurs when formal banks use their rural branch network mainly for savings mobilization but not to lend to the rural poor on the pretext that they are

not creditworthy due to a lack of collateral security. This results in growth differentials between economic sectors, as their growth will be dependent on access to credit. Secondly financial dualism leads to negative equity effects through the interest differentials between formal and informal sector loans. The formal sector interest rates are lower compared to the informal sector interest rates, but formal sector credit is less accessible to the poor with no security. The poor are conditioned to choose high cost informal loans or no credit at all, while the rich access low cost formal credit thus worsening the inequality between the rich and the poor. Thirdly financial dualism makes the implementation of coherent economic, monetary and fiscal policies difficult. The lack of data on informal sector transactions renders the planning process ineffective. The monetary policy instruments (interest rate, reserve requirements) may be rendered ineffective in the presence of large liquidity outside the banking system, hence the management of money supply for effective control of inflation may be difficult.

The major policy recommendation from the repression hypothesis school of thought was the liberalization of the formal financial sector, which would in the long-run crowd out the informal financial sector. This would lead to integration of the formal and informal financial sectors (McKinnon, 1973; Shaw, 1973). The liberalized interest rate as a market price for financial resources was expected to result in the re-allocation of funds from the informal credit markets to the formal financial sector. The re-allocation was postulated to depend on the smooth substitution of financial assets by the asset holders. An increase in the formal sector deposit rates or bond rates was expected to induce asset holders to shift their portfolios from claims on the informal credit activities into bank deposits or bonds. This enhances the modernization of the formal financial sector and subsequent reduction of the informal financial sector. Elimination of all other forms of repressive policies such as high reserve requirements, abolition of credit controls, removal of barriers to entry into banking

business and privatization of state owned banks was expected to enhance competition in the formal sector. The potential benefits of such measures would be a reduction in intermediation margins, increased efficiency in resource mobilization and allocation, and higher growth rates as previously discussed in section 2.4.

Teranishi (1994:315) however argued that liberalization of formal sector interest rates may not be sufficient to result in a significant portfolio shift from claims in the informal credit markets to bank deposits. This is because the informal lenders are not merely asset holders but are professional lenders with highly efficient information capabilities. The information accumulated by informal lenders over time is a form of intangible capital stock, implying that a shift of their portfolios to the formal sector will entail a loss of capital value. Evidence by Steel et al (1997:826) from a study of four African countries (Ghana, Malawi, Tanzania and Nigeria) suggested that the portfolio of informal lenders continued to grow by between 20% - 150% over the period 1990 – 1992 despite the liberalization of the formal financial sectors in the 1980's. Steel et al (1997) also observed that informal sector risk-adjusted interest rates were higher than the formal sector rates, suggesting the continued existence of monopoly power in the informal financial sector despite the implementation of financial sector liberalization policies. Aryeetey and Nissanke (1998:117) were also of the view that financial sector liberalization had failed to solve the problem of financial market fragmentation in developing countries. Wide differences in interest rates and returns among the lenders in the different sectors have continued to persist due to limited interaction between the different segments.

Timberg and Aiyar (1984:51) in a study of urban moneylenders in India also suggested that they charged higher interest rates (18% - 24% per annum) as compared to formal banks (13% - 16% p.a.). Further evidence by Bagachwa (1995:36) showed that moneylenders'

interest rates of 6% - 9% per month were significantly higher than those of the formal sector of 21% - 31% p.a.

3.2.2 The Structuralist Hypothesis

The structuralist hypothesis argues that the emergence and existence of the informal credit market is based on sound economic considerations due to differences in transaction cost structures faced by the formal and informal lenders (Hoff and Stiglitz, 1990). Due to market and market support infrastructure deficiencies, the transaction costs for formal financial intermediaries are prohibitively high when dealing with small borrowers. The high transaction costs prevent formal financial institutions from undertaking adequate screening, monitoring and credit enforcement procedures against default risks over small loans. This leads to the perceived high risks by formal lenders, making them extremely risk-averse in extending credit to small borrowers, particularly to those without credible collateral. The collateral is expected to serve both as a screening device against default risk and an incentive to the borrower to repay the loan within the framework of asymmetric information (Van Tassel, 1999).

Information asymmetry is a situation where the borrowers have more information about their potentials and risks as compared to the lenders due to lack of recorded credit history, existence of high information gathering and analysis costs (Stiglitz, 1990). But the lender also needs accurate information to assess the viability of the project, the creditworthiness of the borrowers and their strategic behaviour so as to minimize default risk and enhance repayment rates. Formal institutions faced with high transaction costs ration out smaller borrowers and the poor without acceptable collateral, to safeguard their operational viability.

Heterogeneous informal lenders therefore satisfy the unsatisfied demand for credit of those left out by the formal financial sector. Informal lenders have access to local information on their borrowers, with whom they have interpersonal relations at very low cost, which they use for screening the borrowers thereby greatly controlling transaction costs and default risk. This gives the informal lenders an informational cost advantage over banks when dealing with small borrowers. In addition, by being part of the community, informal lenders are able to continuously monitor their borrowers at minimal cost, as compared to formal lenders (Hoff and Stiglitz, 1990).

It is also argued that formal credit is not accessible to small borrowers due to the high borrowing cost in the formal sector (Adams and Nehman, 1979:168). The borrower transaction costs include the nominal interest rate charged on loans, commissions charged by the bank (for example application fees, loans registration fees), borrower travel expenses, and the opportunity cost of the borrower's time spent in negotiating for the loan. The borrowing cost ratio, defined as the total borrowing cost as a percentage of the total loan received, was estimated to be 29% for small borrowers and 15% for large borrowers for loans with a duration of one year. The high borrower costs for formal credit therefore tend to make the smaller borrowers to prefer informal credit. Further evidence by Yadav et al (1992:427) suggested that the borrowing cost as ratio of outstanding loans is highest for formal credit (1.8%), followed by moneylenders (0.7%) and least for friends and relatives (0.3%). From the institutional side, evidence by Timberg and Aiyar (1984) suggests that the administrative costs of the informal lenders (1.2% of outstanding loans) are lower than for formal banks (1.7% - 2.75% of outstanding loans). Evidence by Aryeetey (1994:39) also suggested that moneylenders have very low transaction costs computed as percentages of loan amounts: screening costs (1.4%), loan monitoring costs (0%), loan repayment and enforcement costs (0.2%).

The high savings transactions costs in formal banks on the other hand explain why Rotating Savings and Credit Associations (ROSCAs) (see section 3.4.3) continue to be the most viable savings option for low-income people in may parts of the world. In a study of urban market women in Harare, Chamlee–Wright (2002:992) argued that one of the main reasons why market women continue being members of ROSCAs despite having personal bank accounts is due to the high transactions costs involved in saving small amounts. The transaction costs include transport to the bank and opportunity cost due to long waiting time. The ROSCAs provide opportunities to conveniently save small amounts, which would otherwise have been spent on other incidentals. In addition the ROSCAs provide a cost effective alternative for credit. Handa and Kirton (1999:192) in a study of 1000 households in Jamaica also concluded that the ROSCA provide a cost minimizing strategy for saving to the members, whereby instead of all the members going to the bank to the deposit their savings, only the leader goes. What all this evidence points to is that the decision by economic agents to participate in informal financial markets is based on cost considerations.

Informal lenders also use effective collateral substitutes such as joint liability contracts and interlinked credit transactions. The joint liability contract is a lending arrangement where the group members are not only responsible for repayment of their personal loans, but also for loans of their fellow members in case of default. The whole group is sanctioned (i.e. can't access a repeat loan) before the entire group loan is fully paid. In effect the members are co-signers under the joint liability contract. Joint liability contracts are instrumental in resolving information asymmetry problems by: (i) providing a screening mechanism for borrowers, thus separating them into different risk types (Van Tassel, 1999; Ghatak, 1997). Borrowers have more information on the creditworthiness of their fellow members, so the joint liability contracts induce endogenous group formation and self-selection among borrowers, hence low risk borrowers choose to group together so as to avoid the burden of paying for others in

case of default; (ii) inducing endogenous peer monitoring thereby minimizing the moral hazard problems in borrower investment choices (Stiglitz, 1990); (iii) providing a mechanism for enforcement of repayment, hence controlling willful default due to fear of embarrassment/pressure from members (Besley and Coate, 1995; Conning, 1999); (iv) reducing transaction costs to the lenders (Conlin, 1999); (v) acting as insurance to other members in case their projects fail (Coleman, 1999); and (vi) providing an incentive for members to transfer skills to their peers to ensure that their projects succeed and pay back the loans (Varian, 1990).

Joint liability contracts also promote group homogeneity, which plays a critical role in enhancing high repayment performance of group lending programmes. However evidence by Paxton et al (2000) based on 140 lending groups in Burkina Faso suggested that group homogeneity[4] and peer pressure[5] have a positive but insignificant effect on loan repayment behaviour. Group homogeneity was expected to enhance group solidarity such that members may opt to pay on behalf of their fellow members who experience some repayment difficulties. The statistical insignificance of the homogeneity index was explained by the existence of covariant risk, which affects the members' joint repayment ability because of their involvement in similar activities and facing the same exogenous shocks (such as production and price shocks). For example if the members of the group are involved in the agricultural production of a similar crop which is affected by pests, all the members may default because they are all affected by the same natural hazard. Peer pressure on the other hand was expected to reinforce the individual members' willingness to repay the loans for fear of embarrassment or evoking the anger of group members. The insignificance of the

[4] *The homogeneity index was a summation of nine binary variables (1=Yes, 0=No) relating to the socio-economic characteristics of each group. The index captured whether the members were of the same ethnic group, gender, age, income level, participated in same economic activities, lived in the same neighbourhood.*

[5] *The peer pressure index was constructed ranging from zero (no anger and no action taken against the member who has defaulted in loan repayment) to four (members angry with defaulter and took some form of action).*

peer pressure variable in the Paxton et al (2000) model was explained by the fact that the people attached greater value to village social harmony than continued access to loans. For this reason no serious action was taken against defaulters by fellow group members as the loan in default was perceived to belong to an organization external to the community. The feeling they had was that there was no need to antagonize fellow community members with whom they shared their daily life.

The interlinked credit contract, another collateral substitute, is where a credit transaction involves interdependent exchanges in two or more markets (such as product, labour, land) which are simultaneously agreed upon (Basu, 1983). For example, a landlord lends to workers on condition they provide him labour at predetermined wage rates over a period of time (interlinkage between the credit and labour markets), a trader/money lender extends credit to farmers on condition they market their output through him (interlinkage between the credit and product market) or credit granted on condition the borrower assigns land user rights to the lender (interlinkage between credit and land market). Interlinked credit transactions arose because of potential default risks and hence the need for markets to get interlocked so as to provide insurance against such risks. Interlinked credit transactions not only act as collateral substitutes but also explain the existence of factor price differentials in different market segments.

Basu (1983) argued that informal financial markets are characterized by monopolistic competition. For example, for credit contracts interlinked to the labour market, different landlords can charge different interest rates to their clients and pay different wages but the workers will have no incentive to migrate from one landlord to another in search of cheaper credit due to the existence of transfer costs. On the other hand for credit contracts

interlinked to the product market, moneylenders can offer farmers different combinations of interest rates for loans and prices of output marketed through them.

The structuralist hypothesis concludes that informal lenders have sizable comparative advantages over the formal lenders in engaging in small-scale credit transactions on account of their lower transaction costs and effective risk management. These include use of interlinked credit contracts, joint liability contracts, personal knowledge of their borrowers for effective assessment of risk and debt repayment capacity. This explains the emergence and co-existence of the formal and informal financial sectors because they have different cost structures and market niches (Hoff and Stiglitz, 1990; Aryeetey, 1994).

3.3 The Policy of Interlinkage of Formal and Informal Financial Sectors

The policy implication from the structuralist analysis is that financial dualism may be reduced through promotion of linkages between the formal and informal financial sectors (Schirmeister and Nadler, 1996; Aryeetey and Nissanke, 1998). The promotion of linkages can be through banking arrangements where informal lenders deposit mobilized savings with banks, and/or banks lend to informal lenders for on-lending to their clients. The informal agents' bank deposits may act as collateral for any borrowing (Jones et al, 1998:105). The other policy option is for the formal banks to adopt the lending practices of informal lenders so as to serve the smaller borrowers. These include simplification of bank structures and procedures, provision of appropriate financial services that meet the needs of the poor (such as small loans, flexible repayment schedules, consumption and production loans), use of alternative collateral arrangements (household chattels, joint liability contracts), and use of informal agents as representatives of formal banks to take advantage of their lower transaction costs and personal contact with the clients. It is hoped that increased access to formal financial services by the poor will in the long run lead to a

diminishing of the informal financial sector (Germidis, 1990). The institutionalization of the informal financial sector through the development of a regulatory framework that allows licensed informal agents to mobilize public savings is critical in strengthening the linkages between the two sectors. However the institutionalization process has to follow a financial systems development approach (Aryeetey and Nissanke, 1998: 118). An example of Uganda's regulatory framework for the microfinance sector is discussed in section 4.3.4.4.

The development of the social insurance sector is also viewed to be a key strategy in strengthening the formal and informal financial sector linkages. The presence of spontaneous savings associations (e.g. savings clubs) is a reflection of the need for social insurance among the poor, as existing insurance schemes are not accessible to them. In most developing countries, old age insurance schemes are for those in salaried employment, thus leaving the rural people with no recourse. It is argued that the development of a social security system or social insurance will act as a substitute for the spontaneous informal savings associations and will generate stable savings that can be allocated to long-term investment. The long run effect will be a reduction of the significance of the informal financial sector. The argument for demanding informal credit as an alternative for insurance products is further discussed in section 5.2.3.

3.4 Types and Characteristic Features of Informal Financial Institutions

The informal financial sector markets comprise of friends/relatives, moneylenders, ROSCAs, landlords, savings and credit co-operative societies (Yadav et al, 1992:423) and microfinance institutions (Aryeetey and Nissanke, 1998:117). The various informal financial sector markets have unique features depending on the degree of their engagement in resource mobilization and resource allocation, the products offered and the terms of

contracts (Fernando, 1988). The contract terms vary from interest free credit, subsidized interest rates, and market interest rates.

3.4.1 Friends and Relatives

The friends and relatives market is characterized by occasional lending using own surplus funds (Montiel et al, 1993:11). The implication here is that the relatives and friends do not engage in lending activities on a full time basis. The terms of contract in the friends and relatives market is usually characterized by interest free and collateral free loans, which explain the importance of social relationships in that market. The friends and relatives value more the continuation of existing social relationships and/or strengthening them further. In rural societies where a number of activities are characterized by reciprocity, provision of interest free loans by friends and relatives may be interpreted as an attempt to establish reciprocal obligations on which they can draw in future times of need. The interest free loans therefore constitute part of a complex social system of spreading risk, as the lenders are also potential borrowers from the same friends or relatives to whom they lent free of interest in the past. Though the nominal rate of interest on such loans is zero, the real rate of interest may be negative depending on the rate of inflation during the period of the loan. Evidence by Mohieldin and Wright (2000:661) suggested that in Egypt, 90.6% of the credit from friends, relatives and neighbours was implicitly and explicitly interest free. In addition 92.6% of all the informal credit was collateral free.

The credit from the friends and relatives market is mainly used for smoothing consumption and for small business loans. The consumption smoothing requirements arise due to income uncertainty and variability especially in agrarian economies that are subject to production and price shocks. The consumption requirements may include durable goods purchases,

education, and marriage. The strong social relationships in the friends and relatives market ensure that transaction costs and default risks are minimal.

3.4.2 Moneylenders

The moneylenders market is comprised of pawnbrokers, landlords, traders and private finance companies (Terasnishi, 1994:316). The source of funds that they use for lending activities may either be own funds or borrowed funds from either the formal or informal financial markets. The credit contracts in the professional moneylenders market are characterized by market interest rates which are generally higher than formal sector interest rates.

Credit is rationally allocated to clients in this market based on risk perceptions and past performance. The moneylenders have an informational advantage, which gives them a monopolistic position in the market. This enables them to minimize transaction costs, default risk and earn rents on the information they possess (see section 3.2.2).

Another common feature in the moneylender market is interlinked credit contracts, which also reinforces their monopolistic position. The pawnbrokers lend against household valuables (such as jewellery, gold chains) or assets to minimize default risk. Evidence by Bagachwa (1995:29) suggested a high level of interlinked credit transactions in the informal financial sector in Tanzania: 86% of the total volume of credit extended by rural moneylenders, 87% of all credit from trader-moneylender, 71% of credit from landlords. Nagarajan et al (1998:356) noted that 92% of the observed credit contracts in the Philippine credit market were from the moneylenders (mainly traders and farmer lenders). The informal credit contracts were characterized by interlinkage to the product, labour and/or

land markets so as to overcome the adverse selection and moral hazard problems due to asymmetric information.

Private finance companies mobilize resources for intermediation through a shareholding or equity arrangement. The clients buy shares from the company, and the pooled resources constitute a revolving fund that will be used by the company to extend loans both to the members and non-members. The credit contract terms are purely market interest rates, commensurate enough to give a good return to the shareholders (Montiel et al, 1993). The private finance companies emerged as a market response to the desire by economic agents to invest their surplus funds at market determined interest rates. This was particularly true for economies with controlled formal sector interest rates coupled with high inflation rates.

3.4.3 Rotating Savings and Credit Associations (ROSCAs)

ROSCAs and Accumulated Savings and Credit Associations (ASCRAs) markets are key components of the rural financial markets (Bouman, 1995:372). ROSCAs are voluntary and autonomous institutions that are created with unique objectives, rules and organizational patterns. These are self-regulating groups that may be set up for social or economic purposes. The ROSCAs are argued to create long–lasting economic relationships to enable the members to develop their businesses, withstand economic hardships more effectively and plan for their old age/retirement. The high participation rate of adults in ROSCAs (for example between 50% - 95% in the Republic of Congo, Cameroon, and Gambia) is testimony to the importance of this informal institution. In addition, savings mobilized through ROSCAs account for approximately 8% -10% of GDP in Ethiopia and about 50% of total savings in India.

The homogeneity of participants of the ROSCA in terms of socio-economic status is also a distinguishing feature. The participants may be involved in the same economic activity, income group or residential area. This homogeneity ensures that members have adequate information on one another that helps in the self-selection of members to minimize default risk and transaction costs. Empirical evidence of the homogeneity of ROSCAs was presented by Bagachwa (1995) who in a survey of 49 ROSCAs in Tanzania found that 33% were formed from employment relationships, 20% from geographical proximity, 13% from friendships and 20% from shared housing arrangements.

The ROSCAs undertake financial intermediation through mobilization of savings and credit allocation. The resource mobilization mechanism takes the form of regular pooling of savings from the members. The credit allocation mechanism is mainly by lottery, where credit is allocated to the members on a rotational basis until each person has had a turn. The advantage of ROSCAs is that it enables members to have quick access to a large sum of money than when saving individually. The credit contract may either be interest free or market interest depending on the set rules of the group. Even in the case of interest free contracts, implicit interest rate is paid by the members in form of foregone interest on pooled savings deposits over time as one waits for the turn.

The Savings and Credit Associations (ASCRAs) have many similarities with ROSCAs. The distinguishing features of ASCRAs are that the pooled savings are used as a revolving loan fund and the credit allocation mechanism is mainly through the bidding process, where the highest bidder takes the money. The credit contracts in ASCRAs are characterized by charging market interest rates. Evidence by Bouman (1995:375) suggested that ASCRAs charge interest rates in the range of 5 – 10% per month. The membership of the ASCRAs is more heterogeneous with open participation of both the poor and rich.

3.4.4 Savings and Credit Co-operative Societies and Unions

The savings and credit co-operative societies and unions is a variant of the ROSCAs, which are registered and governed by legislation such as the co-operatives acts, though generally not regulated by central banks (Soyibo, 1994:14). The savings and credit co-operative are basically membership organizations that operate share capital and deposit accounts. The mobilized savings constitute a significant proportion of their source of funds for lending. Savings and credit co-operatives are the shareholders of credit unions, which act as precursors to peoples' banks. Credit unions usually link small savers with commercial banks to earn interest on union deposits. They may also use the savings of the union as collateral to obtain loans for on-lending to the members. The screening and lending mechanisms of savings and credit co-operatives is such that credit is linked to the member's savings. This enhances the low screening and transaction costs incurred by these informal institutions. Estimates by Soyibo (1994:46) based on savings and credit co-operatives in Nigeria suggested that the screening costs were about 0.5% of the loan amount, while the loan monitoring costs were about 0.1% of the loan amount. The interest rate charged by the savings and credit co-operatives is generally lower than other informal lenders. Estimates by Bagachwa (1995:35) suggested that savings and credit co-operatives in Tanzania charged monthly interest rates of 2.5% as compared to other informal lenders that charged between 5% - 9% per month.

3.4.5 Microfinance Institutions (MFIs)

The Microfinance Institutions (MFIs) market is a new generation of informal financial institutions providing specialized financial services to small borrowers (Aryeetey and Nissanke, 1998:117). In the economic regulation era, credit granting Non-Government Organizations (NGOs) emerged and were used by donors to channel subsidized credit to the

poor for poverty alleviation. The credit granting NGOs were also involved in development work. Over time there was a shift in donors' focus to the financial sustainability of the credit granting NGOs as a strategy for sustainable access to financial services by the poor, which led to the emergence of specialized microfinance institutions (MFIs) providing only financial services. Some of these MFIs developed into regulated banks (such Grameen Bank in Bangladesh, BancoSol in Bolivia, and Bank Rakyat in Indonesia), while some MFIs remained in the unregulated category (such as Foundation for International Community Assistance [FINCA]). The MFIs were perceived to be a "win-win" situation where both financial institutions and poor clients would benefit (Morduch, 1999:1570). The thinking was that it was a profitable business to lend to the poor despite the high transaction costs and lack of collateral. The MFIs were combining the attributes of both pure commercial banking (profit making) and the social mission of poverty alleviation. This thinking captured the attention of both the socialists and the capitalists. The socialist advocates of microfinance stress such attributes as the "bottom – up" approach, being community based, focus on the disadvantaged persons especially women, and use of social capital. The capitalists on the other hand were fascinated by microfinance because it provides prospects for poverty alleviation while providing incentives to the poor to work as opposed to previous subsidized credit programmes which created dependency syndromes with no incentives to work. In addition the capitalists stressed the use of market determined interest rates by MFIs.

Following the arguments of Rhyne and Otero (1992) that sustainable poverty alleviation can only be realized if the lender institutions are financially sustainable, these MFIs have developed unique characteristic features based on the financial systems approach. These include targeting clients excluded from the formal financial sector, charging market interest rates, use of group lending techniques, dynamic incentives, regular repayment schedules and

integration of rural savings mobilization as a strategy to improve resource allocation (Morduch, 1999:1579).

The target group of the MFIs are predominantly those among the poor who are perceived by banks to be risky borrowers due to lack of credible collateral. However the degree to which the MFIs serve the poorest of the poor varies, with some programs like BancoSol targeting the richest of the poor. The charging of market interest rates by MFIs is primarily geared to attainment of financial sustainability. BancoSol is reported to be charging interest rates of 48% p.a. in an economy with inflation rate of less than 5% p.a. Grameen Bank charged interest rates of 20% p.a. as opposed to the full cost recovery rates of 32% p.a., while FINCA charged 4% per month. The success in the attainment of the financial sustainability goal has been mixed across different MFIs. While programs like BancoSol and Bank Rakyat are reported to be financially sustainable, the majority of the MFIs worldwide are just making progress towards that goal (Morduch, 1999).

The use of group lending techniques as a trademark in most MFIs is intended to harness the local information through the self-selection process of the members so as to eliminate high-risk borrowers. This group lending methodology, which effectively makes the members co-signers of the loan, gives incentives for peer monitoring which simultaneously results in lower transaction costs and high repayment rates for the MFIs. Different MFIs have innovated different modes of group lending. While some use the Grameen Bank model of lending only to a proportion of group members at a time while conditioning disbursement to other members of the group to the performance of those who had received the loan earlier, other programs like BancoSol disburse to all the members simultaneously (Morduch, 1999).

The use of dynamic incentives is another unique feature of MFIs (Braverman and Guasch, 1986:1260). Dynamic incentives is a lending methodology where MFIs start off by giving clients small loan amounts which will then be progressively increased over time subject to the clients' loan repayment performance. It is argued that progressive lending limits enable the MFIs to develop relationships with clients over time and to screen out the worst cases before the loan amounts become too big. Braverman and Guasch (1986) pointed out the shortfalls of dynamic incentives. Firstly, if the lending relationship has a finite end, that is the borrower knows the maximum loan amount that can ever be got from the MFI, then this may act as an incentive to default in the final period. In such a scenario the MFIs will suffer huge amounts of default. Secondly, competition among MFIs may diminish the power of dynamic incentives. This is particularly true when MFIs struggling to increase their outreach end by lending to the same clients who have accessed credit from other MFIs. Thirdly, dynamic incentives may work more effectively in rural areas where there is limited mobility among the clients. In urban areas where there is high mobility, it becomes difficult to trace the clients who change their rented premises and can easily shift to borrow from other MFIs. Fourthly, the dynamic incentives may be more effective among women who have limited borrowing alternatives. Despite these shortfalls, dynamic incentives have made a significant contribution to high repayment rates of MFIs.

The use of regular repayment schedules is also a unique lending technology peculiar to MFIs (Park and Ren, 2001:58). The repayment schedules usually range from weekly to bi-weekly. The rationale for the regular repayment schedules is to screen out undisciplined borrowers. In addition it also provides early warning signals to the MFIs and the peer group members of any emerging default problems so as to take timely action. It is also argued that it conditions households to have a diversified income base to service the loans.

The MFIs mainly use compulsory savings as part of the lending methodology. The compulsory savings is a proportion of the loan amount, which is deposited with the MFI upfront. These compulsory savings will not be accessible to the clients until the loan amounts are fully repaid. Recent development thinking on microfinance argues that the poor can save and all they need are conveniently located facilities, flexible savings instruments and positive returns. The new thinking emphasizes that MFIs should fully integrate savings into their operations so as to enhance their sustainability and also develop the households. From the institutional point of view, savings mobilization will create a cheap source of funds for on-lending. It also creates a natural pool of clients, as today's savers will be future borrowers. The savings operations therefore facilitate development of strong relationships between clients and the institutions. From the point of view of clients, savings operations give them opportunities to build up their own capital that can be used to finance business expansion instead of continuously borrowing. Through savings, the clients can also build up an asset base that can be used as collateral for borrowing from the formal sector when they need bigger loan amounts than those provided by MFIs. The households also get an opportunity to save for future consumption.

3.5 Conclusion

The main goal of this chapter was to examine why informal financial markets exist, the key characteristic features of the different informal financial institutions, and how these relate to the current study.

The theoretical framework for the emergence and co-existence of the informal financial sector is provided by two competing schools of thought: the financial repression hypothesis (McKinnon, 1973; Shaw, 1973), and the structuralist hypothesis (Hoff and Stiglitz, 1990). According to the financial repression hypothesis, the informal financial sector emerged due

to the excess regulation of the formal financial sector through policies like controlled interest rates, high reserve requirements and sectoral allocation of credit. The effect of these repressive policies was the creation of excess credit demand for formal credit and the use of non-price mechanisms to ration credit. As a result those rationed out had to satisfy their credit requirements in the informal financial sector at very high interest rates. The conclusion of the repression hypothesis was that the liberalization of the formal financial sector would result in a transfer of resources from the informal to the formal financial sector, and consequently a wiping out of the informal financial sector.

The structuralist hypothesis however argued that the informal financial sector exists on the basis of the cost structure that has led to segmentation of the credit market. Informal lenders have developed cost effective methods of delivering small credit and overcoming the information asymmetry problems prevalent in rural credit markets as compared to the formal lenders. The conclusion was that the informal sector can not be wiped out by liberalization of the formal sector, hence linkages should be developed between the two sectors as they serve different market segments. The view of this study is that the structuralist hypothesis more accurately explains the observed phenomenon of the co-existence of formal and informal financial sectors in LDCs.

The continued existence of the informal financial sector demonstrates the fact that it plays an important role in providing financial services to economic agents who do not have access to the formal financial sector. The demand for informal financial services is influenced by household socio-economic characteristics and other factors, which are to be investigated by this study. The informal financial sector institutions have also developed mechanisms for screening borrowers (by use of information collected on borrowers) and the use of collateral substitutes (such as joint liability contracts and interlinked credit contacts) to minimize the

default risk. This function is consistent with the role played by the broader financial sector in analyzing potential investment projects so as to increase the efficiency of investment as previously discussed in section 2.4.2.2. These unique mechanisms also define informal lenders' response to the borrowers' loan demand, thus influencing their credit rationing behaviour. The current study also seeks to investigate the specific factors that influence the informal lenders' credit rationing behaviour in Uganda. The next chapter examines the structure of Uganda's financial sector.

CHAPTER 4: UGANDA'S FINANCIAL SECTOR

4.1 Introduction

The purpose of this chapter is to relate all the literature so far reviewed to the developments in the Ugandan financial sector and how it fits into the important question of credit demand and credit rationing in the informal financial sector. A number of conclusions have so far been derived from the literature review. First, the financial sector (broadly defined to include the formal and informal financial sectors) plays an important role in the mobilization and allocation of resources to promote economic growth, mainly through the channels of the volume of investment and the efficiency of investment. Secondly, two different policy regimes have been implemented in LDCs in the quest to promote economic growth, which had implications for the informal financial sector. The policy regimes comprised of economic regulation with non-market oriented policy instruments, and liberalization policies which emphasized the use of market-oriented financial and monetary policy instruments. Thirdly, the informal financial sector co-exists alongside its formal counterpart, hence the need for interlinkages to broaden the financial sector. Fourthly, financial regulation is important to maintain the stability of the financial sector and for consumer protection. Fifthly, informal financial institutions use cost effective techniques in the delivery of credit in small amounts, which includes among others the use of collateral substitutes (such as joint liability contracts and interlinked credit contracts).

The rest of the chapter is organized as follows: section 4.2 gives an overview of the structure of Uganda's financial sector, section 4.3 discusses the performance of Uganda's financial sector over the various policy regimes including regulatory frameworks, and section 4.4 concludes.

4.2 The Structure of Uganda's Financial Sector

Uganda's financial system comprises of the formal and informal financial sectors. The formal financial sector comprises the Bank of Uganda (Central Bank), 18 commercial banks, 7 credit institutions, 3 development banks, 26 insurance companies, one leasing company and one National Social Security Fund (Katimbo-Mugwanya, 1999:20). The informal financial sector includes relatives and friends, moneylenders, co-operative savings and credit societies, rotating savings and credit associations, community based organizations and non-government organizations (Wamasembe, 2001:14). While the formal financial sector is regulated under the Financial Institutions Statute of 1993 (which regulates banks, credit institutions, and insurance companies), the informal financial sector has largely been unregulated until the recent enactment of the Microfinance Deposit-taking Institutions Act, 2003. Only the deposit-taking microfinance institutions will be regulated under the MDI Act (2003), while the non-deposit institutions will be self-regulated under an industry-based umbrella organization.

4.3 The Performance of Uganda's Financial System

The performance of Uganda's financial system will be discussed in the context of two distinctive policy regimes: non-market oriented financial and monetary policies (economic regulation, 1962 – 1986), and market oriented financial and monetary policies (financial sector reforms, 1987 – 2004), and the implications of the two policy regimes for the informal financial sector will be spelled out.

4.3.1 Uganda's Financial Sector in the Economic Regulation Period

The period 1962 – 1986 was characterized by non-market oriented financial and monetary policy regimes. The policies that government adopted included the creation and

management of public sector banks (for example Uganda Commercial Bank), control of interest rates (both deposit and lending interest rates), credit allocation to priority sectors, partial nationalization of foreign banks and control of foreign exchange rates.

Bategeka (1999a: 9) argued that the financial sector was highly directed with administratively fixed interest rates and credit allocation that compromised the resource mobilization and allocation efficiency of the financial system. The non-market oriented financial and monetary policies created inefficiencies within the financial system.

The weak financial state of the public sector banks led the Central Bank to compromise on its function of effective conduct of monetary policy, which partly contributed to inflationary pressures experienced in the economy. The public sector banks relied on Bank of Uganda for liquidity support, leading to more money being put into circulation. The easy access to liquidity support by public sector banks from the Central Bank diminished any incentives to improve performance. The Banking Act of 1969 also undermined the authority of Bank of Uganda by the requirement to consult the Minister of Finance on key policy issues such as prudential matters and licensing of banks. The financial sector was therefore very weak and unable to efficiently perform its desired functions of resource mobilization and allocation.

Muwanga (2000) further argued that the weak internal control systems of banks, coupled with the weak supervisory function of Bank of Uganda, led to unprecedented malpractices such as excessive insider lending, lending without adequate collateral, fraud and forgery. The local banks were therefore weak and grossly undercapitalized, as the capitalization levels stipulated by the Banking Act of 1969 had been eroded by inflation. It was in the spirit of addressing these weaknesses in the banking systems worldwide that the Basel

Accord of 1988 (referred to in section 2.5.4.2) was designed. The specific capital adequacy requirements that were adopted in Uganda are discussed in section 4.3.2.

The informal financial sector institutions that existed in the economic regulation period were mainly the relatives/friends, moneylenders, savings and credit associations/co-operatives, and credit granting NGOs. The co-operative savings and credit societies/unions were governed by the Co-operative Act of 1964, but not supervised by the Central Bank, while no law governed the other categories of informal financial institutions. The powers of registration and supervision of the co-operative institutions lay with the Minister of Co-operatives and Marketing. The co-operative savings and credit societies/unions provided financial services to their members at controlled interest rates. The co-operatives sector was also characterized by mismanagement and corruption that led to its collapse in the late 1990's (Wamasembe, 2001). The co-operative savings and credit societies mainly mobilized resources for lending operations from their members. The credit granting NGOs emerged as a response to the donors' desire to have alternative institutions to channel development finance directly to the beneficiaries (discussed further in section 4.3.4.1).

4.3.2 The Financial Sector Reforms

As stated earlier, government interference in financial markets sparked off a debate in the 1970's championed by McKinnon (1973) and Shaw (1973) who argued that these policies were repressive and a disincentive to savings with negative effects on long-run economic growth. The policy advice based on the McKinnon-Shaw school of thought was the adoption of market oriented financial and monetary policies, which entailed the liberalization of the financial sector. This new thinking greatly influenced the design of Structural Adjustment Programmes (SAPs) sponsored by the International Monetary Fund (IMF) and the World Bank. The financial sector reforms were part of the broader SAPs initiated in Uganda in

1987 under the Economic Recovery Program (ERP). The objective of ERP was to remove all distortions within the economy so as to enhance market forces in the mobilization and allocation of resources (Bategeka, 1999a: 6).

The financial sector reforms that were introduced in 1991 and funded under the Financial Sector Adjustment Credit (FSAC) had three critical components which included the review of the Banking Act of 1969, institutional reforms and financial sector liberalization (Tumusiime-Mutebile (2001, Muwanga, 2000).

4.3.2.1 Review of the Banking Act, 1969

The Banking Act of 1969 stipulated very low capitalization levels for financial institutions and their capitalization levels were furthermore eroded by high inflation. The Banking Act of 1969 had also invested a lot of powers in the Minister of Finance to decide on key issues regarding prudential regulation of financial institutions, thereby denying the Central Bank of much needed autonomy in the conduct of monetary policy.

As a result of the review of the Banking Act of 1969, two new statutes were passed in 1993: the Financial Institutions Statute (FIS) and the Bank of Uganda (BOU) Act, both of 1993 (Government of Uganda, 1993). The Bank of Uganda Act (1993) gave the Central Bank the powers to discipline financial institutions that flout the law or its prudential regulations and/or become insolvent. It is as a result of this new mandate that the Bank of Uganda used its powers in the resolution of failed banks such as International Credit Bank, Greenland Bank and Co-operative Bank. The Financial Institutions Statute (FIS 1993) also gave BOU more independence in the licensing and regulation of financial institutions, and in issuing prudential regulations related to capital adequacy, liquidity and reporting requirements.

The FIS (1993) stipulated capital adequacy requirements for financial institutions which were consistent with the minimum standards spelled out in the Basle Accord of 1988 (discussed in section 2.5.4.2), and reflected the country's specific risks. Under the Basle Accord of 1988, each country was free to fix their capital adequacy ratios, but subject to the minimum standards and the severity of financial instability concerns. In the case of Uganda, minimum capital requirements were set as follows: Foreign Commercial banks Shs1 billion; Local Commercial banks Shs0.5 billion; Non-bank financial intermediaries Shs0.3 billion. In addition there was the on-going capital reserve requirement that was equivalent to 10% of the risk-weighted assets. In January 2000 Bank of Uganda, through the Statutory Capital adequacy instrument, raised the minimum capital requirements to Shs2 billion for all commercial banks (and 4 billion by 2003) and Shs1 billion for all other financial institutions. The rationale for the enhanced capital adequacy requirement was to give appropriate incentives to the owners of financial institutions to undertake prudent management so as to minimize costly bank failures. In addition the enhanced capital adequacy requirements would provide a cushion for banks to absorb any losses commensurate with the risks and safeguard depositors' funds. Higher minimum capital requirements would also discourage entrance into the financial sector by entities with a weak financial base (Tumusiime-Mutebile, 2001).

4.3.2.2 Institutional Reforms

The institutional reforms focused on two components, namely restructuring the Bank of Uganda to strengthen the supervision function and divestiture of the Public Sector Commercial banks (Tumusiime–Mutebile, 2002:8). The strengthening of the supervisory function of the Central Bank was intended to ensure commercial banks' compliance with the

law and to minimize bank failures that emanate from internal mismanagement of financial institutions. The prudential regulatory function of Bank of Uganda focused on proper categorization of financial assets (especially the loan portfolio) and loan loss provisioning to avoid misrepresentations in financial statements, adequate disclosure of financial information (by ensuring that financial statements are prepared in accordance with international accounting standards), governance and management issues (by ensuring that the shareholders of a bank are not from one family or merely one person as was the case with defunct International Credit Bank and also ensuring that Senior Managers are technically competent), internal control systems (to curb financial malpractices like insider lending, credit concentration), timely intervention and resolution of failed banks .

The divestiture of government interests in public sector commercial banks was intended to reduce government interference in the management of financial institutions. As pointed out earlier, government involvement in management of loss making public sector banks with huge non-performing assets was disastrous to the development of an efficient financial sector. Uganda Commercial Bank (UCB) was divested to a strategic investor, Standard Bank Investments Corporation (Stanbic) of South Africa, in February 2002. The residual role of government was to provide a conducive environment for the efficient functioning of the financial sector through an appropriate regulatory framework (Tumusiime–Mutebile, 2002).

4.3.2.3 Financial Sector Liberalization

The financial liberalization component included the decontrol of interest and foreign exchange rates, abolition of the credit allocation system and any forms of financial repression. Liberalizing interest rates and foreign exchange rates was systematic and gradual. The first stage of the interest rate liberalization process was the indexation of

interest rates to the Treasury Bill (TB) rate. The Treasury Bill (TB) market was introduced in 1992 and lending and bank deposit rates were linked to the 91-day TB rate. The time deposit rates were subject to minimum limits and lending rates to agriculture were subject to a ceiling.

The major instrument that BOU used for the conduct of monetary policy was the Treasury Bill (TB), with commercial banks being major players in the TB market. Bank of Uganda also adopted the Reserve Money Programme (RMP) in 1993 as a tool to guide monetary policy. Under the RMP, a desired path of money supply was determined at the beginning of the financial year, and intervention in the market would be undertaken to minimize the deviations of liquidity levels from the desired path. If the money supply level exceeded the desired path (for example through increased donor inflows), the BOU would mop up the excess liquidity through Open Market Operations using the Treasury Bill instrument, thereby averting inflationary pressures. The reverse action would be undertaken in the event of the money supply level being lower than the desired path. In 1996 BOU developed its own instrument, the BOU Bill, to support the Treasury Bill in the implementation of monetary policy. BOU also institutionalized a Central Depository System (CDS) and a Repurchase Agreement Market (REPO) to facilitate secondary trading and flexible open market operations. The resultant effect of these policy measures was control of the rate of inflation that supported macro-economic stability.

However the net effect of the reliance on the Treasury Bill (TB) as an instrument of monetary policy was high domestic interest rates and the crowding out of private sector credit. The crowding out of private sector credit arose because the commercial banks that participated in the TB market found it more lucrative to invest in TBs rather than lend to the private sector due to low default risks and transaction costs. The rapid expansion of the

informal financial sector in Uganda following the liberalization of the formal financial sector may be partly explained by the crowding out effect due to the use of the TB as a key instrument in the conduct of monetary policy.

The fixed foreign exchange rate system was abolished and replaced by the inter-bank market that was created in 1993 to which the exchange rates were linked. Under the inter-bank market arrangement, it was only the banks that participated in the foreign exchange market, where the exchange rate was determined by forces of demand and supply. The interest rates and exchange rates were fully liberalized in 1994 and all restrictions on commercial bank operations (such as credit allocations) were eliminated. Government borrowing from the banking sector also witnessed a downward trend. The financial sector liberalization also involved the liberalization of the current and capital accounts of the balance of payments, which enabled Uganda to attain "*Article 8 status of the IMF.... Convertibility of the Uganda Shillings is fully guaranteed*" (Bategeka, 1999b: 13).

However, the BOU had to regularly intervene in the foreign exchange market to minimize the high exchange rate variability that emerged from speculative activities. In addition, the intervention in foreign exchange markets was done as part of monetary policy management policy to mop up excess liquidity created by Government spending. Government received donor budget support in foreign currency, which averaged 10% of GDP in the 1990's and rose to about 13% of GDP for the period 2001/2 to 2003/4. This support was mainly from the debt relief funds under the Highly Indebted Poor Countries (HIPC) and Enhanced Highly Indebted Poor Countries (EHIPC) initiatives for poverty reduction programs. These large external aid inflows increased money supply beyond money demand levels, hence BOU had to intervene in the foreign exchange market to sterilize the effects of excess money supply (Muwanga, 2000).

4.3.3 The Challenges in the Financial Sector in the Post- Reform Period

The key challenges in the financial sector after liberalization included among others the high intermediation margins, low savings rates, and inefficiencies in the payment system.

4.3.3.1 High Intermediation Margins

High intermediation margins[6] continue to characterize Uganda's financial system, despite liberalization. As can be seen from Appendix 2, average intermediation margins rose from 6% in the economic regulation period to 10% in the post-liberalization period. As earlier pointed out, one of the cardinal objectives of the financial sector reforms was to improve the efficiency of financial markets through the liberalization of interest rates. The expectation was that liberalization would lead to a reduction in the intermediation margins due to increased competition and efficiency within the financial system. In the first instance, the removal of interest rate controls was expected to enable financial intermediaries to charge market lending rates which would increase their profitability and capacity to pay higher deposit rates to savers. Secondly the removal of barriers to entry to the banking sector were also expected to lead to increased competition within the banking sector which would result in financial institutions striving to improve the efficiency of their operations to survive the stiff competition. The expected result was a reduction in the lending interest rates in a bid to attract more business and an increase in the deposit rates so as to attract more deposits, thereby leading to a reduction in the intermediation margins.

Tumusiime- Mutebile (2002) argued that the high intermediation margins are structural in nature, especially as a result of the accumulation of large non-performing assets by banks in the 1980's, where the high lending rates were geared to cover those losses. However a

[6] *Intermediation margin is defined as the difference between the bank lending rates (for loans/overdrafts) and the deposit rates paid to savers.*

number of policy measures have already been undertaken to address the high costs of intermediation which include: strengthening of the legal system to improve the loan recovery rates and reduce forgeries and fraud, establishment of a credit reference bureau at the Uganda Institute of Bankers, mandatory publicizing of all charges and interest rates by Commercial banks (to remove information asymmetries between banks and their clients, and to shape up rational business expectations to enhance efficiency and transparency in the financial system), strengthening the supervision and regulation of the banking system, and reducing the bulk of government domestic arrears that has negatively impacted on lending to the private sector. The high lending rates constrain long-term productive investment, hence may stifle economic growth. To this end, it can be argued that Uganda's financial system is inefficient because of prevailing high intermediation margins.

Bategeka (1999a) further argued that the continued existence of high financial intermediation margins is accounted for by the high operational costs and limited competition within the banking sector. In an attempt to break-even, the banks are forced to maintain high lending rates. The existence of few financial intermediaries portrays oligopolistic tendencies within the financial system. The limited competition within the financial system acts as a disincentive to banks to improve their efficiency that can lead to a reduction in the financial intermediation margins.

4.3.3.2 Low Savings Rates

The commercial banks' deposits (demand and time deposits) as a proportion of GDP, rose marginally from 7% in the economic regulation period to 8% in the post-liberalization period, suggesting the existence of large cash transactions outside the banking system (see Appendix 2). This may be explained by some of the developments in the financial sector that may have hurt public confidence in the banking system, which include the conversion

tax levied during the currency reform of 1987, the collapse of some banks in the 1990's, and the urban bias in the location of commercial banks (Chemonges, 1999). The currency reform involved striking off two zeros plus a conversion tax of 30% on all financial assets (cash, bank deposits, and financial investments such as in Treasury Bills). For example, if someone had Shs1000 in old currency, he/she would get Shs7 in the new currency. The conversion tax, whose utilization was not adequately explained to the public, hurt confidence in the banking system.

The other incident that hurt public confidence in the banking system was the closure of insolvent banks as part of the financial sector reforms. Under the Deposit Insurance Scheme the Central Bank was under obligation to refund depositors up to Shs3 million per account, implying that those that had more than Shs3 million at the time of bank closure would lose the difference. For the initial batch of banks that were closed (such as Teefe Bank), the policy of refunding depositors' funds up to the maximum insured limit was strictly adhered to. But the government decision to refund 100% of depositors' funds for the three banks closed in 1998/99 (namely Co-operative Bank, Greenland Bank and International Credit Bank) may be seen as an attempt to restore public confidence in the banking system. This however cost the taxpayer over shs100 billion (approximately 1.2% of GDP in 1999/2000).

Most of the formal financial institutions are urban based, leaving the rural areas largely under-banked and under-served such that approximately 87% of the rural households do not have bank accounts (MFPED, 2000). The urban location of commercial banks makes the savings services inaccessible to the majority of the rural population.

4.3.3.3 Weaknesses in the Payment System

The payment system is viewed to be inefficient and underdeveloped. The weak legal and regulatory framework is argued to be among the main factors that constrain the development of an efficient payment system in Uganda (Chemonges, 1999; Mwebya, 2001). The laws governing the payment system in Uganda are not integrated in one instrument but spread across several laws. For example, the Bills of Exchange Act governs the usage of bills of exchange including cheques, while the Financial Institutions Statute governs the licensing, operations and supervision of all deposit-taking institutions. The other relevant laws include the Bank of Uganda Statute, the Capital Markets Authority Statute, the Evidence Act, the Penal Code section on false cheques, the Companies Act, the Bankruptcy Act, and the Deeds of Arrangement Act. As a result of the multiplicity of relevant laws, no single law governs the payment system (including modern payment technologies and payment cards) in the country. In addition, the bureaucratic and inefficient judicial system weakens the effective conflict resolution process and acts as a constraint to the development of an efficient payment system.

4.3.4 Implications of Different Policy Regimes on the Informal Financial Sector

The developments in the financial sector under the different policy regimes had a number of implications for the informal financial sector, including the emergence of credit granting NGOs, rapid expansion of the informal financial sector following liberalization of the formal financial sector, emergence of specialized MFIs, and development of a regulatory framework for deposit-taking microfinance institutions.

4.3.4.1 Emergence of Credit Granting NGOs

Economic regulation created inefficiencies within the financial system through mismanagement of public sector banks (state owned commercial banks and development banks) and high default risk. The public sector banks were grossly mismanaged as the managers were cronies of the political powers of the day and cared less about prudential management of their banks. The public sector banks made huge losses that were subsidized by the Treasury and had a high proportion of non-performing assets. The non-performing assets were the result of loans being given on political lines and not on a proper evaluation of the viability of the investment projects. The non-performing assets had to be transferred to a Non-Performing Assets Trust (NPART) for recovery (Tumusiime-Mutebile, 2000).

The implication of the poor performance of the public sector banks during the economic regulation period was the emergence of credit granting NGOs (mainly foreign NGOs operating in Uganda) as alternatives through which donors channeled development assistance directly to the poor. This is consistent with the observations made by Schoombee (1998) that NGOs (with commitment to social welfare goals, their non-profit orientation, their closeness to the community, and their high level of motivation) presented a viable alternative to development banks. These NGOs provided microfinance as part of the broader development programmes (such as health, education, advocacy) at subsidized interest rates.

4.3.4.2 Rapid Expansion of Microfinance Institutions

The financial repression hypothesis by McKinnon (1973) and Shaw (1973), referred to in section 3.2.1, had argued that the inefficient informal financial sector created through economic regulation would be wiped out through liberalization of the formal sector. However the observed rapid expansion of informal financial institutions following financial

sector liberalization in Uganda lends more credence to the structuralist hypothesis (Hoff and Stiglitz, 1990). The financial sector reforms (earlier discussed in section 4.3.2) resulted in the closure of failed banks and the divestiture of state-owned banks which left most of the rural areas unbanked. The re-structuring of UCB, for example, resulted in the closure of non-viable branches that were mainly located in the rural areas (Bategeka, 1999b: 14). The MFIs therefore emerged to fill the vacuum in financial service delivery created by financial sector reforms, especially in rural areas. While estimates by Katimbo-Mugwanya (1999) indicated that there were 79 registered MFIs in the late nineties, Ledgerwood et al (2002:21) indicated that there were about 500 MFIs by the early years of the new millenium. The difference in the two estimates may be accounted for by the registration status, where Ledgerwood et al (2002) includes all MFIs irrespective of whether they have any form of registration or not. Registration here refers to having a legal status by being registered as a company (limited by guarantee or shares), registered with the NGO Board or registered under the Co-operative Act. Some MFIs (for example Community–Based Organizations, church-based credit schemes) do not have any legal status.

According to Hannig and Bohnstedt (1999:24), the MFIs provide financial services especially to small and medium-scale enterprises (SMEs) owned by the poor, which MFPED (2001a) argues contributes to poverty alleviation. Microfinance has been argued to have evolved as an economic development approach intended to benefit low income people. This has been recognized in Uganda's Poverty Reduction Strategy Paper (PRSP), where the use of microfinance and other tools to enhance the capacity of the poor to engage in sustainable productive activities have been identified as a poverty reduction strategy.

4.3.4.3 Evolution of Specialized Microfinance Institutions

Liberalization of the financial sector in Uganda also led to the emergence of specialized microfinance institutions providing only financial services (savings and credit) as opposed to a myriad of development services. Following the arguments of Rhyne and Otero (1992), the focus of attention within the international donor community shifted to sustainability of microfinance institutions and using a market based approach in the delivery of services (for example, charging of market interest rates). The rationale was that sustainable institutions provide the poor with sustainable access to credit, thus contributing to poverty alleviation in the long run. The specialized MFIs that emerged on the Ugandan scene were either completely new entities (such as Uganda Women's Finance Trust, Foundation for International Community Assistance – FINCA) or institutions created from existing old NGOs involved in development work. An example of such is Micro Enterprise Development Network (MEDNET), which is subsidiary company incorporated by World Vision International to manage the credit programme, while the parent NGO continues with development work.

4.3.4.4 Regulatory Framework for the Microfinance Sector

The liberalization of the formal financial sector and the rapid expansion of the informal financial sector created the motivation to regulate the informal financial sector so as to maintain the stability of the financial system and to protect consumers (which arguments are similar to those referred to in section 2.5.1). Previously, MFIs operated outside the regulatory framework of the Financial Institutions Statute (FIS) [7] of 1993, though they provided both savings and credit services. Some MFIs were mobilizing client deposits either as part of their lending methodology (compulsory savings linked to loans) or for safe

[7] *The Financial Institutions Statute of 1993 regulates financial institutions that include Banks, Insurance firms and Credit Institutions in Uganda.*

custody that they kept on their bank accounts with commercial banks. Some MFIs were intermediating these public deposits contrary to the provisions of the FIS of 1993. Bank of Uganda (BOU) got concerned about the safety of these public savings, which concern was heightened by the commercial bank failures that had hit the financial system in the 1990's (Katimbo-Mugwanya, 1999; Hannig and Bohnstedt, 1999).

A consultative process was put in place to design the regulatory framework for the microfinance sector. The key players in the consultative process included Bank of Uganda (as the regulator of the financial system), microfinance practitioners, policy makers and development partners. The policy framework was designed with the overriding goal that microfinance must be run as a business and that the safety of public deposits must be guaranteed. For this reason, the critical issues that were covered in the microfinance policy included sustainability and outreach, capital adequacy requirements, liquidity requirements, ownership and governance (Bank of Uganda, 1999). The MDI[8] Act (2003) was subsequently enacted by parliament and promulgated into law in May 2003 (Government of Uganda, 2003).

The financial sustainability issue concerns the ability of the MFIs to sustain their operations from internally generated revenues. The argument for emphasis on financial sustainability is that it guarantees continuity of access to financial services by the poor. Of course financial sustainability actually is all about profitability, which is expected to have a number of positive effects on the development of the microfinance sector. First the more profitable the MFI operations, the higher will be the stake of the shareholders and the more they will take all actions to safeguard the collapse of such institutions. These range from design of policies and procedures that enhance the sustainability of the MFIs, hiring competent staff to manage

[8] *MDI refers to the Microfinance Deposit-Taking Institutions*

the MFIs, monitoring and supervising the senior management, and maintaining a high portfolio quality. Secondly since the licensed MFIs will be allowed to intermediate public deposits, the sustainability of the MFIs will ensure the safety of public deposits. The shareholders will take prudent decisions that will ensure the safety of public deposits. It should be noted that sustainability of MFIs is directly linked to the stability and broadening of the financial system. The act of deposit-taking entails accepting the risk that these public deposits can be lost either in the process of safekeeping or through intermediation. So the BOU policy clearly focused on the safety of these deposits through profitability of MFI operations to enhance the stability of the financial system.

The policy on adequate capitalization of MFIs also relates to the safety of public deposits. Because of the potential risk of loss of public deposits, the shareholders of the deposit-taking MFIs will be required to put up sufficient capital to be able to absorb any losses without encroaching on depositors' funds. The capital requirements will in addition act as an incentive to the owners of these institutions to prudentially manage the depositors' funds because they have a stake in the operations. It is argued that there is a positive relationship between capital requirements and sustainability of the financial institution. The MDI Act (2003) therefore stipulated the minimum paid up capital for deposit-taking MFIs to be shs500 million to be invested in liquid assets in Uganda approved by the Bank of Uganda. In addition, there are provisions for on-going capital requirements that are based on risk-weighted assets. The core capital adequacy ratio must at any point not be less than fifteen per cent of the risk-weighted assets, while the total capital adequacy ratio must not be less than twenty per cent of the risk-weighted assets.

The liquidity requirements policy was based on the rationale that failure to have adequate liquidity could threaten the stability of deposit-taking MFIs. This was because the duration

of MFI deposits is more likely to be on the lower end of the spectrum, hence the need to have higher liquidity ratios as compared to formal commercial banks so as to meet the client cash withdrawal requirements. The minimum liquidity requirements shall be determined by the Central Bank in the detailed regulations of MFIs.

The ownership and governance policy indicate the need for MFIs to have good corporate structures that can stand the challenges of intermediation. The deposit –taking MFIs will be required under the new law to change their legal status from being companies limited by guarantee to companies limited by shares as a precondition for licensing. Though most MFIs are already registered as companies limited by guarantee, the contention with this legal structure is that the owners cannot be identified in cases of resolution of the institution. The stipulated shareholding arrangement in the MDI Act (2003) is that no one person or group of persons shall be allowed to own more than thirty per cent of the shares of the MFIs unless approved by the Central Bank. This however does not apply to the holding or acquisition of shares in the MFIs by a wholly owned subsidiary of a bank licensed under the Financial Institutions Statute, 1993 or by a reputable financial institution, or in exceptional cases, a reputable public company (Government of Uganda, 2003).

From the examination of the MDI Act 2003, it is clear that the prudential regulatory measures that are stipulated are similar to those of the formal financial sector, with slight variations in capital adequacy requirements. This clearly demonstrates that the microfinance sector is an important component of the financial sector, whose performance could have far reaching implications for the financial system.

4.3.5 Potential Implications of the MDI Act (2003) for the Microfinance Sector

The MDI Act (2003) has a number of potential effects on the microfinance sector (Okurut et al, 2004a). The MDI Act (2003) classifies players in the microfinance industry into four different tiers. Tier 1 is the formal commercial banks and Tier 2 is the credit institutions (such as housing finance, capital finance company, insurance companies) registered under the Financial Institutions Statute of 1993. Tier 3 will consist of deposit-taking MFIs that will be licensed and supervised by the Central Bank. The Tier 3 MFIs will be allowed to take public deposits and intermediate them. The Tier 4 MFIs will not be regulated by the Central Bank and will not be allowed to accept and intermediate deposits. The Tier 4 MFIs will be self-regulated under a membership based umbrella organization that will set performance standards such as reporting, portfolio quality and best practices (Namara et al, 2003:8). The Tier 4 MFIs will be the credit-only institutions such that even if they take compulsory savings as part of their methodology, they are not allowed to intermediate those savings.

Because all institutions in Tier 3 are legally allowed to take public deposits for intermediation, it raises the opportunity for a cheaper source of capital. This has the potential effect of enhancing the profitability and sustainability levels of MFIs by lowering the cost of funds. The challenge however raised by the MDI Act (2003) relates to the number of MFIs that are likely to meet the licensing requirements and qualify to be in Tier 3. Ledgerwood et al (2002) estimated that very few MFIs (less than 5) are likely to meet the licensing requirements in the short-term and most of them will remain in Tier 4. This raises specific challenges relating to access to savings services by the rural poor. As discussed earlier, the financial sector reforms resulted in the closure of non-profitable rural bank branches thereby creating a vacuum of financial service delivery to the poor. The implementation of the MDI Act (2003) implies that the rural poor who had hitherto

depended on MFIs for savings services will be denied that facility in the short-run since the Tier 4 MFIs will not be legally allowed to accept public savings.

Wamatsembe (2001) has also observed that microfinance best practice MFIs tend to operate only in urban and peri-urban areas (usually within a radius of 5 kilometers from town centers) to minimize the large transaction costs that are associated with rural credit operations. It is these microfinance best practice MFIs that have a higher probability of being licensed under the MDI Act (2003).

To counter this potential negative effect of having no branch networks of deposit-taking MFIs in rural areas, the Government of Uganda established the Microfinance Outreach Plan (MOP) under the Ministry of Finance, Planning and Economic Development (MFPED) to coordinate the industry, with various forms of institutional support services from the donor community (Okurut et al, 2004b). The key elements of MOP's vision for the microfinance industry over the five years include: (i) providing a conducive environment for expansion, growth and professionalizing the microfinance industry, (ii) motivating best practice MFIs to expand their services to the underserved rural areas using market oriented incentives, and (iii) bridging the financial services gap between formal and informal services providers by supporting interlinkages among the tiers of players in the financial industry.

One of the components of the MOP is the Matching Grants for Capacity Building (MCAP) which is a market oriented incentive package to motivate best practice MFIs to expand their services to the under-banked areas, especially the rural areas that were greatly affected by the financial sector reforms that led to closure of some banks and/or branch networks. The incentives include the refund of genuine losses incurred for a fixed period of time (first two-years losses proposed) as a result of opening a new branch in a rural remote area, and

provision of grants (for infrastructure, product development, staff capacity building). The infrastructure to be covered relates to the new rural remote branches, which include buildings, computers, safes, and motorcycles. The design of MCAP is such that the costs shall be shared between MCAP and the MFIs, with the grant funding declining over time. The delivery mechanism for capacity building services will be market oriented, where the private sector agents will be the service providers (constituting the supply side) and the MFIs constituting the demand side. The prices for the capacity building services rendered to MFIs (consultancy fees) will therefore be determined by forces of demand and supply. So one of the objectives of MCAP is to build the capacity of private sector service providers, so as to increase the supply side and enhance competition in service delivery, and thereby enhance efficiency. Through this incentive mechanism, the few MFIs that will be able to meet the licensing requirements will be motivated to extend their branch networks to the rural areas and fill the gaps created by the financial sector reforms (Okurut et al, 2004b).

The MDI Act (2003) places too much emphasis on financial sustainability, thus requiring microfinance to be run as businesses generating profits. The new profit orientation implies that MFIs have to separate the NGO social program from the credit program. While development work may continue targeting all clients including the poorest of the poor (the most vulnerable in society), the credit program may only target the "*the economically active poor*" as their market niche. The economically active poor are those who have the capacity to repay loans, which may include the richest of the poor and even the non-poor. The challenge is how the welfare of the poorest of the poor (the core poor) will be enhanced given the fact that they may be rationed out by both the formal financial and Microfinance institutions.

4.4 Conclusions

This chapter had set out to examine the structure of Uganda's financial sector and the implications of the different policies in the economic regulation and liberalization periods on the informal financial sector.

Economic regulation pursued from the 1960's to 1986 resulted in the inefficiency of Uganda's financial sector as reflected by the high non-performing assets and the heavy losses of the public sector banks (state owned commercial banks and development banks), which had to rely on subsidies from the Treasury over the period. This led to the emergence of credit granting NGOs which the donors used as an alternative to channel development finance directly to the beneficiaries.

The financial sector liberalization policies resulted in the expansion of the informal financial sector in Uganda contrary to the predictions of the financial repression hypothesis (McKinnon, 1973; Shaw, 1973). The conclusion is that the continued co-existence of the informal financial sector alongside its formal counterpart even after liberalization is best explained by the structuralist hypothesis (Hoff and Stiglitz, 1990).

In the Ugandan case, financial regulation covers both the formal financial sector (The Financial Institutions Statute of 1993) and the microfinance deposit-taking institutions (The MDI Act of 2003). This is important for the stability of the financial system and customer protection. The informal financial sector has been recognized by the policy makers as playing a key role in the poverty alleviation process through the provision of microfinance to the poor (MFPED, 2001a), which makes the study of the determinants of informal credit demand and credit rationing very relevant.

In summary, it can be argued that a vibrant informal financial sector exists in Uganda and it serves a unique market niche of small borrowers/savers. The questions that arise and are addressed in subsequent chapters are: What factors influence households' demand for credit in the informal financial sector? What factors influence the lenders' response to the borrowers' loan demand and subsequent credit rationing behaviour? What should be done to improve households' access to the broader financial sector?

CHAPTER 5: DETERMINANTS OF INFORMAL CREDIT DEMAND

5.1 Introduction

The purpose of this chapter is to identify the key determinants of informal credit demand that are reported in the empirical literature. In addition, alternative econometric models will be identified from which an appropriate model can be selected for this study. While a large number of empirical studies on informal credit demand has been done the world over, the literature reviewed was mainly from LDCs because of its relevance to Uganda.

The McKinnon – Shaw hypothesis (discussed in section 3.2.1) postulated that the demand for informal credit is a function of repressive policies in the formal financial sector, where economic agents rationed out of the formal sector had to meet their credit needs at high interest rates in informal markets. It was argued that liberalization of the formal financial sector would increase its efficiency in resource mobilization and allocation, which would in turn diminish the demand for informal credit in the long run. The structuralist hypothesis (Hoff and Stiglitz, 1990), referred to in section 3.2.2, however argued that the demand for informal credit would continue to exist even if the formal financial sector is liberalized, due to market deficiencies and information asymmetries that have resulted in credit market segmentation.

Transaction costs define the market niches for different lenders. For the formal lenders, the transaction costs of engaging in small credit transactions are too high, thus this category of clients are better served by informal lenders who have developed cost-effective mechanisms for small credit delivery. The formal and informal financial sectors will continue to co-exist over time as they have different market niches, thus a continuous demand for informal

sector credit. The specific question that arises and is addressed in this chapter is what specific factors determine households' informal credit demand.

The rest of the chapter is organized as follows: section 5.2 presents a discussion of why informal credit is demanded, section 5.3 presents an overview of empirical studies reviewed and section 5.4 discusses the determinants of informal credit demand.

5.2 Informal credit demand

Rural households and other low income households typically have inadequate access to formal sector credit as they are considered to be risky borrowers due to lack of acceptable collateral. Due to the small size of loans demanded by small borrowers, the formal financial sector institutions are also unwilling to lend because of high transaction costs. In addition, the high variability of rural household incomes due to their dependence on agriculture, which is prone to both exogenous production and price shocks, makes formal financial institutions rate them as highly risky. High income variability is indicative of the low repayment capacity of such rural households. For these reasons, rural households mainly depend on the informal financial sector to meet their credit needs. Estimates by Adugna and Heidhues (2000:27) suggest that approximately 84% of the credit disbursements to rural households in Etiopiacome from informal sources. Informal credit, it is argued, is in demand for production and consumption purposes as well as an alternative insurance product.

5.2.1 Informal Credit Demanded for Production Purposes

The demand for informal production credit is a derived demand for factors of production (Batterham and Majid, 1987:292). This demand depends on the demand for factors of production such as improved seeds, fertilizer and ox ploughs. Under conditions of certainty,

the optimal demand for a factor of production can be determined by equating the marginal value product to the marginal factor cost. However, under conditions of uncertainty, the optimal use of a factor of production may decrease due to risk, which in turn reduces the demand for credit. This is because the marginal value product is equated with the marginal factor cost plus a marginal cost for risk. The marginal cost for risk is influenced by the variability of expected future profits, which in turn is determined by expected price and output variability. The marginal cost for risk is a reflection of the degree of risk aversion by the household. The greater the degree of risk aversion, the higher the marginal cost of risk, and the lower the demand for credit.

Adugna and Heidhues (2000) argued that credit enables small farmers who are not risk-averse to overcome their liquidity constraints and to make farm investments that could lead to increased agricultural output. The farm investments could be in the form of adopting new technologies such as high yielding seeds and also other agricultural inputs. Increased agricultural output from the credit-financed investments will lead to an increase in household income, other factors constant. Similar views of the importance of credit in facilitating farm investments and the adoption of improved production practices for increased output were underscored by Yazdani and Gunjal (1998:263). They argued that the initiation of credit programmes is one key policy measure to improve the welfare of farmers. Zeller et al (1994:169) however pointed out that credit to the rural household should not only be for farm production but also for investments in non-agricultural enterprises to boost household income and rural employment opportunities.

5.2.2 Informal Credit Demanded for Consumption Purposes

Informal credit is also demanded to meet household consumption needs such as health care, education of children, durable goods, housing and social events (Pradhan and Dinakar,

1990:203). The demand for informal consumption credit is therefore a derived demand for consumption goods/services (Batterham and Majid, 1987:292). Household demand for purchased consumption goods/services can be determined using the marginal conditions from the theory of consumer choice, where at the optimum, marginal utility equals marginal cost. The optimal condition that defines the quantity of the good/service demanded also determines the amount of consumption credit demanded given the household characteristics. This is because household consumption expenditure can be financed from a number of sources such as income, accumulated savings and/or credit. External credit is usually demanded when household consumption requirements exceed the available household resources (that is income and accumulated savings). Mohieldin and Wright (2000:657) argued that in Egypt informal credit tends to be demanded for consumption smoothing while formal credit is for investment. The same observation was made by Duong and Izumida (2002:319) that Vietnamese formal banks tend to extend loans for production and investment while informal lenders mainly finance consumption.

The rationale for rural households to demand credit for consumption purposes was provided by Zeller et al (1994:170) who argued that the productivity of a household does not only depend on conventional production inputs, but also on the productivity of the labour force. This is because labour is one of the critical factors of production in the agricultural sector. The productivity of the labour force is influenced by its skills, education, nutritional and health status, which raises the likelihood of increased future output. By maintaining and enhancing human capital, consumption credit is argued to be highly productive. This was clearly demonstrated by the remarks of a village leader in Gambia on his willingness to pay interest for consumption credit (as quoted by Zeller et al, 1994:174):

"Most important is health. If my brother is ill, he can't go to the field. One member of the family has to care for him, and the crops cannot be properly cultivated. Therefore I would

pay the highest interest on credit which allows me to buy medicaments if needed. Second comes food. Being hungry, one cannot work hard enough. Therefore I would pay more interest for food credit than for credit to obtain fertilizer"

This perceived high productivity of consumption credit explains why rural households continually borrow from the informal financial sector despite the high interest rates.

5.2.3 Informal Credit Demanded as an Insurance Alternative

The lack of formal insurance markets and inaccessible national social security systems in many rural communities in developing countries also explains the high demand for informal credit as an alternative insurance mechanism (Zeller et al, 1994: 171). Rural poor households face exogenous shocks, idiosyncratic or covariate in nature, which require some form of insurance as a risk-management system (Chaudhuri, 2003:2). Idiosyncratic shocks (such as sickness, death of a family member) affect individual households and community-based social security networks may act as the insurance substitute. The covariate shocks, which affect the entire community, are comprised of production and price shocks. The production shocks (such as drought, floods, pests) result in high variability of agricultural output, which in turn raises income variability for those households engaged in the agricultural sector. Negative price shocks such as a fall in prices of major agricultural products, also renders the rural households vulnerable even in times of a good agricultural harvest. Lack of markets for the bumper harvest, the heavy post-harvest losses and the depressed prices may still result in low incomes for agricultural households despite increased productivity. The efficiency of community-based social networks is seriously constrained in managing the covariate risks.

Ahmed (1999:59) pointed out the life-cycle shocks that are related to demographic changes that are faced by households for which insurance is required. In a bid to build up future

reserves that can be drawn during old age, the demand for informal credit is created at household level to start-up or expand existing income generating projects. Such informal credit therefore acts as a substitute for old age insurance. However Ahmed (1999) further argued that for informal credit to have the maximum positive impact on the livelihoods of the rural poor, the MFIs must understand the vulnerabilities that the poor operate in so as to guide the design of flexible products and policies.

Udry (1990:251) argued that informal sector credit raises the risk-management capacity of households, thereby acting as a substitute for insurance. Households with better access to credit will have a greater capacity to absorb risks and pool these risks across periods, thus stabilizing consumption over time. Evidence from Northern Nigeria suggests that the state-contingent informal credit contracts among the predominantly Muslim community clearly demonstrates the risk-sharing arrangements between informal lenders and borrowers. Since the charging of interest rates is prohibited under Islamic law, the lender can only share in the benefits of the investment if he also shares in the risks of the investment. Under a state-contingent contract, the terms of the loan (interest rate, loan period, repayment) depends on the outcome of the investment and the observable random production/consumption shocks experienced by both the lender and the borrower. Both parties to the informal credit contract (the lender and the borrower) understand that if the returns to the investment are good, then the loan will be repaid over a relatively shorter period with high interest. If on the other hand the borrower suffered observable unexpected negative shocks, then the interest rate will be lower. The lender will also automatically extend the loan period to allow the borrower to recover from the negative shocks and re-organize the investments to generate funds for loan repayment. In such a scenario, the informal credit market plays the important role of an alternative and efficient risk-management system for the rural sector. Households will be able to borrow more when they experience adverse shocks and lend more if they realize

positive shocks. The free flow of information in informal financial markets between the lenders and borrowers allows informal credit to play a more direct role in insuring against risk.

5.3 Overview of Empirical Studies on Informal Credit Demand

A lot of empirical work has been done on determinants of informal credit demand, but the choice of literature reviewed for this study was motivated in terms of comparability of the results to Uganda. For this reason, the reviewed literature was mainly from LDCs. The questions that are addressed in this section include: What motivated these studies and is it related to the motivation for the current study? What were the main findings of the reviewed studies?

5.3.1 Motivations for Empirical Studies Reviewed and their Relationship to Current Study

The reviewed research was generally motivated by the need to have an in-depth knowledge of the functioning of rural credit markets. Rural credit markets were characterized by the parallel market structure of the regulated formal financial sector and the unregulated informal financial sector. Rural households were observed to be participating in both markets, but with low income households being more dominant in the informal financial markets. The rationale was that low-income households were mainly rationed out of the formal financial sector due to lack of appropriate collateral.

These parallel market structures in rural credit markets raised a number of interesting research questions which include: What explains the co-existence of the formal and informal financial sectors in rural credit markets? What determines households' borrowing behaviour from the rural credit markets? What factors influence the lenders' decision regarding the

amount of credit supplied? Does credit rationing exist in both the unregulated informal sector and the formal sector, and if so, what explains the lenders' credit rationing behaviour? What costs are incurred by households in their participation in the various sectors of the rural credit markets (formal and informal)? The quest for answers to these questions motivated the various empirical studies that were reviewed.

The various studies addressed the different research questions (or combinations of questions) highlighted above, but the selection criteria adopted was such that the research must have examined directly or indirectly the core themes of this study, namely determinants of informal credit demand and informal credit rationing. The studies can be broadly classified into three categories depending on the extent to which they covered the areas of interest to this study. First were studies that estimated both models for the determinants of households' borrowing behaviour (credit demand) and lenders' credit rationing behaviour (credit supply) in rural credit markets (Zeller, 1994; Bell et al , 1994; Baydas et al, 1994; and Duong and Izumida, 2002). Secondly, studies that specifically estimated the credit demand model or as part of the research (Adugna and Heidhues, 2000; Nagarajan et al, 1998; Musinguzi and Smith, 2000; Baydas and Cuevas, 1990; Pradhan and Dinakar, 1997; and Yadav et al, 1992). Thirdly, the category of studies that examined the determinants of credit supply in rural credit markets (Kochar, 1997; Vaessen, 2001; and Zeller et al, 1994).

The rationale for the current study is to examine the determinants of credit demand and credit rationing in the informal financial sector in Uganda, to enable identification of strategies to improve households' access to the financial services of the broader financial sector. The reviewed studies guided the identification of gaps to be filled by the current study, the selection of specific variables to be included in the respective models, and the

selection of econometric models to be used. The literature reviewed revealed that little empirical work has been done on rural credit markets in Uganda, with no specific study done on informal credit demand and credit rationing. Musinguzi and Smith (2000) analyzed the determinants of household credit demand for the general rural credit market. However, there was no distinction in the analytical work between formal and informal sources of credit, which is an extension made by this study. In addition, given the imperfections and information asymmetry problems that are prevalent in rural credit markets, the current study sought to investigate the factors that influence informal lenders' credit rationing behaviour, which aspect was not covered by the Musinguzi and Smith (2000) study.

5.3.2 Summary of Findings on Informal Credit Demand from the Literature

The demand for informal credit has been argued in the literature to be influenced by household, enterprise, village/community and lender characteristics. Empirical work has mainly used two types of models: the Logit/Probit models (Adugna and Heidhues, 2000; Zeller, 1994; Nagarajan et al 1998; Musinguzi and Smith, 2000); and the Ordinary Least Squares (OLS)/ Maximum Likelihood Estimation (MLE) models (Baydas et al, 1994; Baydas and Cuevas, 1990; Pradhan and Dinakar, 1997; Yadav et al, 1992; Bell et al, 1997; Duong and Izumida, 2002). The logit/probit models are probability models where the dependent variable is the probability of borrowing informal credit (=1 if household borrowed informal credit, otherwise zero) and the explanatory variables being household characteristics, enterprise characteristics, village/community characteristics and/or lender characteristics. For the OLS/MLE models, the dependent variable is the amount of loan applied for from the informal sector, with the same explanatory variables specified above (Greene, 2000; Kennedy, 1992). The detailed discussion and specification of the credit demand models is presented in section 7.4.2.1.

Adugna and Heidhues (2000: 35) used a logit model to estimate the factors that influence informal credit demand in Lume District, Central Ethiopia, using cross-sectional data collected in 1993/94 for 161 households. The results suggested that informal credit demand is positively and significantly influenced by the dependency ratio, health status, liquid assets and renting out of part of the land. The wealth of the household negatively influences informal credit demand.

Zeller (1994:1902), in a study of the determinants of informal credit demand in Madagascar, estimated a probit model using data for 189 households and 148 informal lending groups. The results suggested that informal credit demand is positively and significantly influenced by age, education level, poverty status, being a household head, health status and social relationship network.

Nagarajan et al (1998:356), in a study of the demand for agricultural loans in the Philippine credit market, also estimated a probit model. The data was based on 127 farm households in Nueva Ecija Province in Central Luzon, which was collected for the three cropping seasons in 1985 – 86 and 1989 – 90. The results suggested that credit demand is positively and significantly influenced by age, education level and size of cultivated area. Non-farm income negatively influences informal credit demand.

Musinguzi and Smith (2000:134), in a study of the borrowing behaviour in rural Uganda, also estimated the logit model using data on 300 rural households collected from 4 regions in 1997. The dependent variable was the probability of borrowing (=1 if household ever borrowed, otherwise zero) and the independent variables were household characteristics. It should be noted that the borrowing captured in this study was from both formal and informal sources. But since the study sample was rural households, it can be argued that the bulk of

credit that was available to them was from the informal financial sector. This is exemplified by the stated reasons for not borrowing reported in the study, which included lack of access (27.8%) and lack of collateral (15.3%). The regression results suggested that household expenditure and household size have a positive and significant effect on credit demand.

Yadav et al (1992:427) used a tobit model (dependent variable =1 if household borrowed from a particular source, otherwise zero) to estimate the determinants of credit demand in the disaggregated rural credit market based on a sample of 190 households from Western and Central Nepal. The borrowers were decomposed into three categories according to borrowing source: formal sector, moneylenders, and friends/relatives, with separate models estimated for each category. Family size had a positive and significant effect on informal credit demand while education level had a negative and significant effect.

Duong and Izumida (2002:319), in a study of Rural Development Finance in Vietnam, used a tobit model based on a sample of 300 households from three provinces (Ninh Binh, Quang Ngai and An Giang). Their conclusion was that borrowing from the informal financial sector is significantly influenced by the dependency ratio and total farming area.

Baydas and Cuevas (1990:374) estimated the determinants of demand for rural credit from co-operative unions in Togo using the ordinary least squares method (OLS) based on a sample of 137 households. The regression results suggested that the loan amount demanded is positively and significantly influenced by transaction costs, working capital requirements and household income, and negatively by family size.

Baydas et al (1994:283) used the maximum likelihood estimation techniques (MLE) to analyze the factors that influence household demand for credit from microenterprise

programmes in Ecuador. The results suggested that informal credit demand is positively and significantly influenced by business asset value, business profits, ownership status, off-farm activities, education and being male.

Pradhan and Dinakar (1990:206) also used OLS models in their investigation of the regional factors that affect household demand for consumption and production credit in India. Their findings were that while the households accessed both formal and informal credit, formal credit was mainly used for production purposes and informal credit was largely for consumption purposes. The significance of the informal financial sector was reflected by the fact that 78.6% of the total credit outstanding at household level in 1961 came from informal sources. However this proportion fell to 37.4% in 1981 but remained an important source of credit especially to the poor for consumption. The estimated model for consumption credit can therefore be argued to be a demand function for informal credit. The results suggested that regional consumption credit demand was positively influenced by the rural unemployment rate and regional productivity, and negatively by the size of land holding.

Mohieldin and Wright (2000:663) examined the determinants of informal credit demand using a probit model based on a sample of 200 households from four Egyptian villages in the Kalyoubbiya Governorate. The results suggested that borrowing decisions from the informal financial sector are positively influenced by household assets and negatively by wage income and savings.

Kochar (1997:364), who used a probit model based on data from the All-India Debt and Investment Survey 1981 – 1982 for 2415 households in Uttar Pradesh State, found that the choice of informal credit is positively and significantly influenced by the predicted interest rate and collateral requirements in the formal sector. The choice of informal credit was

negatively and significantly influenced by productivity. Regions with higher levels of agricultural productivity (proxied by yield per acre), demanded mainly formal sector credit for investment, thus explaining the negative relationship between productivity and the choice of informal credit. By implication it was the poor regions that demanded informal credit for consumption smoothing.

5.4 Determinants of Informal Credit Demand

This section gives a detailed discussion of each of the determinants of informal credit demand that were identified from the empirical literature, including how they were measured and the interpretation of the results. It is only the variables that were reported to be statistically significant (at least at the 10% significance level) that are discussed here.

5.4.1 Age

In all of the empirical research, the age of the borrower was measured in years. The results by Zeller (1994) suggested that the age of the borrower has a positive and significant effect (at the 1% significance level) on informal credit demand. The intuition for the positive and significant coefficient for age is based on the fact that older persons have control over household resources, which increases their creditworthiness and raises their demand for credit. The results by Nagarajan et al (1998) also suggested that credit demand is positively and significantly influenced by the age of the household head (at the 5% significance level).

5.4.2 Gender

The sex variable has been captured as a binary variable. Empirical results by Baydas et al (1994) revealed that sex (male=1) has a positive and significant effect (at the 10% significance level) on informal credit demand. The intuition for the result is that the males

mainly dominate in the control of household resources, which makes them more creditworthy, hence raising the demand for credit. These results may also suggest discrimination against women in informal credit markets.

5.4.3 Household Wealth

Household wealth is articulated in the literature as one of the significant determinants of informal credit demand. Household wealth is captured in various studies using different proxies which include income, household expenditure, and value of household assets. In the study by Adugna and Heidhues (2000), household wealth (proxied by the number of oxen) had a negative and significant effect (at the 1% significance level) on informal credit demand. The rationale for this result was that wealthier households had more resource endowments that enabled them to produce sufficient food crops to meet subsistence needs. This implied that such wealthier households demanded less informal credit for consumption purposes.

Evidence by Baydas and Cuevas (1990) suggested that household income has a positive and significant effect (at the 1% significance level) on informal credit demand. Household income, which was interpreted as a measure of future consumption, significantly affects credit demand. Musinguzi and Smith (2000), who used household expenditure as a measure of wealth, also reported a positive and significant (t-value 2.15) relationship with credit demand. Both studies (Baydas and Cuevas, 1990, Musinguzi and Smith,2000) did not adduce any explanations for the positive and significant relationship between informal credit demand and household expenditure.

Mohieldin and Wright (2000) examined the effect of the source of income on informal credit demand. The results suggested that individuals are less likely to borrow from the informal

financial sector if they have stable wage income from salaried employment in the public or private sector (coefficient negative and t-value –3.235). This explains why rural households whose livelihoods are dependent on agricultural income, which is subject to exogenous production and price shocks, mainly borrow from the informal financial sector to meet unexpected shortfalls in income.

Land size is one of the indicators of household wealth. Nagarajan et al (1998) used the number of cultivated hectares as a proxy for the borrower's farming capacity. The results suggested a positive and significant relationship between farming capacity and informal credit demand (at the 10% significance level). This implies that credit demand is influenced by the ownership of physical and human resources that are necessary for farm production. Duong and Izumida (2002) also found a positive and significant relationship (at the 10% significance level) between total farming area (measured in hectares) and informal credit demand. What was implied by this result was that households borrow from the informal financial sector even at high interest rates for production purposes. The results by Bell et al (1997) suggested that land value has a positive and significant effect on informal credit demand.

Household assets, which form part of household wealth, were captured in the studies by the monetary value of the assets. Evidence by Mohieldin and Wright (2000) found that household assets have a positive and significant effect (t-value 2.98) on the probability of borrowing from the informal financial sector. What this result highlighted was that despite the fact that most lending in the informal financial sector is collateral free, some informal lenders might still require some form of collateral due to information asymmetries and weak enforcement mechanisms in rural credit markets.

From a logical point of view, it can be argued that wealthier households may tend to use own savings for self-financing and/or to borrow larger loans from the formal financial sector at lower interest rates given the fact that they are rated as being creditworthy. This would in turn lead to a negative relationship between all measures of household wealth and informal credit demand, which may explain the negative coefficients of wealth and informal credit demand as reported by Adugna and Heidhues (2000) and Mohieldin and Wright (2000).

5.4.4 Education Level

The education level variable has been measured in most studies as a continuous variable in terms of completed years of schooling, while in a few cases it was captured as a binary variable. Baydas et al (1994) captured education level as a binary variable (=1 if high school and above, otherwise zero). The results suggested that education level has a positive and significant effect (at the 10% significance level) on informal credit demand. The significance of the education coefficient was explained in terms of its contribution to knowing the rules of the game and effective utilization of the credit. The more educated people are more likely to understand and abide by the rules of the micro enterprise programs and to make successful use of the credit. Evidence by Zeller (1994) also suggested that education level has a positive and significant effect (at the 5% significance level) on informal credit demand, because education increases the returns from human capital. Nagarajan et al (1998) also reached similar conclusions regarding the positive and significant effect of education (at the 10% significance level) on credit demand.

Yadav et al (1992) observed that the education level of the household head had a negative and significant effect on borrowing decisions from the informal financial sector, but with varying levels of significance. From the moneylender source, the education level coefficient

was negative and significant at the 5% significance level, while for friends/relatives it was negative and significant at the 1% significance level. The argument behind these results is that more educated people are more likely to borrow from the formal sector as compared to the informal sector. These results may be rationalized in the sense that since the formal banking sector is characterized with a lot of formalities, it requires some level of education to comprehend the processes. In addition given the lower interest rates and larger loan amounts that can be accessed from the formal financial sector, the educated may be taking advantage of such favourable terms.

5.4.5 Household Size

Household size has been captured in the literature as the total number of members in the household. The household is commonly defined as people who share from the same pot. Evidence by Yadav et al (1992) suggested that family size was the most decisive factor (coefficient positive and significant at the 1% level) for borrowing from informal sources, namely, moneylenders, and friends/relatives. Similar findings of the positive and significant effect of household size were reported by Vaessen (2001) at the 5% significance level and by Musinguzi and Smith (2000) with a t-value of 2.56. The implication is that households with larger family sizes coupled with many children are under pressure to meet higher levels of consumption expenditures (such as education of children and health care) and this augments the demand for informal credit.

Findings by Baydas and Cuevas (1990) however suggested that credit demand was negatively influenced by family size (at the 5% significance level). Family size had been used as a proxy for labour size and so the interpretation of the result has to be done within the context of labour demand. The rationale for the negative and significant coefficient for

family size was based on the rationale that family labour acts as a substitute for hired labour in the household production function. The larger the family size, the larger the available family labour hence the lower the demand for hired labour. This implies reduced cash expenses to pay for hired labour, which in turn reduces the demand for informal credit hence the negative and significant coefficient.

5.4.6 Dependency ratio

Dependency ratio has been measured as the proportion of dependants in relation to total active adults, where the dependants include children and the elderly. In effect dependency ratio is a proxy for the income earning capacity of the household. The higher the dependency ratio, the lower the income earning capacity of the household, and vice versa. Evidence by Duong and Izumida (2002) suggested that the dependency ratio has a positive and significant effect (at the 5% significance level) on the amount borrowed from the informal sector. The argument in support of this result was that borrowing from the informal sector was mainly for consumption smoothing. This was based on the observation that families with many dependants were the poor, who could not meet their food requirements in times of crisis. In addition, such poor families found it difficult or even impossible to borrow from the formal sector to smooth their consumption. It was therefore argued that informal credit reflected the demand for funds to improve the quality of life such as the purchase of food, construction of new houses and buying new durable goods. This explains the positive and significant relationship between the dependency ratio and informal credit demand. Adugna and Heidhues (2000) also reported that the dependency rate has a positive and significant effect (at the 5% significance level) on informal credit demand

5.4.7 Off-farm Activities

Engagement in off-farm activities was captured as a dummy variable in most empirical research. Baydas et al (1994) reported that involvement in off-farm activities positively and significantly increases informal credit demand (at the 5% significance level). The argument for this result was that establishment of off-farm activities would involve some cash outlay which increases the demand for informal credit. Contrary to the above, Nagarajan et al (1998) observed that the non-farm income variable has a negative and significant effect on informal credit demand (at the 1% significance level). The argument for this result was that non-farm income increases household income and opportunities for self-financing which in turn reduces the demand for informal credit.

5.4.8 Health Status

Health status has been measured in the literature as either a continuous variable in terms of the number of days lost to sickness or as a dummy variable (=1 if household member was sick at the time of the survey, otherwise zero). Adugna and Heidhues (2000) found a positive and significant relationship between the health status dummy and informal credit demand at the 10% significance level. Zeller (1994) also found a positive and significant relationship between the household health status (captured by the number of sick days) and informal credit demand (at the 10% significance level). What these results highlight is that poor health status increases the demand for consumption credit to finance health care needs.

5.4.9 Social Capital/network

Social capital is one of the determinants of informal credit demand identified in the empirical literature. This has a lot to do with the lending methodology in the informal

financial sector, which is not based on physical collateral. The social capital variable is constructed in the literature as a binary variable. Zeller (1994) used the existence of an ancestral burial ground within the region as a proxy for strong social relationships, which was positive and significant at the 10% significance level. The implication of this result is that the people with strong social networks have more friends and relatives to whom they can easily go to ask for informal credit. Since lending in the informal sector is based on mutual trust in terms of loan repayment, informal lenders feel more comfortable in dealing with people with whom they have had a long social relationship. Even in the event of default, it will be easier to use community leaders to enforce recovery instead of using the formal courts of law. This approach can only be effective if both the lender and the borrower are from the same community and have respect for the community leaders. This explains why some informal lenders prefer to deal with their kin in informal financial transactions.

5.4.10 Cost of credit

The credit price variables, which are composed of financial costs (interest rates, fees and commissions, transport costs) and non-financial costs (waiting time), which are incurred by the borrowing households were missing from most of the empirical research, possibly on account of the difficulty of collecting such information.

Evidence by Baydas and Cuevas (1990) suggested that the loan amount demanded was positively and significantly influenced by the total cost of credit (at the 1% significance level). This unusual result was explained by the way the total cost variable was constructed, which included interest rates charged by the union and imputed transaction costs (proxied by the opportunity cost of waiting time between application and receipt of the loan). The imputed transaction costs contributed a significant proportion of the total cost of credit, which was associated with the longer time taken to obtain larger loans, as the interest rate

was the same irrespective of the loan amount. It was only the imputed transaction cost component of the total cost that varied across borrowers, hence the positive relationship between amount demanded and the total cost of credit.

The effect of informal interest rates on informal credit demand was analyzed by Bell et al (1997) using an OLS model. The results suggested that informal credit demand is negatively influenced by interest rates and quite inelastic, which is consistent with the theory of demand where the quantity of a good demanded is inversely related to its own price. It should be noted that the degree of sensitivity of credit demand by the poor to interest rates continues to be a major debate in the development economics literature (Morduch, 1999). Some scholars argue that credit demand by the poor is not very sensitive to interest rate variations because interest costs are a small fraction of overall production costs, so poor households can absorb high interest rates. According to this school of thought, what matters to the poor is access to credit but not interest rates. Another school of thought argues that the elasticity of credit demand with respect to interest rate is high, hence the need to keep interest rates low so as to maximize the benefits to the poor. These seemingly opposing views constitute the basis of arguments for and against subsidization of interest rates to the poor. Those who oppose subsidization of interest rates tend to assume low sensitivity of credit demand to interest rate, positive impacts of interest rates on returns, and negative externalities of subsidized credit programs on other lenders. They therefore advocate charging of full cost recovery interest rates (market rates). The other argument in favour of market interest rates has to do with the high stock turn over (velocity) of small businesses. The people who sell items on a regular basis (for example daily or weekly) can afford to pay market interest rates than say farmers whose turnover is low. On the other hand, those who support subsidization of interest rates assume high sensitivity of credit demand to interest

rates, low or perhaps negative impacts of interest rates on returns, and small or beneficial spillovers onto other lenders.

Kochar (1997) examined the effect of formal sector interest rates and choice of informal credit. Empirical evidence suggested a positive and significant relationship between the formal sector interest rate and the probability of access to informal credit (at the 5% significance level). This result may be interpreted in the context of those households that participate in both the formal and informal financial markets, where the borrower considers not only the formal sector interest rates but also the associated transaction costs (financial and non-financial). This may explain the positive relationship between formal sector interest rates and informal credit demand.

5.4.11 Enterprise Characteristics

Enterprise characteristics (which include ownership structure, its size and profitability levels) have also been cited in the literature as factors that explain the borrowers' credit demand behaviour. Evidence by Baydas et al (1994) suggests that being an owner of an enterprise has a positive and significant effect on credit demand (at the 10% significance level). This implies that the owners are more likely to make more effective use of the loan for business expansion.

Enterprise size has been measured by working capital requirements and business assets. Evidence by Baydas and Cuevas (1990) suggested that credit demand is positively influenced by working capital requirements (at the 1% significance level). The members who had larger working capital requirements had to deposit more with the union so as to get bigger loans, hence the positive coefficient. Baydas et al (1994) used business asset value as a proxy for enterprise size, where there was an observed positive and significant relationship

with informal credit demand (at the 1% significance level). By implication larger enterprises tend to demand larger loans.

The magnitude of business profits is also argued to have a positive effect on credit demand. This view is supported by Baydas et al (1994) where the coefficient for business profits was positive and significant (at the 5% significance level). This result can be interpreted within the context that business profits encourage entrepreneurs to undertake greater financial risk through increased borrowing on condition they make profits from such investments. Of course more risky projects promise higher profits, implying that for risk-neutral entrepreneurs there will be increased demand for credit.

5.4.12 Household Liquidity

Household liquidity is one of the determinants of informal credit demand in empirical research. Liquidity was measured in terms of the household holding savings (cash) or near cash items that can easily be liquidated for loan repayment. In Adugna and Heidhues (2000) study, liquid assets (captured by the number of small ruminants such as goats and sheep kept by the household) had a positive and significant effect (at the 10% significance level) on informal credit demand. Since these were poor rural households, the ruminants were the main items that could easily be converted to cash within a short period of time. The higher the liquidity of the household, the higher its creditworthiness, which serves as security for the loan, hence increasing demand for informal credit.

Mohieldin and Wright (2000), who used household savings as a measure of liquidity, found that it had a negative and significant effect (t-value –3.464) on the probability of borrowing from the informal sector. The explanation for the result was that individuals might prefer to

use their savings rather than borrow, as personal savings are a much cheaper source of funds for investment.

5.4.13 Poverty Status

The poverty status of the household (defined relative to the reference poverty line against which the household can be categorized either as being poor or non-poor), is one of the determinants of informal credit demand in the empirical literature. A number of proxies for poverty status have been developed in the literature and used as explanatory variables in the informal credit demand models. In the Adugna and Heidhues (2000) study, poverty status was proxied by the dummy for rented out land. It should be noted that renting out plots of land was associated with being resource poor, a coping mechanism that was adopted by poor households that did not have enough resources to effectively utilize all their land. The income from the rented out plots could therefore act as a guarantee for loan repayment to the informal lenders, which also reflected the interlinkage between the informal credit and land markets. The practice of renting out of part of the land has a positive and significant effect on informal credit demand (at the 10% significance level).

In the Zeller (1994) study, the poverty status (captured by the wage labourer dummy) had a positive and significant effect on informal credit demand. The rationale is that it is the poor who worked as agricultural wage labourers for the landlords, hence reflecting the dependence of the poor on informal credit. Pradhan and Dinakar (1990) used different proxies for poverty status that included the unemployment rate and land size. The results suggested that regional consumption credit demand was positively and significantly influenced by the rural unemployment rate, while credit demand is negatively and significantly influenced by size of land holding. The higher the rural unemployment rate, the higher the demand for consumption credit. The size of the land holding (measured as the

proportion of households with land above 7.5 acres of land) was negatively correlated with informal credit demand. The land size variable was used as a proxy for the poverty status, where the non-poor were the ones with land above 7.5 acres. The conclusion was that it was the poor who mainly demanded informal credit for consumption purposes, hence the rationale for the negative and significant coefficient.

5.5 Conclusion

The motivation for this chapter was to identify (i) the key determinants of informal credit demand from the empirical research done in LDCs, and (ii) the econometric models used in the research.

The main models that were used by the reviewed studies were logit/probit models (which are probability models where the dependent variable takes the value of one or zero), and OLS/MLE models (where the dependent variable is the amount of credit demanded) with explanatory variables being household socio-economic characteristics and other factors (enterprise or village specific characteristics).

Empirical evidence suggests that informal credit demand is positively and significantly influenced by the following variables: age, sex (male=1), dependency ratio, health status, enterprise characteristics, poverty status, and formal sector interest rates. Informal credit demand is negatively and significantly influenced by informal sector interest rates. However the following variables were not conclusive in terms of their effect on informal credit demand: household wealth, household liquidity, education level, family size, and off-farm activities. The inconclusiveness of these variables is based on the fact that their coefficients were reported to be significantly positive in some studies and yet in other studies they were significantly negative.

These results form the basis for the identification of the variables and specification of the credit demand model for the current study (to be discussed in section 7.4.2.1). The next chapter examines the factors that influence the informal lenders' credit rationing behaviour.

CHAPTER 6: DETERMINANTS OF CREDIT RATIONING IN THE INFORMAL FINANCIAL SECTOR

6.1 Introduction

The motivation for this chapter is to establish the significant determinants of informal lenders' credit rationing behaviour from the empirical literature so as to form a basis for the analytical work for the Ugandan case.

Credit rationing can be defined as a state in which the borrower is constrained in access to credit at the prevailing market interest rates. The credit process involves two distinct stages. In the first stage, the borrower who has a demand for credit decides how much funds to apply for from a particular lender at the prevailing market price, which constitutes the demand side (as discussed in section 5.2). In the second stage, the lender makes a financing decision on each of the loan applications, thus constituting the supply side. The lenders undertake the screening of potential borrowers based on observable characteristics so as to minimize default risk, which influences their response to the client's loan demand. Firstly, the lenders may fully grant the loan amounts demanded by the clients. Secondly, lenders may partially grant the loan amount demanded by the clients (i.e. give less than amount originally applied for). Thirdly, the lenders may completely reject the loan application. The last two scenarios represent a state of the borrowers being credit rationed by the lenders (Zeller, 1994:1895).

The lenders do not sell loan contracts to every willing buyer (borrower) at the prevailing market price (interest rate) because of market imperfections and information asymmetry problems which raise the probability of default risk. The interest rate as the price for credit

therefore fails to play its market-clearing role of equating credit demand and supply, thus giving rise to an equilibrium with credit rationing (Stiglitz and Weiss, 1981).

The rest of the chapter is organized as follows: section 6.2 examines the theoretical framework for credit rationing in terms of its causes, section 6.3 presents an overview of relevant empirical studies on credit rationing, section 6.4 discusses the significant determinants of informal lenders' credit rationing behaviour, and section 6.5 provides the conclusions.

6.2 The Theoretical Framework for Credit Rationing

Credit markets are characterized by the probability of loan default (Hoff and Stiglitz, 1990:238), where default is defined as the inability to pay back the principal loan amount plus accrued interest. The probability of default may be influenced by a number of factors that include the expected returns of the project, the terms of the loan (interest rates, loan period), market imperfections and borrower characteristics. These factors in turn influence the credit rationing behaviour of lenders.

6.2.1 Expected Returns of Investment Projects

Kochar (1997:344) pointed out that the expected returns on the borrowers' proposed investment projects play a key role in influencing the lenders' credit rationing behaviour. The return to the project [R], defined as income net of operational costs, will be the centerpiece of the lenders' financing decision criteria. Here the interest rate plays the role of a screening device. If the expected return [R] is less than the principal loan amount [B] plus interest [i], then the probability of default will be high [i.e. $R < B(1+i)$]. In such a scenario, the optimal lenders' decision will be to either partially ration the borrower by granting a

smaller amount than originally applied for or completely reject the loan application. It should be noted that any default on the loan (either principal loan amount or accrued interest) is a cost to the lender because it has to be written off against income. A typical profit and loss account of an informal lender consists of the income side and the expenditure side. Income comprises interest and commissions charged to the clients for loans granted. The expenditure side consists of operational costs (such as transport, salaries and wages, stationery, office rent), financial costs (that is interest paid on borrowed funds from either the formal banks or the informal sector) and loan losses (that is bad loans whose probability of recovery tend to zero and have to be written-off). The operational costs constitute usually a small proportion of the informal lenders' total costs, hence the major cost components that they must carefully control are financial costs and the risk of loan default.

Informal lenders have no control over the financial cost of funds (interest rates) that they have to incur when they borrow from the banks or other informal lenders to capitalize their portfolios. However they can effectively control the cost of default risk. Von Pischke et al (1998:149) spell out the damaging effects that loan default can have on a lender. The objective function of the lender is to minimize the probability of default risk through careful screening of the clients' proposed investment projects using the market interest rate as the benchmark. By discounting the net cash flow of the clients' proposed investment projects using the market interest rate as the discounting factor, unviable projects can clearly be identified through the computed internal rate of return (IRR). The IRR is the interest rate at which the net present value (NPV) equals zero, which gives the project's break-even position. If the IRR is less than the market interest rate, then the project is unviable. The differences in expected returns to clients' investment projects partly explain why lenders undertake credit rationing (Stiglitz and Weiss, 1981:395). The risk-return assessment of potential projects enhances efficiency in resource allocation.

6.2.2 Market Imperfections

Credit markets are characterized by imperfect information that disable interest rates from playing a market-clearing role (Baydas et al, 1994:280). The classical view was that interest rates would automatically equilibrate credit demand and supply. In the event that there was excess demand for credit, it was postulated that the interest rate (as the price for credit) would automatically adjust upwards to a new equilibrium level, thereby clearing the market.

This classical view was, however, contested by Stiglitz and Weiss (1981:393) who argued that credit markets are characterized by information asymmetry, hence interest rates play thedual role of being the price for credit as well as a screening mechanism. Information asymmetry in credit markets arises because the potential borrowers have more information about their potential risk of default than the lenders (Aleem, 1990:330). This is in an environment in which such important information is not a public good. Information asymmetry is compounded by the fact that in informal credit markets the credit histories of borrowers are not documented and pooled. The costs of acquiring the required information for the assessment of the creditworthiness of potential borrowers are very high, both in terms of time and financial resources expended to gather and analyze it. The other complication is the reliability of such information. If lenders collect that information from the potential borrowers themselves, there is a tendency for the borrowers to give an exaggerated view of their creditworthiness. This raises the need to validate such information from other sources. On the other hand, if lenders try to collect that information from other community members, there is a tendency for community members to withhold the true information of the borrowing character of their fellow community member with whom they share daily life, especially if the one soliciting such information is a stranger. It is for this reason that members from within the same community can access the true information on

borrowers' characters informally through village gossip. This information asymmetry raises the vulnerability of lenders to default risk. For this reason, lenders may not be enthusiastic to charge market clearing interest rates but rather charge a lower than market interest rate and ration credit. An increase in interest rates to the market equilibrium level may result in adverse selection and moral hazard behaviour of borrowers, both of which may negatively affect the lenders' returns on the loans.

First, the interest rate is a cost to the borrower. Even in the case of symmetric ex-ante information (where both the lender and the borrower have perfect information on the expected return on the proposed investment project), an increase in the interest rate has the potential effect of reducing the returns on the borrowers' investment projects by the same proportion, other factors constant (Levacic and Rebmann, 1982:239). This automatic upward adjustment of equilibrium interest rates may lead to loan default because the revenues generated may not be sufficient to service the loan obligations (that is principal loan amount plus accrued interest). The net profit [π] to the borrower is a function of returns [R] and the interest rate [i], which demonstrates a negative correlation between net profit and the interest rate. This scenario holds true for safe and low risk projects that only earn normal profits, such that an increase in interest rates renders them unviable, thus increasing the probability of default. With the consideration of not destabilizing supposedly safe projects, which in turn translates into a higher probability of default, lenders may opt to charge less than equilibrium interest rates and rather ration credit by means of non-price mechanisms.

Secondly, an increase in interest rates to equilibrium levels that clear the market may lead to a higher probability of default to the lender due to the adverse selection effect. Adverse selection is where borrowers with safe (and low default risk) projects which earn normal

profits decide to opt out of the credit market in the face of increasing interest rates, while more risky projects with potentially higher returns but with a higher probability of default are attracted into the market. Due to the information asymmetry problem in credit markets, only the borrowers have perfect knowledge about the risk profiles of their projects, but the lenders do not. An increase in the interest rate therefore results in the adverse selection problem that affects the risk composition of the portfolio and in turn affects the returns to the lender. The expected return to the lender is postulated to be a decreasing function of the riskness of the loan. An increase in the interest rate increases the probability of attracting projects with a high probability of default, which in turn reduces the profitability of lending operations.

Thirdly, an increase in interest rates may also create a moral hazard problem, which is where the increase in interest rates influences the behaviour of borrowers with low risk projects to shift to high-risk projects that promise higher returns but with a high probability of default. While the lenders' decisions to grant loans may have been based on the assessment of the safe projects, an increase in interest rates will influence borrowers to shift from low risk to high-risk projects after receiving the loans. This will be due to the fact that borrowers will find it difficult to continue to service the loans at the high interest rates using the marginal returns from the safe projects. However the switch from safe to risky projects increases the probability of default to the lender, thus reducing the returns on loans. For this reason, lenders faced with information asymmetry and lack of control over actions of the borrowers tend to design credit contracts that will induce borrowers to take actions that enhance the likelihood of repayment and also attract low risk borrowers. The lenders may therefore find it optimal to charge lower than equilibrium interest rates to maximize profits and use non-price mechanisms to ration credit (Hoff and Stiglitz, 1990:238).

The lenders may also charge lower than equilibrium interest rates as an incentive to the borrowers to bear the risks of loan default on behalf of the lender (Stiglitz, 1990:360). This is particularly true if the lender uses a joint liability contract where the members of the group are jointly responsible for the repayment of the loan. The cosigners may be motivated if they are sufficiently compensated with financial incentives (i.e. margin between the actual and market interest rates). For this reason, lenders may charge lower than equilibrium interest rates so as to provide an incentive mechanism for cosigners to bear the additional costs of screening borrowers and default risk. The lender therefore maximizes profits at a lower than equilibrium interest rate with credit rationing because of lower probability of default. Cosigning also increases the effective collateral behind a loan. So at a given interest rate, the lender rations credit demand.

6.2.3 Borrower Characteristics

Kochar (1997) developed a theoretical framework for informal sector credit rationing. The informal lender's supply curve was postulated to be upward sloping which is consistent with any model with a probability of default, such that an increase in the loan amount increases returns on condition the default risk increases less than proportionately. This implies that the lender's opportunity cost increases with the expected increase in income as the loan amount increases, thus inducing the lender to increase the interest rate. The supply schedule was expressed as:

$$B = B(i, X) \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (16)$$

Where:

B = Loan amount supplied by an informal lender

i = Interest rate charged by the informal lender to maximize profits

X = Household characteristics.

The supply schedule therefore specifies all the combinations of (i, B) offered to a household with X characteristics, which affect the returns to the loan. On the other hand, the household demand curve for credit is downward sloping and the household's objective is also to maximize profits (by minimizing borrowing costs):

$$Max\ \pi = \pi(i, B),\ f_i<0, f_B>0 \quad \ldots\ldots(17)$$

Subject to

$i = i(B)$

$B>0$

Where:

π = household profits

$f_i = \delta\pi/\delta i$

$f_B = \delta\pi/\delta B$

The demand and supply schedules demonstrate two kinds of credit rationing. First, given the household characteristics (X), the informal lender fixes the interest rate *(i)* and the maximum loan amount *(B)* that can be accessed by the particular household. If the loan amount demanded by the household *(say M)* at the given interest rate *(i)* exceeds the amount that the informal lender is willing to supply *(B)*, then the particular household is credit rationed. This implies that the household is not free to borrow any amount of money at the prevailing interest rate. Secondly, the upward sloping supply curve also implies that credit can be available for risky borrowers at very high interest rates. But given the household's rational profit maximization behaviour, the interest rate charged by the informal lender will determine whether the household will accept the loan or not. If the interest rate exceeds the rate at which the household will maximize profits, then the rational household will find that it is not optimal to borrow as the marginal cost of the loan ($\delta i/\delta B$) exceeds the marginal revenue from the loan ($\delta\pi/\delta B$), hence being credit constrained. The interest rate as a price

can therefore be used both as a credit rationing device (high interest rates charged to high risk borrowers) and an incentive to pay (low interest rates charged to low risk borrowers).

The specific borrower characteristics that influence the informal lenders' credit rationing behaviour include strength of previous business relationships, borrowers' reputation in the market, borrowers' acceptance of interlinked credit contracts, borrowers' debt-service capacity and borrowers' wealth status. Aleem (1990:333), in a study of informal market lenders and their clients in Chambar, Pakistan, argued that informal lenders mainly use their established relationship with borrowers as a screening and credit rationing mechanism. Lenders do not generally entertain loan requests from people who have not had previous dealings with them either in form of the sale of harvested output through them or purchase of farm inputs. The longer the period of the previous business relationship, the lower will be the probability of the borrower being credit rationed. This is due to the fact that these business relationships provide the lender with important information about the potential borrower, including his marketable surplus and the way he conducts business. Bell (1990: 312) further pointed out that because it takes a long period to build a relationship with informal lenders (a minimum of one year), borrowers tend to stick to particular informal lenders so as to avoid the long screening process and high probability of loan applications being rejected by new lenders. In effect the borrowers will incur a high opportunity cost in trying to switch to other lenders.

Siamwalla et al (1990:278), in a study of households and moneylenders in Nakhon Ratchasima Province in Thailand, indicated that 83% of the households borrowed only from one informal source and 72% of informal sector borrowers in the National Survey had not attempted to borrow from other informal lenders during the past three years. In addition the borrowers took up to seven years to build creditworthiness with a particular informal lender,

hence making switching lenders very costly. Hoff and Stiglitz (1990:238) called this the relationship-specific social capital built between the informal lender and the borrower that is used as a non-price mechanism for credit rationing. Though switching between informal lenders does take place, borrowers have to do it very carefully to minimize opportunity costs and the risk of losing access to credit from their current sources. Aleem (1990) also observed that informal lenders rejected more than 50% of new loan applications, which provides a disincentive for borrowers to switch between different informal lenders for fear of losing access to credit.

The reputation of the potential borrower is another important yardstick that influences informal lenders' credit rationing behaviour (Siamwalla et al, 1990: 281). Since loans in the informal financial sector are mainly character loans (i.e. not backed by any collateral security), the borrowers' reputation is of significant importance to the informal lender. For this reason informal lenders invest both financial resources and time to gather information about potential borrowers from people known to them both in the market place and the villages where the borrowers reside. The reputation of the borrower determines the probability of willful default, where someone deliberately refuses to pay the loan even if he/she has the means to. The probability of willful default, which reflects the intrinsic character of the potential borrower, may be assessed through how he/she has performed in the repayment of loans borrowed from other people. Aleem (1990:335) estimated that informal lender's screening costs in Pakistan were worth one day of the lenders' time and approximately $2.02 in transportation costs. As already stated, the significant information gathering costs are due to information asymmetries in credit markets in which credit histories are not recorded and not publicly available. The strict vetting of potential borrowers based on information on their reputation is intended to minimize the default risk, hence borrowers with poor reputations will more likely be credit rationed.

The informal lenders' assessment of the borrowers' debt service capacity and household wealth also influence the probability of their being credit rationed (Zeller, 1994:1896). The debt-service capacity is computed as outstanding debt expressed as a proportion of total household income. Informal lenders gather information on the outstanding loan obligations of potential borrowers from the different sources (both formal and informal) and compare this to their income levels. If the debt-income ratio is greater than one, then the potential borrower is more likely to be credit rationed because of the low repayment capacity. However the composition of the borrowers' outstanding debt is of significance to the informal lenders' credit rationing behaviour. If the biggest proportion of the outstanding debt is from the formal financial sector, the informal lender may not be threatened as he has a higher chance of recovering his money as compared to the formal lender. In such a scenario the potential borrower may be less credit rationed. However the probability of being credit rationed may be high if the potential borrower's outstanding debt obligations are mainly from other informal lenders. Household wealth gives an indication of the borrowers' repayment potential, with wealthier households being rated as being more creditworthy and less likely to be credit rationed.

The borrowers' acceptance of interlinked credit contracts also determine their likelihood of being credit rationed (Udry, 1990:252). As discussed in section 3.3.2, an interlinked credit contract effectively reduces the probability of default to the informal lender. This is because the interlinked credit contract acts as a disguised form of collateral that reduces the adverse selection and moral hazard problems where contractual terms in one transaction influence the borrower's behaviour in another. The interlinked credit contract also provides an added incentive for the borrower to repay the loan. Potential borrowers therefore have a choice of either accepting or rejecting the terms of the interlinked credit contract. The borrowers'

acceptance of interlinked credit contracts will depend on the magnitude of the opportunity costs imposed on them by the terms of the contract. The opportunity costs may include being paid lower than market prices in the product market for agricultural output marketed through the trader-informal lenders, accepting less than market wage rates in the labour market for work done for landlords who also double as informal lenders, and assigning land user rights to the informal lenders in the land market. It should be noted that informal lenders design the interlinked credit contracts with the objective function of maximizing their profits. The potential borrowers respond to the terms of the interlinked credit contract by either accepting or rejecting them. Borrowers who accept the terms of the interlinked credit contracts are less likely to be credit rationed in the informal financial sector.

Bell (1990: 312) argued that there is an effective enforcement mechanism for interlinked credit contracts through co-operation among informal lenders. If a borrower tried to sell his/her agricultural output through another dealer, then that informal lender would deduct the loan plus interest and pass it over to his/her fellow informal lender whom the borrower was trying to dodge. The ease of enforcing the interlinked credit contracts explains why those borrowers who accept them are less likely to be credit rationed.

Atieno (1998) also investigated the credit rationing behaviour of lending institutions (formal and informal) based on household survey data from Western Kenya. The results suggested that there was no evidence of credit rationing behaviour by friends/relatives and group lending programs.

6.3 Overview of Empirical Studies of Credit Rationing

As discussed in section 5.3.1, the selection of the empirical studies was motivated by their relevance to a developing country context. Similar probability models (logit/probit) and

Ordinary Least Squares (OLS) models as pointed out in section 5.3.2, have also been applied in the investigation of the informal lenders' credit rationing behaviour. The current study however uses the Heckman Probit model with sample selection for empirical work on credit rationing (further discussed in section 7.4.2.2). For the Probit/Logit models, the dependent variable was the probability of being credit rationed *[=1 if credit rationed, otherwise zero],* with explanatory variables mostly being household socio-economic characteristics. For the Ordinary Least Squares (OLS) models, the loan amount supplied by the lender was the dependent variable. The rationale for the use of the OLS model was that the factors that influence the amount of credit supplied also influence the lenders' credit rationing behaviour.

Some studies had investigated both informal credit demand and rationing (Baydas et al, 1994; Zeller, 1994; Bell et al, 1997) (see section 5.3.2). Only the main findings of those studies are highlighted in this section. Zeller (1994) found that the probability of being credit rationed is positively and significantly influenced by age, debt-income ratio and education level. The total value of assets owned by the household significantly reduces the probability of being credit rationed. Bell et al (1997) found that interlinked credit contracts and visible household assets positively and significantly influenced the amount of credit supplied by informal lenders, thereby reducing the probability of being credit rationed. Baydas et al (1994) observed that the amount of informal credit supplied is positively related to interest rates, the loan period, business profits and education level.

Models of access to informal credit were estimated by Zeller et al (1994) and Vaessen (2001). Access to credit is interpreted as a supply side phenomenon of the credit market on the grounds that it is the lender who decides whether the borrower accesses credit or not. As pointed out earlier, borrowers can either be totally credit rationed (if their loan applications

are completely rejected), or partially rationed (if amounts supplied by the lenders are less than amounts initially applied for) or not rationed at all (if full amount of credit demanded is granted.

Vaessen (2001:16), in a study of accessibility of rural credit in Northern Nicaragua with specific reference to credit from Fondo de Desamorroll Local (FDL) rural bank, also estimated a logit model. FDL is a non-government organization specializing in the provision of financial services in rural Nicaragua, hence part of the informal financial sector. This study argued that access to credit could be influenced by both the lender and household characteristics. At the institutional level, the lender takes decisions on the target group (either women or men or both), the selection criteria of clients, the geographic area of operation, and the features of financial products to be provided to address sustainability concerns, all of which influence credit supply. At the household level, being part of the specific target group or living in the targeted geographical area influences credit access. The financial product features (loan amount, loan period, interest rate, frequency of repayment) also affect household access to credit from particular informal sources, dependent on the availability of alternative sources. The logit regression results based on a sample of 178 households suggested that informal credit access is positively and significantly influenced by education level, family size, off-farm activities, and access to a network of information and recommendation.

Zeller et al (1994) used a probit model to estimate the factors that influence the probability of access to credit from the Gambian Co-operative based on data from 750 farmers. The Gambian Co-operative falls under the category of informal financial institutions since it is not under the direct supervision of the Central Bank. The results by Zeller et al (1994) suggest that age and household income have significant positive effects on the probability of

informal credit access, while being female has a negative and significant effect on credit access.

6.4 Determinants of Informal Lenders' Credit Rationing Behaviour

6.4. 1 Age

Evidence by Zeller (1994:1903) suggested that age has a positive and significant effect (at the 5% level) on the probability of being credit rationed. The intuition behind these results is that older individuals are more likely to apply for bigger loan amounts, which increases their probability of being credit rationed. Zeller et al (1994) reported a positive and significant effect of age (with a t-value of 2.91) on the probability of informal credit access, as older persons who control household resources may be rated to be more creditworthy.

6.4.2 Gender

In the Zeller et al (1994) study, being female had a negative and significant effect (with a t-value of -5.98) on credit access. This particular result reflected discrimination against women in the credit market. However the reasons that were adduced to explain this result were that membership in the credit union was male dominated and that as per the culture of the particular communities that were investigated, the men were regarded as representatives of the households. For this reason, there was no discrimination against women since the men in the credit market effectively represented them. This argument was supported by Baydas et al (1994) who reported that being male did not have any significant effect on access to credit.

6.4.3 Education Level

Vaessen (2001) showed that informal credit access is positively and significantly influenced by education level (at the 1% significance level), possibly on account of increasing returns to investment as a result of education. Zeller (1994) reported that education level had a positive and significant effect (at the 10% significance level) on the probability of being credit rationed. The argument for this result may be that what is critical to the informal lender is the character of the borrower in terms of trustworthiness in servicing debts, which may not be correlated with education level. In addition since law does not regulate transactions in the informal financial sector, the more educated borrowers may even turn out to be willful defaulters since they can challenge the informal lenders in the courts of law.

The results by Baydas et al (1994) suggested that the amount of credit supplied is positively and significantly influenced by the level of education (at the 5% significance level), which was a sharp contrast to the findings by Zeller (1994). The argument that was adduced by Baydas et al (1994) to explain their result was that the educated are more likely to get loans because they demand larger loans. In addition the institution preferred to give larger loans in order to minimize transaction costs.

6.4.4 Repayment capacity

The repayment capacity of the household may be captured by wealth, debt-income ratio, engagement in off-farm activities, and expected business profits. Zeller (1994) used the debt-income ratio, also referred to as the leverage ratio, as a measure of the households' debt repayment capacity. The higher the debt-income ratio, the higher will be the exposure to default risk and the higher will be the probability of being credit rationed. Empirical results suggested a positive and significant relationship between the probability of being credit

rationed and the debt-income ratio (at the 10% significance level). The implication of this result is that informal lenders equipped with information on the incomes and indebtedness of their potential clients use it as a screening and non-price credit rationing mechanism. It should be noted that it is the magnitude of the informal debt that is of significance to the informal lender because it can adversely affect the repayment of his/her loan. The size of the households' formal sector debt is not much of a worry to the informal lender because he has superior mechanisms of getting the first claim on the borrower's resources for loan repayment, while the residual will go to the formal lender. Households with high informal debt-income ratios have a higher probability of default, hence they are more likely to be credit rationed in the informal sector.

Zeller et al (1994) observed that household per capita income (which is an indicator of repayment capacity) had a positive and significant effect (with t-value of 2.00) on the probability of informal credit access. The possible explanation for this result may lie in the way the co-operative movement operates. The Co-operative Union is a membership organization where the maximum amount that can be lent to a member is a multiple of the members' savings with the Union. It is thus more likely that the wealthier households save more with the Union, which increases their likelihood of accessing larger loans (because they have higher repayment capacity) as compared to the poorer households. This may explain the significant positive relationship between household per capita income and the probability of access to credit, thus reducing the probability of being credit rationed.

In the Vaessen (2001) study, off-farm activities, which was captured by the trader dummy as a proxy for repayment capacity, had a positive and significant (at the 10% significance level) on the probability of credit access. The argument in support of this result was that from the institutional side, off-farm activities were preferred (as compared to agricultural

activities) due to their high turnover so as to service the short-term loans. The clients who were engaged in off-farm activities were perceived by the institution to have a higher repayment capacity as compared to agricultural households with high income variability due to exogenous production and price shocks. The strategy of lending mainly to off-farm activities was adopted by the institution to achieve financial sustainability.

Vaessen (2001) also used the agricultural wage labourer dummy as a proxy for repayment capacity. The results suggested a negative and significant relationship between being an agricultural wage labourer and access to informal credit (at the 5% significance level). The argument was that being an agricultural labourer is a reflection of a lower repayment capacity, as it is the poor who mainly work as agricultural wage labourers.

The value of visible assets can also be argued to be a measure of the borrowers' repayment capacity. The higher the value of the visible assets, the lower will be the probability of being credit rationed as the assets can easily be liquidated to recover the loans. Evidence by Zeller (1994) suggested that the total value of assets owned by the household has a negative and significant effect (at the 5% significance level) on the probability of being credit rationed. The argument is that the wealthier households are perceived to have a high repayment potential by the informal lenders, hence they are less likely to be credit rationed. Informal lenders can liquidate the borrowers' assets to recover their loans in case of default.

Bell et al (1997) also found a positive and significant relationship between visible assets and the amount of credit supplied by informal lenders. Intuitively these results are consistent with those reported by Zeller (1994), as the household factors that positively influence the quantity of credit supplied by lenders implicitly reduce the probability of such households being credit rationed.

One of the factors that influence the lenders' credit rationing behaviour is the expected return on the enterprises that are seeking financing. The expected returns are closely associated with repayment capacity. The higher the expected profits, the lower will be the exposure to default risk and the lower will be the probability of being credit rationed. Evidence by Baydas et al (1997) suggested that business profits have a positive and significant effect (at the 5% significance level) on informal credit supply, implying that the more profitable businesses are less likely to be credit rationed. The results also suggest that informal lenders base their lending decisions on the profitability of the proposed business to be financed.

6.4.5 Social Capital/Network

Vaessen (2001) observed that access to a network of information and recommendation had a positive and significant effect (at the 1% significance level) on access to informal credit. The argument is that the network of information and recommendation acts as a screening mechanism within the framework of information asymmetry so as to overcome adverse selection and moral hazard problems. The requirement for potential clients to be recommended or guaranteed by existing clients acts as social collateral, which is more important than physical collateral for institutions that specifically target the poor. Poor households, when applying for a loan, have to depend on their reputation with and recommendation by current clients of the micro finance institution as compared to well-off households. This explains the positive and significant relationship between credit access and household access to the network of information and recommendation. By implication those clients who have access to network information and guarantee are less likely to be credit rationed.

Empirical evidence by Kochar (1997) suggested that the probability of access to informal credit is positively and significantly influenced (at 5% level) by the social security dummy (=1 if personal guarantees were given for informal loan). This result may be explained in terms of personal guarantees serving as alternative collateral that is valued by informal lenders. The guarantors will undertake to monitor and put pressure on the borrowers to ensure full repayment of the loans to the lenders, thus minimizing loan default. The guarantors will be motivated to do this because they are under obligation to pay up the loans in case of default. The guarantee arrangement also enables the lenders to minimize transaction costs, thereby maximizing profits from lending operations. For this reason the clients who have access to a personal guarantee (which is a form of social capital) are less likely to be credit rationed.

6.4.6 Interlinked Credit Contracts

Bell et al (1997) found that tied-credit positively and significantly influenced the supply of credit from the informal financial sector (t-value 2.76). The tied-credit dummy captured whether the credit contract was interlinked. It should be noted that Bell et al (1997) used the OLS method where the dependent variable was the amount of loan supplied and the independent variables being household characteristics. What these results imply is that borrowers' acceptance of interlinked credit contracts, which involve marketing the crops through the informal lenders, reduce their probability of being credit rationed.

6.4.7 Interest Rates

On the credit supply side, there is a positive relationship between the amounts of credit supplied and interest rates. Interest rates play a dual role of price and an incentive mechanism and so the lenders may not charge equilibrium market interest rates. To

minimize the adverse incentives and moral hazard problems that are associated with high interest rates, lenders may choose to ration credit at a given interest rate. Empirical results by Baydas et al (1994) suggested that the amount of credit supplied is positively and significantly influenced by interest rates (at the 1% significance level). This result conforms to the theory of supply, where the quantity of a good or service supplied is positively related to its own price. There was however no inference that could be derived regarding how the interest rates charged by the informal lenders may influence their credit rationing behaviour.

6.4.8 Family Size

Evidence by Vaessen (2001) suggested that family size has a positive and significant effect (at the 5% significance level) on informal credit access. By implication the larger households are less likely to be credit rationed in informal credit markets, though no explanation was given for the result. But it can also be argued that a rational lender would perceive large households to have lower repayment capacity, which increases their probability of being credit rationed.

6.4.9 Loan Periods

The loan period may have either a positive or negative relationship with credit supply. Short loan periods may have high transaction costs relative to long term loans, which could negatively affect the institutions' ability to attain financial sustainability. In this light the lenders may prefer to give larger loans for longer periods, hence a positive relationship between credit supply and loan period may be observed. On the other hand, short loan periods may guarantee higher effective interest rates to lenders through fees and commissions that are charged on every loan cycle. These include loan processing and commitment fees that are fixed proportions of the loan amount. Assuming we have two

categories of lenders: Category A (who lend for short loan periods of four months) and Category B (who lend for longer loan periods of twelve months), Category A lenders will be able to earn commissions and fees three times in a year while Category B lenders can only earn it once. From this point of view, the institution may prefer to extend short-term loans so as to realize high effective interest rates to enhance attainment of financial sustainability. In this scenario one would expect to observe a negative relationship between credit supply and loan period. Evidence by Baydas et al (1994) suggested that the loan period (measured in months) had a positive and significant effect (at the 5% significance level) on amount supplied, which was explained by the lenders' preference to disburse longer-term loans to reduce transaction costs. Again, there was no logical relationship that could be derived between loan periods and informal lenders' credit rationing behaviour.

6.5 Conclusion

This chapter had set out to identify the key variables that influence the informal lenders' credit rationing behaviour from the empirical literature so as to give a rational basis for selection of variables and econometric models to be adapted by the current study. Some of the studies (Baydas et al, 1994; Bell et al, 1997) estimated informal supply models using the OLS/MLE techniques, where the dependent variable was the amount of loan received. Others (Zeller et al, 1994; Vaessen, 2001) had estimated logit models for informal credit access where the dependent variable was a binary variable (=1 if accessed credit). The determinants of informal credit rationing had to be inferred from such models based on the rationale that the household characteristics that positively and significantly influence the amount of credit supplied (or access to credit), can be argued to have a negative and significant effect on the probability of households' being credit rationed. For models that had estimated direct credit rationing (Zeller, 1994), the interpretation of the coefficients was direct.

Empirical evidence suggests that informal lenders' credit rationing behaviour is negatively and significantly influenced by sex (on account of males controlling more of the household resources thus being more creditworthy), perceived repayment capacity, social capital (guarantee arrangements), and interlinked credit contracts. Repayment capacity is captured in various studies by different kinds of variables which include household wealth, asset values, debt-income ratio, engagement in off-farm activities, and expected business profits. The higher the repayment capacity, the lower the loan default risk, and the lower the likelihood of being credit rationed. The guarantee arrangements and interlinked credit contracts enable informal lenders to resolve the information asymmetry problems inherent in credit markets.

Though household size was reported to have a negative and significant effect on the lenders' credit rationing behaviour, there was no rational basis for the result. Age and education level have inconclusive effects on the informal lenders' credit rationing behaviour (as their coefficients were positive and significant in some studies, while being negative and significant in others).

The next chapter examines the methodology used in the analysis of determinants of credit demand and credit rationing in Uganda's informal financial sector.

CHAPTER 7: METHODOLOGY

7.1 Introduction

From the survey of literature on the determinants of credit demand and credit rationing in chapters 5.4 and 6.4 respectively, a number of variables and econometric models that had been used in empirical work were identified. Given the fact that this study uses secondary data from the Uganda National Household Survey (UNHS) 1999/2000 that was collected by the Uganda Bureau of Statistics (UBOS), it is important to first examine the data set to see which significant variables that had been identified in the empirical literature can be extracted from the existing data. Secondly, some variables had been captured differently by the different studies and so the decision of how particular variables will be specified will depend on how the instruments for the UNHS 1999/00 survey had been constructed. So an examination of the kinds of questions that had been asked and the kind of responses that had been expected becomes critical. Thirdly, not all the econometric models that were identified in the literature survey can be estimated, for obvious data problems. A review of the existing data set therefore guides the selection of the most appropriate model to apply to the current study.

The issues discussed above provide the relevance of this chapter to the study. The organization of the rest of the chapter is as follows: section 7.2 presents the data sources and the sampling technique that had been used by UBOS, section 7.3 discusses how the variables for the study were measured, section 7.4 gives the specifications of the econometric models and the rationale for their selection, and section 7.5 provides the conclusions of the chapter.

7.2 Data Sources

The study used the Uganda National Household Survey (UNHS) data set for 1999/2000 from the Uganda Bureau of Statistics (UBOS) with a sample size of 10,692 households. This is a credible data set that was collected with technical support by the World Bank. A multi-stage stratified random sampling technique with probability proportionate to size was used by UBOS to draw the sample based on the 1991 census as the sampling frame. Each district was stratified into enumeration areas categorized as urban, other urban and rural. The first stage of sampling involved the selection of enumeration areas. The second stage was the sampling of households, where production and socio-economic aspects were taken into account in sample selection to ensure that it was representative. Households in enumeration areas were stratified according to acreage of agricultural production and socio-economic activities and a proportional sample of 10 households was randomly sampled per enumeration area.

7.3 Construction of Variables for the study

The variables that were used for the study were those identified in the literature review (in sections 5.4 and 6.4), and for which data was available in the UNHS 1999/2000 data set. The detailed description of how the variables used in the study were constructed is herein given below (with abbreviations for the respective variable names in brackets):

(i) ***Age of borrower (age):*** Section 2 of the UNHS 1999/2000 socio-economic survey questionnaire provides detailed demographic information (including age and sex) for all household members. The variable ***age*** was measured in years.

(ii) ***Sex of borrower (sex):*** This was constructed as a binary variable (=1 if male, otherwise zero).

(iii) ***Dependency ratio (depr):*** This was constructed following World Bank (2002) using the following formula: $(a + b)/c$, where a = number of children aged below 15 years; b = number of adults aged above 65 years; c = number of adults aged between 15 to 65 years.

(iv) ***Highest education level (edh):*** This variable was measured in number of completed years of schooling.

(v) ***Health status of household (sic):*** This was proxied by the number of days lost by the household due to sickness of its members. This was derived from section 3 of the questionnaire which had asked the following specific questions: *Did you fall sick in the last 30 days? If yes, what sickness or injury did you suffer from? What was the number of days lost due to sickness or injury?*

(vi) ***Migration status of household head (mig):*** This was derived as a binary variable (=1 if household head migrated to current location, otherwise zero), which was generated from section 5 (A) of the questionnaire.

(vii) ***Household expenditure (exp):*** The expenditure approach was used to compute household expenditure to proxy for income. The rationale is that expenditure information tends to be more reliable than the income data. Because of a number of factors (such as fear of taxation), respondents tend to understate their incomes. Section 7 of the questionnaire captured information on consumption expenditure on various items as follows: *Section 7(A) Household food and beverages expenditure in last 7 days, Section 7(B) Household non-durable goods expenditure* in last *30 days, Section 7 (C) Household semi-durable goods and services expenditure during last 365 days, Section 7 (D) Household non-consumption expenditure during last 12 months.* The household consumption expenditure from the different sections was annualized and summed to get an estimate of total household expenditure (***exp***). For durable goods, the whole value of the purchased good was not included in the expenditure computation. It was only the

portion of the durable asset utilized by the household over a period of one year that was included. This was proxied by the annual depreciation value of the asset and the opportunity cost in terms of foregone income on funds used for the purchase of the durable asset. For annual depreciation value of the durable good, the straight-line method was used, which was derived as the depreciation factor multiplied by the cost of the durable asset. The annual depreciation factor was generated as the inverse of the useful life of the asset (e.g. if the life span of the asset was 4 years, then the depreciation factor was 0.25). The opportunity cost on the other hand was derived as interest income lost by funds tied up in the purchase of the asset, assuming that the funds were invested at interest bearing fixed deposits (at the average Treasury Bill rate 10% per annum). The total annual household expenditure was converted to United States dollars (Exchange rate US$1 = Uganda Shillings 1,800). To generate per adult equivalent household expenditure, adult equivalents were generated following World Bank (2002) as follows:

$$AE = 1 + 0.7(N_1 - 1) + 0.5N_2 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (10)$$

Where

AE = *Adult Equivalent*

N_1 = *Number of adults aged 15 or above*

N_2 = *Number of children aged less than 15.*

The household expenditure per adult equivalent (***hhexp***) was derived as total household expenditure (***exp***) divided by adult equivalents (***AE***).

(viii) Value of Household assets per adult equivalent (astva): Section 10(A) of the questionnaire gave the various assets owned by the household in terms of both the quantity and current value. The different assets included household assets, livestock/poultry, and enterprise equipment. The variable (***astva***) was derived as a summation of the current values of all assets owned by the household measured in

United States dollars (Exchange rate US$1 = Shillings 1,800) and divided by adult equivalent.

(ix) ***Land size per adult equivalent (lan):*** This was the total land owned by the household (measured in acres) divided by adult equivalent.

(x) ***Credit Demand Variables:*** Section 10 (B) gave the borrowing status of all adult household members from both the formal and informal financial sectors. The specific questions that were asked by the survey were: *Have you ever applied for a loan? If yes, from what source?* The codes for source included: *0=bank, 1=co-operative credit societies, 2=government agencies, 3=non-government organizations, 4=commercial firms, 5=money lenders, 6=employer, 7=relatives/friends, 8=community funds, 9=others.* As already mentioned in chapter 4.2, from the options listed above it is only the banks that were regulated by the Bank of Uganda under the Financial Institutions Statute (FIS) 1993 at the time of the UNHS 1999/2000 survey. The rest of the options for source fell in the unregulated informal financial sector. The Microfinance Deposit–Taking Institutions Act (2003) that was discussed in section 4.3.5 was only promulgated into law in May 2003 and is in the process of being implemented. The variable for general[9] credit demand ***(level)*** was constructed as a binary variable *(=1 if a borrower applied for credit from either the formal or informal financial sector, otherwise zero)*. The informal credit demand variable ***(boro)*** was generated as a binary variable *(=1 if borrower applied for an informal sector loan, otherwise zero)*. The variable ***boro*** took the value of one if the source was co-operative credit societies, government agency[10], non-government organizations, commercial firms, moneylenders, employer, relatives/friends, community funds, others and zero if the source was a bank. The variables for loan amounts demanded and supplied from the general credit market (irrespective of whether source was formal or informal sector) were ***ammo*** and ***recivo***

[9] *General refers to the whole credit market (both the formal and informal financial sectors)*
[10] *Government Agency refers to institutions that managed Government credit schemes such as Entandikwa, Poverty Alleviation Project loans, and were not part of the regulated financial sector.*

respectively expressed in dollars. The variables for loan amounts applied for and received from the informal financial sector were labeled as ***infdd*** and ***infss*** respectively expressed in dollars.

(xi) ***Credit Rationing Variables***: Section 10(B) also gave the loan amounts applied for by various household members from the various sources and the amounts received. The variable ***lessmo*** which captured being credit rationed in the general credit market was constructed as a binary variable *(=1 if loan amount received was less than loan amount applied or the loan application totally rejected in the formal or informal financial markets, otherwise zero*). The variable for informal financial sector credit rationing (***ration)*** was also constructed as a binary variable *(=1 if amount received from the informal financial sector source was less than amount applied for or application totally rejected, otherwise zero).*

(xii) ***Loan Period:*** This was measured in number of months.

(xiii) ***Regional and Rural/urban Dummy variables:*** For regional decomposition of the sample, the regional dummies took the value of one if the household was located in a specific region, otherwise zero. The regional dummy variables were labeled as follows: central region (***reg1***), eastern region (***reg2***), northern region (***reg3***), and western region (***reg4***). The rural/urban dummy (***urba***) took the value of one if urban, otherwise zero.

(xiv) ***Missing Variables:*** The following variables were not captured by the UNHS 1999/2000 survey and could not be incorporated in the analytical work: savings, interest rates and commissions charged by financial institutions for loans, transaction costs incurred by borrowers (such as transport costs, waiting time), and specific repayment difficulties encountered.

7.4 Analytical Techniques

7.4.1 Analysis of Variance (ANOVA)

Descriptive statistics (means, median, standard deviation, skewness, kurtosis and number of observations) for the defined variables for the entire sample were generated and are presented in Appendix 1. The informal sector borrowers were then separated and decomposed by region, rural/urban residence and informal lender category where Analysis of Variance (ANOVA) was used to test the differences of means of all the variables for borrowers in the various categories following Billingsley et al (1986). The hypotheses tested was that the borrowers from the various categories have the same mean characteristics:

$$H_0: \mu_{i1} = \mu_{i2} = \mu_{i3} \ldots = \mu_{ik} \qquad (11)$$

$$H_1: \mu_{i1} \neq \mu_{i2} \neq \mu_{i3} \ldots \neq \mu_{ik} \qquad (12)$$

where μ_{ik} = mean of the i^{th} variable (ageh, sex. etc) for households in the k^{th} category. The number of categories (***k***) varied according to the decomposition parameter as follows: regional decomposition ($k = 4$), rural-urban decomposition ($k = 2$), informal lender decomposition ($k = 4$). The ANOVA F statistic for each variable was computed as follows:

$$F_{\sigma,v1,v2} = S^2_B/S^2_W \qquad (13)$$

Where:

σ= significance level

$v1$ = Numerator degrees of freedom, equal to (k-1), where k= number of categories.

$v2$ = Denominator degrees of freedom, equal to $(n_T - k)$, where n_T = total sample size

S^2_B = Between-group variance

S^2_W = Within-group variance

7.4.2 Econometric Model Estimation

7.4.2.1 Credit Demand Models

The study used four main estimation techniques: the logit model for the probability of credit demand, the Heckman probit model with sample selection for the probability of credit rationing, the Heckman two-step selection model for the value of credit demanded and supplied, and the multinomial logit model for the choice between formal and informal sector credit (using those who had not applied for any credit as the reference category), and choice between informal institutions (using the relatives/friends/community funds as the reference category).

The logit model was used to estimate a behavioural model for household credit demand, where demand was captured by the probability of applying for a loan, given the relevant socio-economic characteristics. In a logit model, the outcome variable is discrete dichotomous in nature (Kennedy, 1992; Greene, 2000), where the probability, p, that a borrower demands a loan is given by:

$$p = e^{Z}/(1+ e^{Z}) \quad \text{……………………………………………………….(14)}$$

Central to the use of logistic regression is the logit transformation of p given by Z

$$\mathbf{Z} = \ln[p/(1-p)] \quad \text{……………………………………………………….(15)}$$

Where

$$Z = \alpha_0 + \Sigma\alpha_i X_i + \mu_i \quad \text{……………………………………….(16)}$$

Where α_i are the regression parameters, X_i are the household socio-economic variables (independent variables) and μ_i is the error term.

When borrowing is perceived as a decision-making process, then it starts with an individual either having a demand for credit or not. It is only those individuals who have demand for credit who decide to apply for credit, and those who do not have demand for credit will not

apply (Zeller, 1994). Two separate logit models were estimated for the general credit demand and informal credit demand with dependent variables being ***level*** and ***boro*** respectively, over the same set of explanatory variables. The analysis was done at the national, regional and rural/urban levels. The specific explanatory variables in vector X that were included in the credit demand model are listed in Table 7.1.

Table 7.1 Explanatory Variables for Credit Demand Model

Variable name	*Definition and unit of measurement*	*Expected sign of coefficient*	*Economic intuition for expected result*
age	Age of borrower, measured in years	Positive for both formal and informal credit	Older members control household resources, hence have capacity to pay
sex	Sex of borrower (=1 if male, otherwise zero)	??	Undefined a priori
depr	Dependency ratio	Positive for both formal and informal credit	Higher dependency ratio increases demand for consumption credit such as education for children
edh	Highest education level of borrower, measured in number of completed years schooling	Positive for both formal and informal credit	Education increases returns from capital
sic	Health status of the household, measured by the number of sick days lost by household due to sickness	Positive for both formal and informal credit	Poor health status increases demand for credit for heath care financing to maintain the productive capacity of the labour force
mig	Migration status of household head (=1 if household head migrated to current location, otherwise zero)	??	Undefined a priori
hhexp	Total household expenditure (in US$)	Negative for informal credit	Households with higher income can use their own savings and/or borrow bigger and cheaper credit from the formal banks
astva	Total value of household assets (in US$)	Negative for informal credit	Households endowed with assets can pledge them to banks for bigger loans
lan	Total household land holding (in acres)	Negative for informal credit	Same as above

Two multinomial logit models were also estimated. The first was to determine the factors that influence the choice between formal and informal credit, using those that did not apply for any credit as the reference category. The second multinomial logit model estimated the factors that determine the borrowers' choice of informal institutions, with relatives /friends / community funds as the reference category.

The Heckman two-step selection model for the amount of credit demanded was specified as follows:

$$Q_d = \gamma_0 + \Sigma\gamma_i X_i + \varepsilon_i , \quad \text{select } (Q_d = \psi_0 + \Sigma \psi_i K_i + \mu_i) \ldots\ldots\ldots\ldots\ldots\ldots (17)$$

Where

$Q_d = \gamma_0 + \Sigma\gamma_i X_i + \varepsilon_i$ is the model of interest

$Q_d = \psi_0 + \Sigma \psi_i K_i + \mu_i$ is the selection model

Q_d = Total value of credit applied for

X_i = Vector of socio-economic characteristics

K_i = Subset of the vector of parameters in vector X_i

γ_0 , ψ_0 = constant terms

γ_i , ψ_i = Vector of coefficients

ε_i = error term

The rationale for estimating the Heckman Selection model was to validate the results from the logit regressions, as well as to model the volume/amount of credit demand. Given the fact that sample selection took place in terms of some individuals not demanding any credit, the Ordinary Least Squares (OLS) estimation method would have given biased parameter estimates of the amounts of credit demanded (Heckman, 1976:475). Heckman has shown that this is tantamount to a missing variable problem. The Heckman two-step selection model involved the specification of the model of interest based on some underlying economic theory and the selection model whose variables have the likelihood of influencing the outcome observed. The dependent variable for both the model of interest and the selection model was the value of credit demanded, with explanatory variables being socio-economic characteristics. The rationale for the use of the Heckman two-step selection model is that the dependent variable for the model of interest is not always observable for cases

where the amount of credit demanded is zero. The dependent variable for the i^{th} observation is only observable if $(\psi_i K_i + \mu_i) > 0$, where $\varepsilon_i \sim N(0,1)$, $\mu_i \sim N(0,1)$, $corr(\varepsilon_i, \mu_i) = \rho$ and $\rho \neq 0$.

By implication, only observations whose dependent variables were observable (i.e. people who did apply for credit) were selected into the model of interest. The test for the unbiased parameter estimates is based on whether the error terms of the model of interest and the selection model are correlated (ρ). The diagnostic statistics for the Heckman two-step selection model are discussed in detail in section 9.2.

7.4.2.2 Heckman Probit Model with Sample Selection for Credit Rationing

As argued in section 6.2, the lender makes a decision whether to ration credit demand or not based on his analysis of the borrower's socio-economic characteristics, plus any other available information on the borrower's behaviour. The Heckman probit model with sample selection was used to analyze the factors that influence the lenders' credit rationing behaviour. The Heckman probit model with sample selection involved the specification of the model of interest and the selection model. For the model of interest, the dependent variable was the probability of being credit rationed either in the whole credit market or specifically in the informal financial sector. The dependent variables were ***lessmo*** *(=1 if credit rationed in the whole credit market i.e. formal or informal, otherwise zero)* and ***ration*** *(=1 if credit rationed in the informal financial sector, otherwise zero)* which were regressed over the same independent variables (X_i). For the selection models, the dependent variable was the probability of applying for the loan. For the whole credit market rationing model, the dependent variable for the selection model was ***level*** (=1 if applied for credit in the formal or informal financial sector, otherwise zero). For the informal financial sector credit rationing model, the dependent variable for the selection model was ***boro*** (=1 if applied for informal credit, otherwise zero). The rationale for this specification was to avoid modelling

those who had not applied for any credit, as such persons were not credit rationed by financial institutions (formal and informal) but were self-credit rationed (Heckman, 1976).

The specification of the Heckman probit model with sample selection for informal credit rationing was as follows:

$$\text{Prob(ration)} = \beta_0 + \Sigma\beta_i X_i + \varepsilon_i, \quad \text{select (boro} = \Omega_0 + \Sigma\,\Omega_i K_i + \varepsilon_i) \ldots\ldots\ldots (18)$$

Where:

$\text{Prob(ration)} = \beta_0 + \Sigma\beta_i X_i + \varepsilon_i$ is the model of interest

$\text{Prob(boro)} = \Omega_0 + \Sigma\,\Omega_i K_i + \mu_i$ is the selection model

ration = the probability of being credit rationed (*ration* =1 if borrower was credit rationed in informal sector, otherwise zero)

boro = the probability of applying for an informal loan (*boro* =1 if borrower applied for informal loan, otherwise zero)

β_0 , Ω_0 = constant terms

β_i, Ω_i = vector of coefficients

X_i = Vector of household socio-economic characteristics

K_i = Sub-set of the socio-economic characteristics vector, X_i.

ε_i, μ_i = error terms

Again, the dependent variable for the model of interest is not always observable. The dependent variable for the i^{th} observation is only observable if $(\Omega_i K_i + \mu_i) > 0$, where

$\varepsilon_i \sim N(0,1)$, $\mu_i \sim N(0,1)$, $\text{corr}(\varepsilon_i, \mu_i) = \rho$ and $\rho \neq 0$.

The specific explanatory variables included in the vector X for both the informal sector and broader sector credit rationing models are listed in Table 7.2.

Table7. 2: Explanatory Variables for the Credit Rationing Model

Variable name	*Expected sign of coefficient*	*Economic intuition*
age	Positive	Older households are more likely to apply for larger amounts, thereby being credit rationed by informal lenders
sex	??	Undefined a priori
educ	Positive	Education and literacy levels do not necessarily improve the loan repayment behaviour. The educated people are more informed of their legal rights and hence the probability of defaulting may be high, as informal lenders lack legal enforcement rights. All such matters have to go through the inefficient and corruption-ridden courts of law which favour the defaulter. For that reason the educated/literate households are more likely to be credit rationed
sic	Positive	Households with poor health status have a low repayment capacity, hence more likely to be credit rationed
mig	??	Undefined a priori
inc astva lan	Negative	Households with higher income, assets and land holding exhibit a high repayment potential, as recoveries can be effected through liquidation of such assets, hence less likely to be credit rationed

The Heckman two-step selection model was also used to analyze the factors that influence the amount of credit supplied by lenders. The specification of the Heckman two-step selection model for the amount of informal credit supplied is as follows:

$$Q_s = \delta_0 + \Sigma\delta_i X_i + \varepsilon_i , \quad \text{select } (Q_s = \phi_0 + \Sigma \phi_i K_i + \mu_i) \ldots\ldots\ldots\ldots\ldots\ldots (19)$$

Where

$Q_s = \delta_0 + \Sigma\delta_i X_i + \varepsilon_i$ is the model of interest

$Q_s = \phi_0 + \Sigma \phi_i K_i + \mu_i$ is the selection model

Q_s = Total value of credit supplied

X_i = Vector of socio-economic characteristics

K_i = Sub-set of vector of socio-economic characteristics, X_i.

δ_0 , ϕ_0 = Constants

δ_i , ϕ_i = Coefficients

e_i , μ_i = error terms

As discussed earlier, the dependent variable of the model of interest is not always observable. The dependent variable for the i^{th} observation is observable on condition that $(\phi_i K_i + \mu_i) > 0$, where $\varepsilon_i \sim N(0,1)$, $\mu_i \sim N(0,1)$, $corr(\varepsilon_i, \mu_{i)} = \rho$ and $\rho \neq 0$.

7.5 Conclusions

This chapter had two main motivations. The first objective was to construct the variables which were identified as key determinants of informal credit demand and credit rationing in sections 5.4 and 6.4 respectively from the UNHS 1999/00 data set. The second objective was to explicitly specify the econometric models to be used for estimation of determinants of informal credit demand and credit rationing in Uganda.

The conclusion from this chapter is that most of the data needed to construct the variables of interest was captured by the UNHS 1999/00 survey. The specific socio-economic variables which were constructed included: age, sex, dependency ratio, health status (proxied by number of sick days), migration status, household expenditure, value of household assets. The loan characteristics captured by the survey included the different sources of credit (formal and informal), the loan amounts applied for, the loan amounts received, and the loan period. Based on information of loan amount demanded and received, the variable for being credit rationed was constructed. However the survey did not capture information on the price variables for credit such as interest rates and commissions charged by the lenders, and the transaction costs incurred by the borrowers (such as transport costs, waiting time to receive a loan).

With regard to analytical techniques, the conclusion was that it is more appropriate to use different techniques. The ANOVA technique was used for analysis of the descriptive

statistics of the variables of interest, which results are discussed in chapter 8. The different econometric models that are selected for empirical work for the current study include: the logit model for estimation of the determinants of the households' borrowing behaviour, the Heckman probit model with sample selection for estimation of the determinants of informal lenders' credit rationing behaviour, the Heckman two-step selection model for estimation of the determinants of the value of credit demanded and supplied, and the multinomial logit model for estimation of factors that influence the borrowers' choice between formal and informal credit, and choice between informal institutions. The selection of the different econometric models was motivated by the need to generate plausible results and control for sample selection bias (which specifically relates to the choice of the Heckman two-step selection models, and the Heckman probit models with sample selection). The econometric results of the study are presented in chapter 9.

CHAPTER 8: EMPIRICAL RESULTS - DESCRIPTIVE STATISTICS

8.1 Introduction

The objective of this chapter is to discuss the descriptive statistics of the variables of interest. This is a bivariate analysis, which gives some indications of the relationships between the variables of interest. The limitation of the bivariate analysis, however, is that it cannot give the exact relationships between credit demand or credit rationing variables and the rest of the variables, which can only be provided by the multivariate analysis whose results are discussed in chapter 9. The variables of interest that influence informal credit demand and credit rationing were identified in sections 5.4 and 6.4 respectively, and are measured as discussed in section 7.3. The ANOVA technique, referred to in section 7.4.1, was used to analyze the mean differences of the variables of interest across various categories (namely credit status, regional and rural/urban categories).

The rest of the chapter is organized as follows: Section 8.2 analyzes the credit status of the sample, which examines whether the respondents applied for credit or not, and the source of credit if any. Section 8.3 discusses the socio-economic characteristics of the sample, and section 8.4 presents the conclusions of the chapter.

8.2 Credit Status of Sample

The analysis was done at the individual level comprising of adults[11] who had provided information related to credit transactions. The sample was analyzed by region, residence and credit status using unweighted data of UNHS 1999/2000. The four regions that were used for analysis were constituted as follows: Central Region (12 districts), Eastern region (12 districts), Northern Region (10 districts) and Western Region (12 districts). The residence

[11] *Adults are those aged above 18 years as stipulated by the Ugandan laws.*

status dummy was used to decompose households into either rural or urban (= 1 if household resides in urban area, otherwise zero). The different informal financial institutions earlier discussed in section 3.4 were classified into four main categories as follows: Category 1 (Cooperative credit societies/NGOs), Category 2 (Money lenders/Commercial firms), Category 3 (Relatives/friends/community funds/employers), and Category 4 (Government Agencies).

There were a total of 22,932 adults who were covered in the UNHS 1999/2000 survey. The credit status captured whether the respondent ever applied for a loan or not, and the source of credit if they ever applied. The credit status variable separated the sample into two broad categories: the borrowers and non-borrowers. The borrowers were further categorized by the source of credit: formal sector (banks) and informal sector.

The results tables have been organized in such a way that the observations are presented by row (which gives the row percentages) and by column (which gives the column percentages). The motivation for this style of presentation is that it allows the analyst to make between-group and within-group comparisons. For between-group comparisons, the row percentage is used, while the column percentage is used for within-group comparisons.

8.2.1 Non-borrowers

At the national level, 90.3% of the respondents had not applied for any credit during the last 12 months prior to the survey. At the regional level, northern region had the highest proportion of respondents who had never applied for loans (98.8%) followed by the central region (91.6%). At the rural/urban level, the proportions of those who had not applied for credit were 90.7% and 88.8% for the rural and urban sectors respectively (see Table 8.1).

Table 8.1: Credit Status of Sample by National, Region and Rural/Urban[12]

Credit Status	Region				Sector		National
Never Applied	Central	Eastern	Northern	Western	Urban	Rural	Total
	5,757	5,484	3,665	5,802	4,227	16,302	20,708
	27.8%	26.5%	17.7%	28.0%	20.6%	79.4%	100.0%
	91.6%	88.7%	98.8%	88.0%	88.8%	90.7%	90.3%
Bank	36	13	11	49	69	38	109
	33.0%	11.9%	10.1%	45.0%	64.5%	35.5%	100.0%
	0.6%	0.2%	0.3%	0.7%	1.5%	0.2%	0.5%
Informal	494	687	190	744	463	1,633	2,115
	23.4%	32.5%	9.0%	35.2%	22.1%	77.9%	100.0%
	7.8%	11.1%	4.9%	11.3%	9.7%	9.1%	9.2%
Total	6,287	6,184	3,866	6,595	4,759	17,973	22,932
	27.4%	27.0%	16.9%	28.8%	20.9%	79.1%	100.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The reasons for not applying for credit were also analyzed by region and rural/urban location (see table 8.2). At the national level, the four main reasons cited were: that they did not need credit (44.9%), did not know where to apply (18.9%) and did not have required security (17.8%). A regional level analysis suggested that the highest proportion of those who did not need credit was from northern region (52.5%) and lowest in eastern region (38.0%). Lack of knowledge of where to apply and non-availability of supply as being reasons for not applying had a similar regional distribution where the problem was more pronounced in northern region and lowest in eastern region. However lack of the required security as a constraint to applying for credit was more prevalent in eastern region (26.1%), while the argument of interest rates being too high was dominant in central region (5.3%).

The rural/urban decomposition suggested that the main reasons for not applying for credit within the rural sector included no need for it (43.2%), lack of knowledge where to apply (20.5%) and lack of security (17%). Within the urban sector, the main factors for not applying for credit included: not needed (50.8%), lack of security (20.7%) and lack of knowledge where to apply (13.3%).

[12] *Because of some missing urban/rural values, the rows do not all add up.*

Table 8.2: Reasons for not Applying for Credit by National, Region, and Rural/Urban[13]

Reason	Region				Sector		National
	Central	Eastern	Northern	Western	Urban	Rural	Total
Does not need Credit	2,359	2,045	1,889	2,847	2,109	6,921	9,140
	25.8%	22.4%	20.7%	31.2%	23.4%	76.6%	100.0%
	41.5%	38.0%	52.5%	50.2%	50.8%	43.2%	44.9%
Does not know where to apply	1,026	903	777	1,142	551	3,288	3,848
	26.7%	23.5%	20.2%	29.7%	14.4%	85.7%	100.0%
	18.1%	16.8%	21.6%	20.1%	13.3%	20.5%	18.9%
No supply available locally	583	553	493	603	246	1,978	2,232
	26.1%	24.8%	22.1%	27.0%	11.1%	88.9%	100.0%
	10.3%	10.3%	13.7%	10.6%	5.9%	12.4%	11.0%
Does not have required security	1,216	1,048	312	678	860	2,713	3,614
	33.7%	39.0%	8.6%	18.8%	24.1%	75.9%	100.0%
	21.4%	26.1%	8.7%	12.0%	20.7%	17.0%	17.8%
Interest too high	300	135	74	278	239	542	787
	38.1%	17.2%	9.4%	35.3%	30.6%	69.4%	100.0%
	5.3%	2.5%	2.1%	4.9%	5.8%	3.4%	3.9%
Other	196	344	56	124	148	567	720
	27.2%	47.8%	7.8%	17.2%	20.7%	79.3%	100.0%
	3.5%	6.4%	1.6%	2.2%	3.6%	3.5%	3.5%
Total	5,680	5,388	3,601	5,672	4,153	16.009	20,341
	27.9%	26.5%	17.7%	27.9%	20.6%	79.4%	100.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The analysis of reasons for not applying for credits brings to the fore interesting findings. First, there is limited utilization of credit both in the rural and urban areas. This tends to agree with Adams and Nehman (1979) who argued that there is limited credit demand among the poor due to lack of profitable investment opportunities. In the case of Uganda, the poor reside in the rural and peri-urban areas. Secondly, there is a lack of market information on available credit opportunities, especially among the rural population. This is reflected in two of the reasons given for not applying for credit, namely not knowing where to apply and no supply available locally. It is for this reason that Bagachwa (1995: 44) advocated policies for provision of market information and infrastructural support services to enhance financial sector development.

[13] *Because of some missing urban/rural values, the rows do not all add up.*

Thirdly, lack of required security also featured as a constraint to applying for credit. This could be particularly true for bank credit where collateral is a pre-requisite for any borrowing, hence contributing to financial market segmentation. The poor with no credible collateral are denied access to formal bank credit. It is against this background that policies for formal sector banks to use collateral substitutes such as joint liability contracts are advocated (Reindinger, 1994). These policies will not only increase access by the poor to formal credit but also reduce the formal bank's transaction costs for dealing with small borrowers.

Fourthly, the interest rate was not rated as a significant constraint to applying for credit. Only 3.9% of those who did not apply for credit cited a high interest rate as the constraint. Even within the rural sector, only 3.4% reported the high interest rate as the constraint for not applying for credit. What these results seem to confirm are the arguments by Rhyne and Otero (1992) that what is more critical to the poor is access to credit but not the interest rate. The poor can pay high interest rates as long as they have access to convenient and flexible credit products that meet their needs. However information on interest rates was not captured in the UNHS 1999/2000 survey so it was not possible to empirically test this hypothesis.

8.2.2 Bank borrowers

At the national level, only 0.5% of respondents had applied for bank credit. The results suggest limited access to formal sector credit. The regional analysis suggests that the highest proportion of respondents that applied for bank credit was from western region (0.7%) and lowest in eastern region (0.2%). Within the rural sector, only 0.2% of the respondents applied for bank credit, as compared to 1.5% of those in the urban sector (see table 8.1).

These results corroborate empirical findings that banks have an urban bias (Adams and Nehman, 1979). By being located in the urban areas, the formal banks tend to serve mainly the interests of the urban sector. The high borrowing costs associated with formal bank credit plus the use of collateral as a rationing device may explain the limited accessibility to formal bank credit by the rural people. The limited access to bank credit may also be explained by the financial sector reforms which led to the closure of some banks and/or bank branch networks as discussed in section 4.3.2, which made credit even more inaccessible especially in rural areas. This compounded the already existing problem of collateral requirements.

From the policy perspective, the challenge is how to increase access to formal sector credit by especially smaller borrowers. This is based on the rationale that improved access to credit can enable poor households to improve their welfare by undertaking some investment projects and also human capital formation (through education loans) that enhances future productive capacity. Schoombee (2000:754) identified a number of policy options that could be used to get the banks to extend credit to the small borrowers. These include the use of non-market oriented or market oriented monetary and financial policies. The non-market monetary and financial policies include the control of interest rates and redirecting credit legislation or creation of specialized public sector banks to deliver subsidized credit to specific sectors (such as agriculture, small industry and housing). As argued in sections 3.2.1 and 4.3.1 and also by Schoombee (2000), non-market oriented policies are inefficient and result in the sub-optimal allocation of resources. In addition, directed credit programportfolios are usually characterized by poor repayment rates and worsen the income inequality between the rich and the poor. This is because the richer households have more access to subsidized credit than the poor. For these negative distributional effects plus their

negative effects on financial sector development, non-market policies are not the optimal policy choices to increase small borrowers' access to formal sector credit.

Market oriented monetary and financial policy instruments include the provision of incentives to banks to reduce the cost of default risk as well as transaction costs associated with lending small amounts at a time. These incentives include credit guarantee schemes which act as alternative collateral to cover against default risk losses, and time-bound grants and/or subsidies. However Schoombee (2000) argued that care must be taken in the design and implementation of guarantee schemes in terms of determining the risk-sharing ratio between the fund and the banks, clarity of rules and regulations regarding the handling of claims. If the fund's share of the risk is high, then a moral hazard problem may emanate from the banks by selecting high-risk borrowers. The incentives will provide the banks with the necessary motivation to extend their services to smaller borrowers with minimal negative effects on financial sector development, which is the financial systems approach to development finance. This was the basis upon which the Microfinance Capacity Building Fund (MCAP) of the Microfinance Outreach Plan (MOP) referred to in section 4.3.5 was designed to motivate best practice MFIs to extend their services to remote rural areas with no access to banking services.

8.2.3 Informal sector borrowers

The informal financial sector constitutes one of the most important sources of credit. At the national level, 9.2% of the respondents had applied for informal sector credit. Within the regions, western region still ranked highest with the highest proportion respondents who applied for informal credit (11.3%), followed by eastern region (11.1%) and least in the northern region (4.9%). The rural-urban decomposition reveals that 9.7% of the urban

respondents applied for informal sector credit as compared to 9.1% of the rural respondents (see table 8.1).

The identified informal financial institutions from the survey included relatives and friends, community funds, moneylenders, commercial firms, government agencies, NGOs, co-operative savings and credit societies and employers (See table 8.3).

Table 8.3: Source of Informal Credit by National, Region, and Rural/Urban[14]

Source	Region				Sector		National
	Central	Eastern	Northern	Western	Urban	Rural	
Co-operative Societies	26	18	13	103	27	129	160
	16.3%	11.3%	8.1%	64.4%	17.3%	82.7%	100.0%
	5.5%	2.7%	7.3%	14.4%	6.1%	8.2%	7.9%
Government Agency	46	67	45	80	44	190	238
	19.3%	28.2%	18.9%	33.6%	18.8%	81.2%	100.0%
	9.8%	10.0%	25.1%	11.2%	10.0%	12.1%	11.7%
NGOs	137	124	70	32	134	221	363
	37.7%	34.2%	19.3%	8.8%	37.8%	62.3%	100.0%
	29.2%	18.6%	39.1%	4.5%	30.4%	14.1%	17.9%
Commercial Firm	3	6	0	9	7	11	18
	16.7%	33.3%	0.0%	50.0%	38.9%	61.1%	100.0%
	0.6%	0.9%	0.0%	1.3%	1.6%	0.7%	0.9%
Money Lender	6	3	6	76	12	79	91
	6.6%	3.3%	6.6%	83.5%	13.2%	86.8%	100.0%
	1.3%	0.5%	3.4%	10.6%	2.7%	5.0%	4.5%
Employer	9	6	4	3	14	7	22
	40.9%	27.3%	18.2%	13.6%	66.7%	33.3%	100.0%
	1.9%	0.9%	2.2%	0.4%	3.2%	0.5%	1.1%
Relatives, Friends	228	424	27	241	179	739	920
	24.8%	46.1%	2.9%	26.2%	19.5%	80.5%	100.0%
	48.6%	63.5%	15.1%	33.6%	40.6%	47.0%	45.3%
Community Funds	11	17	13	160	19	182	201
	5.5%	8.5%	6.5%	79.6%	9.5%	90.6%	100.0%
	2.4%	2.5%	7.3%	22.3%	4.3%	11.6%	9.9%
Other	3	3	1	13	5	15	20
	15.0%	15.0%	5.0%	65.0%	25.0%	75.0%	100.0%
	0.6%	0.5%	0.6%	1.8%	1.1%	1.0%	1.0%
Total	469	668	179	717	441	1,573	2,033
	23.1%	32.9%	8.8%	35.3%	21.9%	78.1%	100.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

At the national level, friends/relatives constituted the major source of informal credit (45.3%), followed by non-government organizations (17.9%) and government agencies (11.7%). Both within the regions and the rural/urban sectors, the most important sources of

[14] *Because of some missing urban/rural values, the rows do not all add up.*

credit were friends/relatives, and NGOs. These results agree with Bagachwa (1995) who found that most of the informal credit in Tanzania was from friends and relatives.

8.3 Socio-economic characteristics of sample

Analysis of variance (ANOVA), discussed in section 7.4.1, was used to analyze the differences of means of socio-economic variables for the respondents by the various categorization variables (i.e. region, residence and category of lender). The F-statistics of the ANOVA test are presented in the tables below. The interpretation of the significance of the ANOVA results is based on the magnitude of the F-value. If the F-value is equal to or greater than two (2), then there are significant differences in the mean of the particular variable across the specified categories.

8.3.1 Age, Gender and Household size of Sample by Credit Status

8.3.1.1 Age

At the national level, the mean age of the respondents was 36.75 years. Bank borrowers had a higher mean age (40.83), with those who had not applied for any credit having the smallest mean age (36.56). The mean age difference between the three categories (i.e. non-borrowers, bank and informal sector borrowers) was statistically significant with an F-value of 15.94. The within-region analysis also revealed the same pattern with bank borrowers having a higher mean age in three regions namely central, eastern and northern. However, in the western region the informal sector borrowers had a higher mean age (40.19).

Eastern region generally had the oldest respondents (37.29) and northern region the youngest respondents (36.33). The rural/urban decomposition reveals that the rural respondents have a higher mean age (37.72) as compared to the urban respondents (33.31).

Bank borrowers from both the rural and urban sectors still have a higher mean age as compared to the other two categories (see table 8.4). The conclusion from these results is that relatively older people borrow from banks. This may be explained by the fact that older people are more likely to have assets that can be tendered as security to the banks.

Table 8.4: Mean Age, Gender and Education Level of Sample by Credit Status

Mean Age (in years)							
Credit Status	Region				Sector		National
	Central	Eastern	Northern	Western	Urban	Rural	
Never Applied	36.23	37.26	36.23	36.45	32.92	37.57	36.56
Bank	42.58	44.15	38.91	39.08	39.29	43.34	40.83
Informal	37.23	37.33	38.21	40.19	35.96	39.08	38.39
Total	36.34	37.29	36.33	36.89	33.31	37.72	36.75
F-ratio	3.60	1.13	1.66	18.55	17.19	8.36	15.94
Gender Proportion (Male=1)							
Credit Status	Region				Sector		National
	Central	Eastern	Northern	Western	Urban	Rural	
Never Applied	0.46	0.45	0.45	0.46	0.46	0.45	0.45
Bank	0.78	0.62	1.00	0.61	0.62	0.84	0.71
Informal	0.61	0.65	0.62	0.63	0.53	0.66	0.63
Total	0.47	0.47	0.46	0.48	0.47	0.47	0.47
F-ratio	27.92	48.90	17.91	40.56	7.74	138.75	132.65
Mean Education Level (in years)							
Credit Status	Region				Sector		National
	Central	Eastern	Northern	Western	Urban	Rural	
Never Applied	5.60	4.84	3.82	4.60	7.31	4.11	4.80
Bank	10.81	6.92	10.00	10.06	10.30	9.08	9.93
Informal	6.25	6.03	6.36	5.18	8.14	5.12	5.81
Total	5.69	4.97	3.96	4.71	7.43	4.21	4.92
F-ratio	34.04	26.33	49.90	49.52	22.19	85.39	137.77

8.3.1.2 Gender

As earlier stated, the sex of the respondents was captured by a dummy variable (=1 if male, otherwise zero) and the F-ratios indicate that sex ratios differ significantly by borrowing status. At the national level, 47% of the respondents were male. Men were more likely to apply for bank and informal credit than women. The proportions of male borrowers in the bank and informal sectors were 71% and 63% respectively (See table 8.4). Women were

more predominant in the category of those who had not applied for any credit (55%). The within region analysis also revealed gender differences in access to credit. There was male dominance in access to credit from both formal and informal sectors (> 60%) in all the regions. What was more interesting was that all bank borrowers in the northern region were men. The rural/urban decomposition portrays the same trend of male dominance in access to credit[15].

8.3.1.3 Education level

At the national level, the mean education level (measured in completed years) was 4.92 (see table 8.4). This implies that the respondents attained primary education level on average.[16] The bank borrowers had the highest mean educational level (9.93), with the non-borrowers having the lowest mean educational level (4.8). On a regional basis, respondents from central region had the highest education level (5.69) and northern had the lowest (3.96). Urban respondents had a higher mean education level (7.43) as compared to the rural ones (4.21). Both the regional and rural-urban decomposition portrayed the same trend with the bank borrowers having the highest mean education level, followed by informal sector borrowers and least among the non-borrowers.

Within the informal financial sector, the mean educational level was 5.81. This implies that they had not even completed primary level. Informal borrowers in the northern region had the highest mean educational level (6.36) with western region having the least educated

[15] *The male dominance in both the formal and informal credit markets may be a reflection of traditional culture where the men are the representatives of households (Zeller et al, 1994). The inequality in property rights by gender may also explain why men, who mainly control household assets, have more access to formal credit. In the case of Uganda, the proposed Domestic Relations Bill (DRB) of 2004 is expected to promote gender equality in household resource ownership.*

[16] *Uganda's current educational system is structured such that one requires seven years to complete primary level, six years for secondary level (ordinary and advanced level), and between three to five years for University degree courses. The tertiary institutions mainly take students after secondary education for certificate and diploma courses that take on average two years.*

informal sector of borrowers (5.18). The urban informal sector borrowers had a higher mean educational level (8.14) than the rural borrowers (5.12).

In conclusion, the results suggest that informal sector borrowers had a lower educational level as compared to bank borrowers. Within the informal sector, northern region had the highest educated borrowers and the least educated in the western region. Informal borrowers located in urban areas had a higher education level than those in the rural sector. The high education level of bank borrowers suggests that access to formal credit may be influenced by level of education. This may be explained by the complex formal bank procedures, which require some level of education to be able to comprehend.

8.3.2 Household size, Dependency ratio and Migration status

8.3.2.1 Household size

At the national level, the mean household size was 6.38, with the bank borrowers having the highest mean (6.92) and the informal sector borrowers having the lowest mean (6.13) (See table 8.5). The regional analysis suggests that the respondents from the eastern region have the highest mean household size (6.64), with the northern region having the lowest (6.14). The bank borrowers have the higher mean household sizes as compared to informal sector borrowers in all the regions, with the exception of the western region. Amongst informal sector borrowers, those from the western region had the highest household size (6.27) and those in the central region the lowest (5.74). Within the regions, the F- ratio indicates no significant differences in household size by borrowing status in northern region.

The rural-urban analysis suggests that rural respondents have a higher mean household size (6.44) than urban respondents (6.14). Within the rural sector, bank borrowers have the highest mean household size (8.16). The conclusion from this evidence is that bank

borrowers have higher mean household sizes. Within the informal financial sector, western region and the rural sector have the highest mean household sizes.

Table 8.5: Mean Household Size, Dependency Ratio, and Migration of Sample by Credit Status

Mean Household Size							
Credit Status	Region				Sector		National
	Central	Eastern	Northern	Western	Urban	Rural	
Never Applied	6.29	6.68	6.14	6.40	6.24	6.44	6.40
Bank	8.17	8.31	7.18	5.57	6.14	8.16	6.92
Informal	5.74	6.23	6.22	6.27	5.22	6.39	6.13
Total	6.25	6.64	6.14	6.38	6.14	6.44	6.38
F-ratio	7.82	4.77	0.56	2.43	11.59	4.64	6.17
Mean Dependency Ratio							
Credit Status	Region				Sector		National
	Central	Eastern	Northern	Western	Urban	Rural	
Never Applied	0.47	0.49	0.47	0.47	0.39	0.49	0.47
Bank	0.47	0.51	0.51	0.43	0.43	0.53	0.46
Informal	0.45	0.51	0.49	0.50	0.41	0.51	0.49
Total	0.46	0.49	0.47	0.47	0.40	0.50	0.47
F-ratio	0.74	3.05	0.89	5.89	1.62	5.89	5.06
Mean Migration Level (=1 if migrated)							
Credit Status	Region				Sector		National
	Central	Eastern	Northern	Western	Urban	Rural	
Never Applied	0.55	0.38	0.32	0.35	0.68	0.33	0.41
Bank	0.69	0.46	0.64	0.53	0.70	0.37	0.59
Informal	0.53	0.46	0.39	0.32	0.74	0.33	0.42
Total	0.55	0.39	0.32	0.35	0.68	0.33	0.41
F-ratio	1.74	9.61	4.60	4.99	3.58	0.15	8.25

8.3.2.2 Dependency ratio

As discussed in section 7.3, the dependency ratio was computed as the ratio of children and the aged to the active adults within a household. At the national level, the mean dependency ratio was 0.47, with informal sector borrowers having the highest (0.49) and bank borrowers having the least (0.46). The results of the regional disaggregation suggest that dependency ratios differ significantly across borrowing status categories in only two regions, namely, eastern and western. Bank borrowers have lower dependency ratios than informal sector

borrowers (See table 8.5). The rural-urban analysis suggests that the rural sector has a higher dependency burden (0.5) than the urban sector (0.4), but within the latter the F-ratio indicates no significant differences across borrowing categories.

Within the formal sector, borrowers from eastern and northern regions had the highest mean dependency ratio (0.51) as compared to western region with the lowest (0.43). Similarly within the informal sector, borrowers from eastern region and the rural sector had the highest dependency ratio (0.51).

In summary, bank borrowers generally have lower a dependency ratio as compared to informal sector borrowers. Within the informal financial sector, eastern region has the highest dependency ratio. Informal borrowers in the rural sector have higher dependency ratios than to those in the urban sector.

8.3.2.3 Migration status

As explained earlier, the migration status variable was a dummy (=1 if migrated, otherwise zero). Generally the reported proportions of migration are high, which may be associated with the ambiguity of the question that had been asked in the survey instrument: ***"Has (name) always lived in this village? If no, state year in which arrived"*** It is most probable that female respondents misinterpreted this question. According to the prevailing marriage practices, a woman who gets married leaves her parents' home and goes to live with her spouse. It is not clear how the women married outside their villages of birth interpreted this question, that is, whether they perceived themselves as immigrants into the villages of their spouses or not. For this reason this particular result has to be interpreted with caution.

At the national level, 41% of all the respondents were immigrants(see table 8.5). Migration was more pronounced among the bank borrowers (59%) and lowest among the non-borrowers (41%). Between the regions analysis suggests that central region had the highest proportion of immigrants (55%) and northern region the least (32%). The civil war that has been raging in Northern Uganda ever since Museveni's government came into power in 1986 may explain minimal migration into this region.

In addition, migration is usually motivated by the search for economic opportunities such as employment. Central region hosts the capital city, which has most industrial establishments. This may explain the heavy migration into the central region. Interestingly, though, this is the only region where migration status appears not to differ significantly by borrowing status. The rate of migration among bank borrowers is higher than among informal sector borrowers in all regions, except eastern. The rural/urban categorization revealed that there was greater migration into the urban sector (68%) as compared to the rural sector (33%). This is consistent with rural-urban migration theories, which highlight the economic and infrastructural disparities between the two sectors as major explanation (Todaro, 1997:215). Within the urban sector, migration was highest among informal sector borrowers. But noteworthy is that migration status did not appear to vary significantly by borrowing status in rural areas. However, within the informal sector, the same trend of a high proportion of immigrants being in the central region and urban sector was evident.

In summary, high migration was predominant among bank borrowers as compared to informal borrowers in all regions. The migration pattern was mainly from the rural to the urban sectors. Amongst the informal sectors borrowers, migration was the highest into the central region and the urban sector.

8.3.3 Household Expenditure, Assets and Land

8.3.3.1 Household Expenditure per adult equivalent (US$)

Household expenditure was used as a measure of household welfare. At the national level, the mean expenditure per adult equivalent was US$ 224.99 per annum (see table 8.6). The result for the between region analysis revealed that central region was the wealthiest region with a mean expenditure of US$ 316.12, followed by western region (US$ 210.7), and northern region as the poorest (US$ 134.07). Bank borrowers had a systematically higher mean expenditure than informal sector borrowers in all the regions. The rural-urban divide also showed the urban sector being better off than the rural sector with mean expenditure of US$ 431.3 and US$ 167.01 respectively. These findings are consistent with MFPED (2003:102), which observed that there are widening inequalities between the rural and urban areas and inter-regionally, with the northern region lagging behind the rest of the country, followed by the eastern region.

Bank borrowers had the highest mean expenditure of US$ 645.3 and non-borrowers had the lowest (US$ 220.97). Within the informal financial sector, the overall mean household expenditure was US$ 242.75. The regional distribution of the mean household expenditure for informal sector borrowers follows the national trend with those from the central region being the wealthiest (US$ 338.92) and those from northern region being the poorest (US$ 181.04). Informal sector borrowers from the rural areas were poorer (US$ 183.78) than those in the urban areas (US$ 432.69). It is noteworthy that the expenditure per adult equivalent varies significantly across borrowing categories by region and rural/urban.

In summary, bank borrowers are wealthier than informal sector borrowers. On a regional level, the respondents from the central were the wealthiest, followed by those from western, eastern and those from northern being the poorest. The urban respondents were wealthier

than the rural ones both at regional and rural/urban levels. Those who had not applied for any credit 12 months prior to the survey had lower mean expenditure as compared to bank and informal sector borrowers.

Table 8.6: Mean Household Expenditure, Assets and Land Size per Adult Equivalent

Mean Household Expenditure per adult equivalent (US$)							
Credit Status	Region				Sector		National
	Central	Eastern	Northern	Western	Urban	Rural	
Never Applied	311.93	203.48	130.60	204.30	425.53	164.91	220.97
Bank	673.25	510.97	477.25	698.14	775.54	345.03	645.30
Informal	338.92	206.15	181.04	228.46	432.69	183.78	242.75
Total	316.12	204.42	134.07	210.70	431.30	167.01	224.99
F-ratio	13.96	5.93	22.43	122.34	13.15	30.77	100.10
Mean Household Assets per adult equivalent (US$)							
Credit Status	Region				Sector		National
	Central	Eastern	Northern	Western	Urban	Rural	
Never Applied	71.43	36.11	22.49	59.43	124.71	30.58	50.06
Bank	135.31	81.93	185.06	357.82	316.87	53.28	233.99
Informal	40.92	25.22	21.28	39.48	54.61	26.88	33.55
Total	69.40	34.99	22.89	59.39	120.68	30.29	49.41
F-ratio	0.88	1.85	13.59	13.21	3.93	0.65	14.11
Mean Land Size per adult equivalent (in acres)							
Credit Status	Region				Sector		National
	Central	Eastern	Northern	Western	Urban	Rural	
Never Applied	1.93	0.88	1.60	0.93	1.41	1.27	1.29
Bank	3.04	1.73	0.70	2.13	2.56	1.54	2.31
Informal	2.07	0.78	1.34	2.08	4.58	1.21	1.63
Total	1.95	0.87	1.59	1.07	1.74	1.27	1.32
F-ratio	0.07	1.75	0.12	2.33	2.02	0.04	0.82

8.3.3.2 Household Assets per adult equivalent (US$)

Household assets per adult equivalent vary significantly by borrowing status. At the national level, the mean value of household assets was US$ 49.41, with bank borrowers having the highest (US$ 233.99) and the lowest being informal sector borrowers (US$ 33.55) (See table 8.6). Non-borrowers even had higher mean assets (US$ 50.06) than informal sector borrowers. These results lend credence to empirical evidence that while collateral is a critical factor for borrowing in the formal sector (Teranishi, 1994), it is not a constraint in the informal sector where collateral substitutes are used (Reindinger, 1994). On a regional

basis, central region commanded the highest mean asset values (US$ 69.4), followed by western (US$ 59.39), then eastern (US$ 34.99), and northern (US$ 22.89). The F- ratios indicated that there was no significant variation in asset holding across the borrowing categories in central and eastern regions. On the rural/urban level, the mean assets for the urban sector (US$ 120.68) was significantly higher than for the rural sector (US$ 30.29). Within the rural sector, there was no significant variation in asset holding across the borrower categories.

In summary, the bank borrowers have higher mean assets compared to informal sector borrowers. Central region has the highest mean household assets, followed by western, eastern, and northern. The distribution of asset holding among informal sector borrowers follows the same distribution as the whole sample on a regional basis.

8.3.3.3 Land per adult equivalent (in acres)

At the national level, the mean land holding per adult equivalent was 1.32 acres (See table 8.6). Bank borrowers had a higher mean of 2.31 acres as compared to informal sector borrowers (1.63) and non-borrowers (1.29). Between the regions, respondents from central region had the highest mean land holding (1.95) and eastern region having the least (0.87). Within the regions, bank borrowers had higher mean land holdings than informal financial sector borrowers in all the regions except northern. What was even more striking was that non-borrowers had higher mean land holdings than informal borrowers in eastern and northern regions. The urban sector respondents had a higher mean land holding (1.74) as compared to those in the rural sector (1.27). These results further support the case that collateral is not a major factor in borrowing from informal credit markets. As the F-ratios indicate, land holdings in most regions and nationally do not differ significantly by

borrowing status, which supports the view that this variable seems to have little influence on credit.

8.3.4 Utilization of Credit

Within the formal sector, borrowers demanded credit for mainly business working capital (65.1%) for either starting up or expanding already existing businesses. Agricultural production credit and consumption credit was demanded from the formal sector by an equal proportion of bank borrowers (17.4%) [see table 8.7]. Agricultural production activities included purchase of agricultural land, purchase of livestock and purchase of agricultural inputs. Consumption credit was used for education, health care, durable consumer goods, and services. Within the informal financial sector, the majority of the borrowers needed credit for household consumption purposes (46.6%), followed by business working capital requirements (33.7%) and agricultural production (19.9%). These results are consistent with Mohieldin and Wright (2000) who observed that formal credit in Egypt is demanded mainly for investment while informal sector credit is for consumption smoothing.

The informal financial sector was further disaggregated in the second part of Table 8.7 to investigate the intended uses of credit from the respective informal sources. The results suggest that relatives/friends/community funds were the most important source of consumption credit. Out of all respondents who demanded informal credit for consumer goods/services, 84.2% used friends/relatives as the source of funds. The corresponding proportions of respondents who demanded credit for various categories of consumption loans and used friends/relatives as the source were as follows: health care (87.6%), education (65.3%), and housing (64.1%). The co-operative societies/non-governmental organizations acted as the most important informal source of credit for agricultural production (39.4%) and business credit (39.5%). Friends and relatives constituted the

second most important source of credit for agricultural production (32.2%) and business credit (38.9%).

This empirical evidence confirms what was found in the literature. First, households demand credit for both productive investments and consumption purposes (Temu and Hill, 1994). Consumption credit is also argued to be highly productive because it raises the long-term productive capacity of the household and thus their potential to increase their future output and income levels. This may explain why credit is demanded for health care, education and housing (World Bank, 1989b). The literature also shows that relatives/friends are an important source of consumption credit in developing countries. Finally, there is a need to diversify the credit products to meet the needs of the clients, such as the development of specific consumption loans within the banking and micro-finance sectors. The MCAP initiative under MOP referred to in section 4.3.5 is an appropriate market oriented incentive mechanism to enhance the capacity of MFIs to develop appropriate financial products.

Table 8.7: Purpose of Credit by Source

Source of Credit	Purpose of Credit						National
	Agricultural Production	Business	Housing	Education	Health Care	Consumer goods, services	
Bank	19	71	6	6	1	6	109
	17.4%	65.1%	5.5%	5.5%	0.9%	5.5%	100.0%
	4.5%	9.3%	8.0%	4.0%	0.3%	1.5%	5.1%
Informal Sector	407	690	69	145	331	408	2,050
	19.9%	33.7%	3.4%	7.1%	16.2%	19.9%	100.0%
	95.5%	90.7%	92.0%	96.0%	99.7%	98.6%	95.0%
Total	426	761	75	151	332	414	2,159
	19.7%	35.3%	3.5%	7.0%	15.4%	19.2%	100.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Category of Informal Financial Institutions							
Source of Credit	Purpose						National
	Agricultural Production	Business	Housing	Education	Health Care	Consumer goods, services	
Cooperative, NGOs	154	271	11	25	24	35	520
	29.6%	52.1%	2.1%	4.8%	4.6%	6.7%	100.0%
	39.4%	39.5%	17.2%	17.4%	7.3%	8.6%	25.7%
Money lender, Commercial firm	12	34	6	16	17	24	109
	11.0%	31.2%	5.5%	14.7%	15.6%	22.0%	100.0%
	3.1%	5.0%	9.4%	11.1%	5.2%	5.9%	5.4%
Relatives, Friends, Community Funds	126	267	41	94	289	341	1,158
	10.9%	23.1%	3.5%	8.1%	25.0%	29.5%	100.0%
	32.2%	38.9%	64.1%	65.3%	87.6%	84.2%	57.3%
Government Agency	99	115	6	9	0	5	234
	42.3%	49.2%	2.6%	3.9%	0.0%	2.1%	100.0%
	25.3%	16.7%	9.4%	6.3%	0.0%	1.2%	11.6%
Total	391	687	64	144	330	405	2,021
	19.4%	34.0%	3.2%	7.1%	16.3%	20.0%	100.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

8.3.5 Security Requirements for the Loan

Within the formal sector, land constituted the most common type of security for bank credit (37.0%) – see table 8.8. It should be noted that banks accept only titled land with developed properties as security, and this may explain why the majority of the population does not have access to bank credit. This is because the small borrowers do not have acceptable securities. Currently most of the land, especially in the rural areas, is held under the customary land tenure system without any certificates of title, hence rendering it unviable as

collateral security especially for bank credit. The Land Act of 1998 was expected to expedite the land reforms through the decentralization of the land title processing to the District Land Boards. However, the registration of titles remains centralized for control purposes. These land titles can then be used as collateral to secure funds from commercial banks.

Within the informal financial sector, most of the loans were unsecured (64.9%), implying that security is not the main yardstick that is used to assess the creditworthiness of the borrowers. This is consistent with the literature, which argues that informal lenders use their intimate knowledge of the borrowers for screening them (Morduch 1999). As discussed in section 3.4, informal lenders also use alternative security arrangements such as joint liability contracts and dynamic incentives to identify low risk borrowers. In addition informal lenders strive to build relationships with their clients. The length of time of the business relationship and past repayment performance also acts as an important factor in informal lenders' decision-making about the creditworthiness of the borrowers. Land is also used as security for informal sector loans (18.3%). This may be explained in terms of usufruct arrangements where the owners of the land assign user rights to the informal lender to use the land until the loan is fully repaid. Because informal lenders may themselves be farmers, such an arrangement works very well.

The security requirements were further analyzed by informal financial institution category. The results suggest that of all collateral-free loans, 73.4% were from relatives/friends/community funds. This underscores the importance of kinship/relationship within this credit market segment and intimate knowledge for screening the potential borrowers. In addition, the existence of social mechanisms to enforce repayment further diminishes the need for collateral to back up borrowing from friends/relatives (Fernando,

1998). The second most important informal source of unsecured credit was the co-operative societies/NGOs (17.4%). Co-operative societies use a membership based lending methodology where the loans are strictly extended to members and linked to savings, which acts as a collateral substitute. As argued in section 3.4.5, NGOs mainly use group based lending methodology, where the members are co-signers of the loan contract. The joint liability contract acts as an incentive for members to self-select low risk members, monitor each other and even pay on behalf of the defaulting member so as not to lose access to credit (Ghatak, 1999). In addition, the NGOs use dynamic incentives of small short-term loans that are progressively increased over time as a strategy to build a long-term relationship with the clients as a collateral substitute. The clients being desirous to get bigger loans in future will undertake to have prompt repayment of their loans so as to build a good reputation (Park and Ren, 2001).

Table 8.8: Security Requirements for Credit

Source of Credit	Security						National
	None	Land	Livestock	House	Future Harvest	Other	
Bank	20	40	1	19	5	23	108
	18.5%	37.0%	0.9%	17.6%	4.6%	21.3%	100.0%
	1.5%	9.8%	2.0%	33.9%	6.6%	11.3%	5.1%
Informal Sector	1,301	367	49	37	71	181	2,006
	64.9%	18.3%	2.4%	1.8%	3.5%	9.0%	100.0%
	98.5%	90.2%	98.0%	66.1%	93.4%	88.7%	94.9%
Total	1,321	407	50	56	76	204	2,114
	62.5%	19.3%	2.4%	2.7%	3.6%	9.7%	100.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Category of Informal Financial Institutions							
Source of Credit	Security						National
	None	Land	Livestock	House	Future Harvest	Other	
Cooperative, NGOs	225	132	20	17	29	85	508
	44.3%	26.0%	3.9%	3.4%	5.7%	16.7%	100.0%
	17.4%	36.2%	42.6%	47.2%	40.9%	47.2%	25.5%
Money lender, Commercial firm	33	62	2	3	5	4	109
	30.3%	56.9%	1.8%	2.8%	4.6%	3.7%	100.0%
	2.6%	17.0%	4.3%	8.3%	7.0%	2.2%	5.5%
Relatives, Friends, Community Funds	949	108	9	4	27	59	1,156
	82.1%	9.3%	0.8%	0.4%	2.3%	5.1%	100.0%
	73.4%	29.6%	19.2%	11.1%	38.0%	32.8%	58.0%
Government Agency	86	63	16	12	10	32	219
	39.3%	28.8%	7.3%	5.5%	4.6%	14.6%	100.0%
	6.7%	17.3%	34.0%	33.3%	14.1%	17.8%	11.0%
Total	1,293	365	47	36	71	180	1,992
	64.9%	18.3%	2.4%	1.8%	3.6%	9.0%	100.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

8.3.6 Loan Period (in months)

The determination of the loan period by the lender may be influenced by a number of factors, which include the projected cash flow of the borrower's business, the perceived project risk and the lending methodology. The mean loan period for the sample was 6.0 months (see table 8.9). Bank loans had a significantly higher mean loan period (9.7 months) as compared to informal sector loans (5.8 months). Within the banking sector, the borrowers from central region got longer loan periods (12.6 months), followed by northern region (9.3 months), and the lowest in eastern (6.9 months). The bank clients in the urban

sector had a higher mean loan period (8.9 months), which exceeded that of the rural sector borrowers (8.7 months). However the F ratios indicate that there is no significant variation in loan periods across the formal and informal lenders in all the regions except central.

Within the informal financial sector, the highest mean periods were given to borrowers from the northern region (7.5 months), followed by western region (6.9 months) and the least in eastern region (4.8 months). Informal sector borrowers in the urban sector received a higher loan period (5.9 months) as compared to rural informal borrowers (5.8 months). A significant variation in loan period between formal and informal sector borrowers existed only within the urban sector.

A disaggregation by informal financial institution category suggests that there was significant variation in loan periods across the various informal lenders in all the regions except western. The highest mean loan periods were granted by the government agencies (10.6 months), followed by co-operative societies/NGOs (7.3 months) and the least by relatives/friends and moneylenders, which all averaged 4.5 months. Co-operative societies/NGOs granted the highest mean loan period in the eastern region (9.1 months), while the moneylenders' highest mean loan period was also in eastern region (5.4 months). Friends/relatives favoured the borrowers in western region with longer loan periods (6.9 months), while the government agencies were more generous in central region (12.8 months).

On the rural/urban decomposition, the results suggested that all informal sector institutions gave urban borrowers shorter loan periods as compared to rural borrowers with the exception of co-operative societies/NGOs. The F-ratios also indicate a significant variation in loan period across the informal lenders within the rural and urban sectors.

In summary, the results on loan period agree with the literature. Informal financial institutions give shorter-term loans as compared to the formal bank sector. This has implications for the kind of investments that can be undertaken with such credit from either the formal or informal financial sectors. This may explain why most credit from the banking sector is invested in productive activities while informal credit is largely for consumption smoothing (Mohieldin and Wright, 2000).

Table 8.9: Mean Loan Period (in months)

Source of Credit	Region				Sector		National
	Central	Eastern	Northern	Western	Urban	Rural	
Bank	12.6	6.9	9.3	8.5	8.9	8.7	9.7
Informal	5.0	4.8	7.5	6.9	5.9	5.8	5.8
Total	5.6	4.9	7.5	7.0	6.4	5.8	6.0
F-ratio	29.41	0.95	0.68	0.09	7.47	0.41	2.65
Category of Informal Financial Institution							
Source of Credit	Region				Sector		National
	Central	Eastern	Northern	Western	Urban	Rural	
Cooperative, NGOs	6.2	9.1	8.9	6.0	7.5	7.3	7.3
Money Lender, Firm	2.8	5.4	2.7	4.6	3.6	4.7	4.5
Relatives, Friends, Community Funds	3.2	3.0	4.5	6.9	3.9	4.7	4.5
Government Agency	12.8	9.1	9.2	11.4	10.4	10.6	10.6
Total	5.0	4.8	7.5	6.8	5.8	5.8	5.8
F-ratio	23.47	32.03	8.18	0.36	13.2	2.18	4.00

8.3.7 Mean Loan Amounts Demanded and Supplied (US$)

At the national level, the mean loan amount demanded (applied for) was US$241.76, with mean amounts demanded from formal and informal financial sectors being US$ 2,112.31 and US$145.57 respectively (see table 8.10). There was significant variation in the loan

amounts demanded between the formal and informal sector sources at the national, regional and rural-urban levels.

Table 8.10: Mean Loan Amounts Demanded and Supplied (US$)

Mean Loan Amounts Applied for (US$)							
Credit Status	Region				Sector		National
	Central	Eastern	Northern	Western	Urban	Rural	
Bank	2,681.95	656.84	6,485.78	1,160.17	2,001.74	781.17	2,112.31
Informal	189.11	131.47	146.85	129.92	285.49	103.49	145.57
Total	361.54	141.47	480.48	192.97	512.99	118.20	241.76
F-ratio	33.33	11.26	26.33	117.51	26.12	106.41	126.08
Mean Loan Amounts Received (US$)							
Credit Status	Region				Sector		National
	Central	Eastern	Northern	Western	Urban	Rural	
Bank	1,985.40	405.98	274.00	1,055.32	920.51	266.70	1,201.68
Informal	107.40	70.73	58.18	79.66	198.84	45.75	81.55
Total	233.84	77.24	70.88	142.02	294.48	50.93	137.66
F-ratio	18.60	32.68	7.01	137.31	49.30	86.05	78.52
Mean Credit Rationed Amount (US$)							
Credit Status	Region				Sector		National
	Central	Eastern	Northern	Western	Urban	Rural	
Bank	775.44	250.85	729.14	73.31	291.72	515.56	367.83
Informal	81.53	60.95	86.89	48.26	88.95	56.44	63.57
Total	128.43	64.64	121.09	49.80	115.82	66.38	79.25
F-ratio	67.45	1.62	17.91	0.29	5.78	52.92	51.08

At the regional level, the highest mean loan demanded was in northern region (US$ 480.48), followed by central region (US$ 361.54), and least in eastern region (US$ 141.47). Within the formal sector, the highest mean loan amount demanded was in northern region (US$ 6,485.78), followed by central region (US$ 2,681.95) and the least in eastern region (US$ 656.84). Within the informal financial sector, the highest mean loan demanded was in central region (US$ 189.11), followed by northern region (US$ 146.85) and lowest in western region (US$ 129.92). The rural-urban decomposition suggests that higher loan amounts were demanded in the urban sector.

In terms of loan amounts supplied, US$ 137.66 was the overall mean for the full sample. Within the formal sector, the mean amount supplied was US$ 1,201.68. Central region had the highest mean loan supplied (US$ 1,985.4), followed by western region (US$ 1,055.32) and the least in northern region (US$ 274). Within the informal financial sector, the highest mean loan amount supplied was US$ 81.55. The highest mean informal loan was supplied in central region (US$ 107.4), followed by western region (US$ 79.66) and the lowest was in northern region (US$ 58.18).

The interesting observation here is that the distribution of the mean loan amounts supplied by region in both formal and informal financial sectors follows the welfare status of the regions.[17] What these results suggest is that the wealth status of the borrower is one of the key factors that influences the lenders' decision on the amount to be granted both in the formal and informal financial sectors. The rural-urban disaggregation reveals that higher mean loan amounts were supplied in the urban sector compared to the rural sector, both in the formal and informal financial sectors. This may again be explained by the higher income in the urban sector, which positively influences the lenders' decision to give a higher loan amount. This result is consistent with Stiglitz and Weiss (1981) who argued that the wealth status of the borrowers is one of the indicators that the lenders use to determine their repayment capacities.

As discussed in section 6.1, a state of being credit rationed is observed if the loan amount supplied by the lender is less than the loan amount originally applied for by the borrower or the loan application being completely rejected. The results suggest the presence of credit rationing both in the formal and informal financial sectors. In the formal sector, the mean

[17] *As earlier mentioned, Uganda's regional poverty status has central as the richest region, followed by western, eastern, and northern in that order.*

credit rationed amount (i.e. the difference between the amount applied for and the amount of the loan actually received) was US$ 367.83.

The severity of credit rationing is higher in informal financial markets as compared to formal financial markets, which was a pleasant surprise. The expectation was that credit rationing was more pronounced in the formal financial sector. The inference on the intensity of credit rationing was derived from the comparison of the ratio of mean loan amount received to mean loan amount demanded in the formal and informal financial sectors. In the absence of credit rationing this ratio will be equal to one, and the ratio tends to zero with higher credit rationing. The computed ratios for the formal and informal financial sectors were 0.569 and 0.559 respectively, implying a higher intensity of credit rationing in the informal financial sector. This may be explained by the use of information by the informal lenders to screen the potential borrowers, which may result in higher credit rationing.

Severe formal sector credit rationing was in central region (US$ 775.44) and the mildest in the western region (US$ 73.31). Within the informal financial sector, the mean credit rationed amount was US$ 63.57. Northern region topped the list with the highest informal credit rationing (US$ 86.89), and the lowest in the western region (US$ 48.26). The rural-urban decomposition highlighted the fact that there was more severe credit rationing in the rural sector for borrowers from the formal bank sector, while urban borrowers in informal sector were more credit rationed.

Table 8.11: Informal Credit Demanded and Supplied (US$)

Mean Loan Amounts Applied for (US$)							
Credit Status	Region				Sector		National
	Central	Eastern	Northern	Western	Urban	Rural	
Cooperative, NGOs	222.4	326.9	181.2	224.7	381.3	180.6	244.9
Money Lender, Firm	423.1	121.0	41.2	70.0	359.5	47.4	101.8
Relatives, Friends, Community Funds	100.1	52.9	50.6	51.9	160.3	38.8	62.7
Government Agency	522.3	246.3	194.7	437.4	543.3	308.1	354.1
Total	190.1	131.4	147.0	129.9	288.3	103.3	145.8
F-ratio	11.48	10.45	2.39	14.73	3.42	46.80	31.53
Mean Loan Amounts Received (US$)							
Credit Status	Region				Sector		National
	Central	Eastern	Northern	Western	Urban	Rural	
Cooperative, NGOs	119.7	142.7	57.9	159.2	230.6	76.6	127.7
Money Lender, Firm	51.2	121.0	38.4	62.3	183.5	39.7	65.0
Relatives, Friends, Community Funds	81.5	48.3	34.1	45.0	134.4	34.0	53.8
Government Agency	219.5	70.1	92.2	160.2	423.2	53.1	134.5
Total	107.7	70.9	58.5	79.8	200.5	45.8	81.8
F-ratio	2.39	9.62	0.40	3.35	2.64	11.43	8.18
Mean Credit Rationed Amount (US$)							
Credit Status	Region				Sector		National
	Central	Eastern	Northern	Western	Urban	Rural	
Cooperative, NGOs	102.4	195.3	125.3	65.5	163.0	106.5	120.9
Money Lender, Firm	371.9	0.0	2.8	8.4	176.0	8.1	37.7
Relatives, Friends, Community	18.6	3.5	15.2	6.7	24.4	4.8	8.4
Government Agency	302.8	187.5	110.5	329.7	120.1	276.8	242.8
Total	82.2	60.7	86.7	48.1	90.2	56.2	63.4
F-ratio	15.56	6.05	3.51	22.35	1.75	43.15	27.17

A decomposition of the informal financial sector suggests that there was significant variation in credit rationing across the informal institutions at national, regional and rural levels with the exception of the urban sector (see table 8.11). The most severe credit

rationing was observed within the government agencies (US$ 242.8). The government credit programs include the "Entandikwa" credit scheme and the Youth Entrepreneurship Scheme (YES), which to a large extent are perceived to be state grants (Okurut et al, 2004a). If the borrowers perceive credit to be disguised grants, then there is a likelihood of demanding larger loan amounts, thus increasing the probability of being credit rationed. In addition, due to the fact that government credit schemes are financed through the Treasury, the budgetary constraints limit the availability of funds thus increasing the probability of being credit rationing within this sector.

The Co-operative societies/NGOs sector ranked second in terms of the severity of credit rationing amongst informal financial institutions, which may be accounted for by the lending methodology used. The co-operative credit societies link the members' accumulated savings to the maximum amount of credit that one can borrow. The amount of savings therefore acts as a credit-rationing device. NGOs also use dynamic incentives, where progressive loan limits have been developed. They start with very small amounts, which are gradually increased over time dependent on previous loan repayment performance (Park and Ren, 2001). By implication, the maximum loan amount that a borrower can access from the NGO at any given point in time is predetermined by policy. It will depend on the borrowing cycle (that is the number of the times the client has borrowed) and also repayment performance of previous loans. It implies that any amount of loan applied for that exceeds the stipulated limit will be credit rationed.

The least credit rationing was observed for credit from the friends/relatives/community funds (US$ 8.4). This may be explained by the small loan amounts involved, the intimate knowledge they have on the borrowers and strong social relationships between the lenders and borrowers. The rural/urban decomposition suggests that the urban borrowers were more

likely to be credit rationed by all categories of informal financial institutions with the exception of government agencies.

8.3.8 Loan Repayment Difficulties

Of the 1,150 respondents who responded to the question as to whether they encountered any difficulties in meeting loan repayment dates, 36.5% expressed having faced some problems (see table 8.12).

Table 8.12: Loan Repayment Difficulties

Source of Credit	Repayment Difficulty		
	Yes	No	Total
Bank	11	40	51
	21.6%	78.4%	100.0%
	2.6%	5.5%	4.4%
Informal Sector	409	690	1,099
	37.2%	62.8%	100.0%
	97.4%	94.5%	95.6%
Total	420	730	1,150
	36.5%	63.5%	100.0%
	100.0%	100.0%	100.0%
Category of Informal Institution			
Source of Credit	Repayment Difficulty		
	Yes	No	Total
Cooperative, NGOs	73	134	207
	35.3%	64.7%	100.0%
	17.9%	19.6%	19.0%
Money Lender, Firm	46	45	91
	50.6%	49.5%	100.0%
	11.3%	6.6%	8.4%
Relatives, Friends, Community Funds	268	459	727
	36.9%	63.1%	100.0%
	65.9%	67.2%	66.7%
Government Agency	20	45	65
	30.8%	69.2%	100.0%
	4.9%	6.6%	6.0%
Total	407	683	1,090
	37.3%	62.7%	100.0%
	100.0%	100.0%	100.0%

The majority of those who experienced loan repayment problems were informal sector borrowers (37.2%). Of all those who expressed having faced repayment problems, the

highest proportion was borrowers from the relatives/friends (65.9%). This figure may seem to be high merely because there were more people who borrowed from the relatives/friends, which may have influenced the high probability of reporting the repayment difficulties. The survey did not capture the actual repayment difficulties experienced by borrowers, hence a detailed analysis could not be done.

8.4 Conclusion

The purpose of this chapter was to analyze the descriptive statistics of the variables of interest that are used in the study of credit demand and credit rationing in Uganda's informal financial sector. The ANOVA technique was used to analyze the mean differences of the variables of interest across various categories, which included credit status (which categorized the sample into formal sector borrowers, informal sector borrowers, and non-borrowers), regional decomposition (central, eastern, northern, and western), and rural urban categorization.

In conclusion, the evidence from the descriptive statistics suggests the co-existence of the formal and informal financial sectors, with a significant proportion of the population depending on informal sources to meet their credit needs. Informal lenders mainly use collateral substitutes (such as group guarantee), which makes credit more accessible even to low income earners. The means of the socio-economic variables for the formal sector borrowers were higher as compared to informal sector borrowers for the following variables: age, education level, household size, household expenditure, household assets, and land size. However, informal sector borrowers had a higher mean dependency ratio.

The demand for informal credit exists as evidenced by a significant proportion of the population that depend on informal credit both for investment and consumption purposes.

Credit rationing also exists both in the formal and informal financial sectors, with higher severity in the informal sector.

The regional and rural/urban decomposition suggested that there were variations in means of the variables of interest across the different regions, and rural/urban sectors. The multivariate regression results are discussed in chapter 9.

CHAPTER 9: ECONOMETRIC ESTIMATION RESULTS

9.1 Introduction

The main motivation for this chapter is to discuss the empirical findings on the determinants of credit demand and credit rationing in Uganda's informal financial sector based on multivariate analysis. The descriptive statistics, based on bivariate analysis discussed in chapter 8, have the major limitation of not revealing the exact relationship between the variables of interest. The variables for the multivariate analysis were those identified from the empirical literature in sections 5.4 and 6.4 respectively, and whose specific measurements in the context of this study were discussed in section 7.3. The results presented here are outputs of the specific models for credit demand and credit rationing referred to in section 7.4.2.

The rest of the chapter is organized as follows: Section 9.2 gives an overview of the diagnostic tests that are used as a basis for evaluating the model results. Section 9.3 presents empirical results for determinants of credit demand in the broader financial sector[18], section 9.4 discusses determinants of informal credit demand, section 9.5 examines the determinants of lenders' credit rationing behaviour in the broader financial sector, section 9.6 discusses the determinants of informal credit rationing, and section 9.7 gives the conclusions of the chapter.

9.2 Model Overview and Diagnostic Tests

Four different models (the logit model, the Heckman probit model with sample selection, the Heckman two-step selection and multinomial logit models) were used for econometric estimation, with socio-economic characteristics being explanatory variables. Where the

[18] *Broader financial sector refers to both the formal and informal financial sectors*

dependent variable was dichotomous, the logit model was used to estimate the determinants of the probability of credit demand, while the Heckman probit model with sample selection was used to estimate the determinants of the probability of being credit rationed. The multinomial logit model was used to estimate the factors that influence the borrowers' choice between formal and informal sector credit (using those who did not apply for any credit as the reference category). The multinomial model for the borrowers' choice of particular informal financial institutions (using the relatives /friends / community funds as the reference category) was also estimated.

The Heckman two-step selection model was used to estimate the factors that influence the amount of credit demanded or supplied instead of the OLS model so as to address the problem of potential sample selection bias due to the inclusion of those who did not apply for credit (Heckman, 1990:313). In addition the use of the Heckman probit model with sample selection (referred to in section 7.4.2.2) for estimation of the determinants of the probability of being credit rationed was motivated by the need to control for those who did not apply for credit.

The analysis was done at two levels, the broader financial sector level (level one) and the informal financial sector level (level two). Regressions models were estimated at the national, regional, and rural/urban levels. The motivation for this decomposition was to examine whether there are regional or rural/urban differences in terms of factors that influence credit demand and credit rationing. The only exception was the Heckman two-step selection models and the multinomial logit models which were estimated at the national level only.

The reported diagnostic statistics for the logit models include the Likelihood Ratio (LR) chi2 (n) where "n" is the degrees of freedom. The LR Chi2 ratio tests for the overall significance of the model against the null that all the estimated coefficients are jointly equal to zero. As a rough rule of thumb, the LR Chi2, which is equal or greater than two, signifies that the coefficients are jointly significantly different from zero. The probability of the critical chi square (from the statistical tables) being greater than the computed chi square (Prob>chi2) is also one of the diagnostic tests. The closer this probability is to zero, the higher the significance of the overall model estimates. The z-value which is derived as the estimated coefficient divided by its standard error, is a measure of the significance of the individual parameter estimates, holding other factors constant. The z-values, which are close to or greater than two, indicate that the coefficient is significantly different from zero. The probability greater than z (Prob>z) gives the significance levels of the parameter estimates. The variables that are significant in explaining credit demand or credit rationing at the 1%, 5% and 10% significance levels are identified and marked with asterisks. For the multinomial logit models, the diagnostic statistics and their interpretations are similar to those of the logit models.

For the Heckman two-step selection models, the diagnostic statistics include lambda (λ) which gives a summary statistic as to whether the parameter estimates would have been biased or not if the OLS model had been used in the estimation. If lambda is significantly different from zero, then the OLS model estimates would have been biased. The parameter estimates of the Heckman two-step selection model are therefore said to be biased for the OLS and unbiased for the Heckman model if the error terms of the model of interest and the selection model are correlated, hence lambda will be significantly different from zero. This is because $\lambda = \sigma\rho$, where σ = standard error and ρ = correlation coefficient of the two error terms. The wald chi2(n) and the prob>chi2 test the overall significance of the model against

the null that the coefficients are jointly equal to zero, with the interpretation of the statistics as previously discussed. The z-values and the Prob>z which give the level of significance of each of the parameter estimates holding others constant are also reported and similarly interpreted as discussed above. For the Heckman probit model with sample selection, the diagnostic statistics and their interpretations are similar to the Heckman two-step selection model.

Where regional dummies were used, the northern region was the reference region. Various interaction effects were experimented with, but only the more relevant ones are reported. Some of the variables such as health status were dropped from the regressions because of the small number of observations. As can be seen from Appendix 1, the heath status variable captured by the number of sick days had many missing values. For this reason the days lost to illness would have restricted the number of observations too greatly (only about 6,600 of the almost 23,000 individuals have valid values for this variable). A lesser restriction was imposed by observations for land size, which were restricted to less than 17,000 observations, but this variable was regarded as important enough to retain as the restriction was less severe. Consequently, the number of observations without any missing values included differ somewhat between various models, depending on the number of variables included in the analysis.

9.3 Determinants of Credit Demand in the Broader Financial Sector

9.3.1 National Logit Model for Credit Demand

As earlier pointed out, the dependent variable for the broader financial sector logit model of credit demand was *level (=1 if applied for credit in the formal or informal financial sectors, otherwise zero)*, with explanatory variables being socio-economic variables and results presented in table 9.1.

Table 9.1: Logit Model for Credit Demand in Broader Financial Sector [National and Regional]

Equation of Interest: Dependent Variable ***level*** *(=1 if applied for bank or informal sector credit, otherwise zero)*					
Explanatory Variables	National	Region			
		Central	Eastern	Northern	Western
Lnage	0.737 (10.24)***	0.724 (4.88)***	0.568 (4.21)***	0.866 (3.20)***	0.869 (7.52)***
Sex (Male=1)	0.684 (11.5)***	0.665 (5.46)***	0.870 (7.76)***	0.345 (1.55)	0.615 (6.56)***
lnhhsize	-0.033 (0.62)	0.016 (0.15)	-0.112 (1.16)	0.568 (2.72)***	-0.113 (1.17)
lneduc	0.037 (8.24)***	0.039 (3.47)***	0.045 (5.15)***	0.056 (3.13)***	0.030 (4.61)***
lndepr	0.473 (5.92)***	0.296 (1.66)*	0.516 (3.29)***	0.768 (2.50)**	0.546 (4.55)***
lnhhexp	0.376 (6.78)***	0.587 (4.95)***	0.092 (0.93)	0.571 (3.08)***	0.485 (5.07)***
Dummy: Migration	0.053 (0.90)	-0.036 (0.29)	0.387 (3.51)***	-0.086 (0.37)	-0.137 (1.39)
Lnlan	-0.051 (2.29)**	-0.055 (1.22)	-0.039 (1.09)	0.210 (1.85)*	-0.066 (1.59)
lnastva	-0.036 (1.07)	-0.215 (3.10)***	-0.153 (2.41)**	0.246 (2.18)**	0.103 (1.88)*
Dummy: Urban	-0.017 (0.19)	-0.114 (0.64)	0.448 (2.67)***	-0.512 (1.36)	-0.354 (2.18)**
Dummy: Central Region	0.209 (1.76)*				
Dummy: Eastern Region	0.682 (6.14)***				
Dummy: Western Region	0.790 (7.18)***				
Constant	-7.263 (17.29)***	-7.703 (9.21)***	-4.178 (5.74)***	-10.113 (7.11)***	-7.758 (11.68)***
Number of Observations	15,533	3,920	4,165	2,290	5,158
LR Chi2	588.38	106.46	184.29	74.95	221.36
Prob>Chi2	0.000	0.000	0.000	0.000	0.000
Pseudo R2	0.0589	0.0469	0.0637	0.0811	0.0584
Absolute value of z-statistics in parentheses					
* significant at 10%, ** significant at 5%, ***significant at 1%					

The diagnostic statistics show that the models are significant, and the variables are as previously defined in section 7.3 but transformed to natural logarithm, hence the letters "***ln***" at the beginning of each variable name. The logit model estimates at the national level suggest that the probability of applying for credit is positively and significantly influenced by age at the 1% significance level. The significance of the age coefficient may be explained by the fact that the older individuals have greater control over household

productive resources, which can be used to secure and service the loan. This may be particularly true for formal bank credit, which is characterized by collateral requirements (Adams and Nehman, 1979).

The sex of the borrower had a positive and significant effect (at 1% significance level) on the probability of applying for credit from the broader financial sector. The positive coefficient for the sex dummy conforms to the theory of male dominance in resource control and therefore having a higher likelihood of applying for credit. Education level has a positive and significant effect (at the 1% significance level) on borrowing behaviour, which is consistent with the expectation. Education increases the potential returns from capital investments and in turn increases the probability of credit demand. Household size has an insignificant effect on credit demand.

The dependency ratio has a positive and significant effect (at 1% significance level) on the probability of credit demand. Higher dependency ratio increases the demand for consumption credit such as for education of children and health care. Household expenditure, which was used as a measure for household income, has a positive and significant effect (at the 1% significance level) on credit demand. These results are consistent with a study by Musinguzi and Smith (2000), where the coefficient of income was positive and significant. Being a migrant has a positive but insignificant effect on the probability of credit demand.

The size of land holding has a negative and significant effect (at 5% significance level) on the probability of credit demand, which was surprising. The expectation was that land constitutes collateral that can be pledged as security for loans, so people with higher land sizes were expected to have a higher demand for credit. However, the quality of land as

collateral depends on whether it is titled property, and the developments thereon. The negative sign of the land size coefficient may be explained by the fact that most of the land in Uganda, especially in rural areas, is untitled[19] and in some cases it is communally owned, thus not an attractive collateral.

Household asset values have a negative but statistically insignificant effect on the probability of credit demand. The expectation was that the households that are well endowed with assets would have good collateral to pledge as security for loans and hence have a higher demand for credit, thus the sign of the coefficient is surprising. It could also be that these households have less need for credit.

Being an urban resident has a negative but insignificant effect on credit demand. The expectation was that urban residents need more credit than their rural counterparts, hence the coefficient would be positive. This is because urban residents have to buy all the food they eat, pay rent for accommodation and bills for services consumed (water, electricity) which raises their financing needs. Rural residents consume own food produced and live in own houses, thus having relatively lower spending pressures. Regional location, using northern as the reference category, has a positive and significant effect on credit demand. Households that are located in other regions relative to northern region have a higher likelihood of applying for credit as captured by the positive and significant coefficients of the regional dummies.

[19] *It is for this reason that the Land Act of 1998 seeks to provide bona fide occupants with certificates of title so that they can be used to secure credit.*

9.3.2 Regional Logit Models for Credit Demand in Broader Financial Sector

The regional logit model regressions are presented in table 9.1. Age and education level have positive and significant effects (at 1% significance level) on the probability of credit demand in all the regions. Being male has a positive and significant effect (at the 1% significance level) on borrowing behaviour in all the regions except northern where the coefficient is statistically insignificant. This gives an indication of discrimination against women in the credit market.

Household size has insignificant effect on credit demand in all the regions except northern where it was positive and significant (at the 1% significance level). The coefficients for the dependency ratios were positive and significant in all the regional models but with varying levels of significance as follows: eastern and western (1% significance level), northern (5% significance level) and central (10% significance level). Household expenditure had a positive and significant effect (at the 1% significance level) on credit demand in all regions except in eastern region where it was insignificant. Being a migrant significantly influenced credit demand in only eastern region (at the 1% significance level), while land size was positive and significant (at the 10% significance level) only in northern region. Asset values had a positive and significant effect on credit demand in the northern and western regions at the 5% and 10% significance levels respectively. However in the central and eastern regions, asset values had a negative and significant effect on the probability of credit demand at the 1% and 5% significance levels respectively. While being an urban resident has a positive and significant effect (at 1% significance level) on the probability of credit demand in eastern region, it has a negative and significant effect (at the 5% significance level) in the western region.

9.3.3 Rural/Urban Logit Models for Credit Demand in the Broader Financial Sector

The rural/urban analysis suggests that credit demand in the rural areas is positively and significantly influenced by the following variables (at the 1% significance level): age, sex, education level, dependency ratio and household expenditure. Household size and asset values have positive but insignificant effects. Land size had a negative and significant effect (at the 1% significance level) on credit demand (see table 9.2).

In the urban sector, the probability of credit demand was positively and significantly (at the 1% significance level) influenced by age, education level, dependency ratio and household expenditure. The coefficient for sex was also positive and significant at the 5% significance level. An interesting observation was the negative and significant coefficient (at the 1% significance level) for household size in the urban sector logit model, where large household sizes may be more indicative of poverty.

Table 9.2: Logit Model for Credit Demand in the Broader Financial Sector [Rural and Urban]

Dependent Variable: ***level*** *(=1 if applied for bank or informal credit, otherwise zero)*		
Explanatory Variables	Rural	Urban
Lnage	0.661 (8.67)***	1.306 (6.23)***
Sex (Male=1)	0.766 (11.94)***	0.312 (1.99)**
lnhhsize	0.066 (1.14)	-0.459 (3.31)***
lneduc	0.031 (6.60)***	0.052 (3.08)***
lndepr	0.378 (4.36)***	0.711 (3.48)***
lnhhexp	0.355 (6.01)***	0.356 (2.70)***
Dummy: Migration	-0.022 (0.34)	0.256 (1.59)
Lnlan	-0.107 (4.15)***	-0.032 (0.78)
lnastva	0.047 (1.31)	-0.049 (0.61)
Constant	-6.909 (16.35)***	-7.604 (7.20)***
Number of Observations	13,705	1,828
LR Chi2	429.98	89.35
Prob>Chi2	0.000	0.000
Pseudo R2	0.0494	0.0694
Absolute value of z-statistics in parentheses		
* significant at 10%; ** significant at 5%; *** significant at 1%		

9.3.4 Multinomial Model for borrowers' choice between formal and informal sector credit

The reference category for the multinomial logit model was those who did not apply for any credit. The results (see table 9.3) suggest that, relative to the reference category, the probability of applying for bank credit is positively and significantly influenced at the 1% significance level by age, sex, education level, household expenditure, and living in the urban areas. The dependency ratio and household size have positive and significant effects at the 5% and 10% significance levels respectively.

The choice of informal sector credit, relative to the reference category, is positively and significantly influenced at the 1% significance level by the age of the borrower, being male, education level, dependency ratio and household expenditure. The coefficient for land size was negative and significant at the 5% significance level. Being located in other regions, relative to being in northern region, has a positive and significant effect on the choice of credit from informal lenders, as captured by the coefficients of the regional dummies.

Table 9.3: Multinomial Logit Model for Choice between Formal and Informal Sector Credit

Variable	Bank	Informal
Lnage	1.594 (4.83)***	0.703 (9.59)***
Sex (Male=1)	1.132 (3.71)***	0.665 (11.03)***
Lnhhsize	0.405 (1.70)*	-0.058 (1.05)
Lneduc	0.107 (2.78)***	0.036 (7.95)***
Lndepr	0.769 (2.27)**	0.470 (5.75)***
Lnhhexp	1.002 (4.54)***	0.337 (5.92)***
Dummy: Migration	0.171 (0.63)	0.046 (0.76)
Lnlan	0.024 (0.26)	-0.052 (2.28)**
Lnastva	0.143 (1.05)	-0.051 (1.48)
Dummy: Central Region	-0.406 (0.88)	0.245 (2.00)**
Dummy: Eastern Region	-0.727 (1.41)	0.742 (6.53)***
Dummy: Western Region	-0.073 (0.16)	0.844 (7.47)***
Dummy: Urban	0.919 (2.84)***	-0.101 (1.04)
Constant	-18.365 (10.59)***	-6.897 (17.06)***
Reference Category: Those who did not apply for any credit		
Log Likelihood	-4,917.64	
Number of observations	15,533	
LR chi2(26)	694.27	
Prob>chi2	0.0000	
Pseudo R2	0.0659	
Absolute value of z-statistics in parentheses		
* significant at 10%, ** significant at 5%, *** significant at 1%		

9.3.5 Heckman two-step Selection Model for Value of Credit Demanded in the Broader Financial Sector

The Heckman two-step selection model was only estimated at the national level and the results generally corroborate the logit model estimates (see table 9.4). Lambda is significantly different from zero, which implies that the sample selection bias would have been a problem in an OLS model. The results suggest that the amount of credit demanded is positively and significantly influenced (at the 1% significance level) by age, education level and household expenditure, which are consistent with the logit regression results. These variables are associated with control of household resources which increases with age, increased returns to investment associated with education, and higher capacity to repay associated with higher household expenditure, all of which have positive effects on the quantity of credit demanded.

Table 9.4: Heckman two-step Selection Model for Value of Credit Demanded in the Broader Financial Sector [National]

Equation of Interest: Dependent Variable *lnammo (amount of credit demanded)*	
lnage	0.789 (5.96)***
lneduc	0.050 (7.85)***
lnhhexp	1.141 (17.66)***
Dummy: Migration	-0.072 (0.85)
lndepr	0.190 (1.54)
Constant	-3.896 (5.53)***
Selection Model: Dependent Variable *level (=1 if applied for formal or informal credit)*	
Sex (Male=1)	0.315 (3.49)***
lnhhsize	0.135 (5.26)***
lnlan	-0.021 (1.82)
lnastva	0.048 (3.29)***
Dummy: Urban	0.051 (1.14)
Dummy: Central Region	0.167 (2.00)**
Dummy: Eastern Region	0.275 (3.38)***
Dummy: Western Region	0.383 (4.85)***
Interaction: sex and central region	0.056 (0.52)
Interaction: sex and eastern region	0.202 (1.92)*
Interaction: sex and western region	0.071 (0.70)
Constant	-2.253 (24.12)***
lambda	-0.856 (4.30)***
rho	-0.498
sigma	1.720
Number of Observations	16,783
Censored Observations	15,302
Uncensored Observations	1,481
Wald chi2(5)	481.81
Prob>chi2	0.000
Absolute value of z-statistics in parentheses	
* significant at 10%, ** significant at 5%, *** significant at 1%	

9.4 Informal Credit Demand

9.4.1 National Logit Model for Informal Credit Demand

The logit regression results for the determinants of informal credit demand are presented in table 9.5 and the models are significant based on diagnostic statistics.

Table 9.5: Logit Model for Informal Credit Demand [National and Regional]

Equation of Interest: Dependent Variable ***level*** *(=1 if applied for bank or informal sector credit, otherwise zero)*					
Explanatory Variables	National	Region			
		Central	Eastern	Northern	Western
Lnage	0.692 (9.46)***	0.605 (3.94)***	0.533 (3.91)***	0.910 (3.28)***	0.847 (7.23)***
Sex (Male=1)	0.658 (10.92)***	0.610 (4.86)***	0.856 (7.58)***	0.221 (0.97)	0.606 (6.37)***
lnhhsize	-0.062 (1.13)	-0.087 (0.80)	-0.150 (1.55)	0.591 (2.73)***	-0.073 (0.74)
lneduc	0.036 (7.89)***	0.036 (3.19)***	0.045 (5.13)***	0.055 (3.08)***	0.029 (4.32)***
lndepr	0.465 (5.70)***	0.287 (1.54)	0.520 (3.28)***	0.671 (2.15)**	0.541 (4.41)***
lnhhexp	0.325 (5.73)***	0.513 (4.18)***	0.047 (0.47)	0.591 (3.11)***	0.430 (4.42)***
Dummy: Migration	0.045 (0.74)	-0.045 (0.36)	0.406 (3.66)***	-0.204 (0.82)	-0.172 (1.71)*
Lnlan	-0.052 (2.28)**	-0.061 (1.30)	-0.041 (1.12)	0.235 (2.00)**	-0.055 (1.30)
lnastva	-0.053 (1.55)	-0.223 (3.09)***	-0.158 (2.45)**	0.244 (2.10)**	0.068 (1.22)
Dummy: Urban	-0.116 (1.19)	-0.188 (1.00)	0.434 (2.55)**	-0.711 (1.75)*	-0.566 (3.20)***
Dummy: Central Region	0.252 (2.06)**				
Dummy: Eastern Region	0.748 (6.58)***				
Dummy: Western Region	0.849 (7.51)***				
Constant	-6.787 (16.86)***	-6.675 (7.71)***	-3.746 (5.09)***	-10.424 (7.12)***	-7.331 (10.87)***
Number of Observations	15,533	3,920	4,165	2,290	5,158
LR Chi2	525.63	81.23	177.71	68.65	195.84
Prob>Chi2	0.000	0.000	0.000	0.000	0.000
Pseudo R2	0.0542	0.0378	0.0623	0.0778	0.0529
Absolute value of z-statistics in parentheses					
* significant at 10%, ** significant at 5%, ***significant at 1%					

The results suggest that at the national level, age has a positive and significant effect (at the 1% significance level) on borrowing behaviour from the informal financial sector. These

results are consistent with Nagarajan et al (1998) and Zeller (1994), whose coefficients for age were positive and significant. The positive and significant coefficient for age may be indicative of the fact that older persons have greater control of household resources, which raises their creditworthiness, and hence results in a higher probability of applying for credit. Being male has a positive and significant effect on informal credit demand (at the 1% significance level), which tallies with findings by Baydas et al (1994) which may be interpreted as discrimination against women in the informal credit market.

The education level has a positive and significant effect (at the 1% significance level) on borrowing behaviour from informal sector sources. These findings are consistent with Nagarajan et al (1998) and Zeller (1994), whose coefficients for education level were positive and statistically significant at the 10% and 5% significance levels respectively. The positive coefficient of education level may be interpreted from the productivity point of view. Education level raises the productivity of human capital through acquisition of skills, which in turn raises the returns from investment. By implication the more educated are more likely to make better use of credit, thus raising the probability of credit demand. This is the main justification that is commonly cited by microfinance institutions for providing credit as an integrated package that includes training.

The dependency ratio has a positive and significant effect (at the 1% significance level) on the probability of informal credit demand. This result agrees with empirical findings by Adugna and Heidhues (2000) where the coefficient for dependency ratio was positive and statistically significant (at the 5% significance level). The positive coefficient for the dependency ratio may be accounted for by the fact that informal credit is utilized mainly for consumption smoothing to maintain and/or improve the quality of life (for example, purchase of food items and durable consumer goods, education and health care). Households

with higher dependency ratios have a higher likelihood of demanding informal credit for consumption smoothing.

Migration, though having a positive coefficient, has no significant effect on borrowing behaviour from the informal financial sector. None of the other empirical studies had the migration status variable in their econometric models. Nagarajan et al (1998) had used the reputation of the household head variable (proxied by number of years of stay in the village as a ratio of the age of household head), which was positive but insignificant. Zeller (1994) used a proxy for strength of social relationships variable (= 1 if household had a burial place in the region, otherwise zero), which was positive and significant at the 10% significance level. It should be noted that the above variables could be used as proxies for migration status, which if interpreted in this light, could be comparable with the current study.

Household expenditure per adult equivalent has a positive and significant effect (at the 1% significance level) on household borrowing behaviour from the informal financial sector. These results are not consistent with Nagarajan et al (1998) where the coefficient for total non-farm income variable was negative and statistically significant at the 1% significance level. In the Adugna and Heidhues (2000) study, the economic status of the household was proxied by the number of oxen owned, which also had a negative and significant effect (at the 1% significance level) on household informal credit demand.

The coefficient for asset value was negative but statistically insignificant, which suggests that households with large asset endowments have a lower demand for informal sector credit. This may be explained by the fact that such households can pledge their assets to banks and get more credit at better terms. Empirical results by Nagarajan et al (1998) also suggested that the asset value had a positive but statistically insignificant effect on

household borrowing behaviour. Bell et al (1997) used liquid assets (as a proxy for assets), but the results suggested a statistically insignificant relationship with informal credit demand. However in the Adugna and Heidhues (2000) study, the number of ruminants (which was used as a proxy for liquid assets) was shown to have a positive and significant effect (at 10% significance level) on informal credit demand. Mohieldin and Wright (2000) also found a positive and significant relationship between household asset values and informal credit demand, which result was explained in terms of information and enforcement imperfections which motivate informal lenders to demand some form of collateral.

Household land holding has a negative and significant effect (at the 5% significance level) on household borrowing behaviour from the informal financial sector. This result is quite surprising, cannot be explained, and differs from empirical evidence of other studies. Evidence by Nagarajan et al (1998) suggested a positive and significant relationship (at the 10% significance level) between informal credit demand and the number of cultivated acres, where the positive coefficient was interpreted as evidence for informal credit being used for agricultural production. Evidence by Bell et al (1997) also suggested a positive and significant relationship between land value and informal credit demand.

Regional location, relative to the reference northern region, has a positive and significant effect on informal credit demand. This is evidenced by the positive and significant coefficients of the regional dummies of central, eastern and western regions at the 5%, 1% and 1% significance levels respectively.

9.4.2 Regional Logit Models for Informal Credit Demand

The regional logit models portray differences in the significance of variables that influence informal credit demand across regions (see table 9.5). Age and education level have positive and significant effects on informal credit demand in all the regions (at the 1% significance level). Being male has positive and significant coefficients (at the 1% significance level) in all the regions except northern where it is statistically insignificant. Household size and land holding have insignificant effects on informal credit demand in all regions, except in northern region where they have positive and significant effects at the 1% and 5% significance levels respectively.

The dependency ratio has positive and significant effects on informal credit demand in eastern and western regions (at the 1% significance level), and in northern region (at the 5% significance level). Household expenditure positively and significantly influences informal credit demand (at the 1% significance level) in all the regions except eastern. Migration has a positive and significant effect on credit demand in eastern region (at the 1% significance level), but has a negative and significant effect in western region (at the 10% significance level). Asset values negatively influence informal credit demand in central region (at the 1% significance level) and eastern region (at the 5% significance level). However in northern region, asset values have a positive and significant effect (at the 5% significance level) on informal credit demand but statistically insignificant effect in western region.

Being an urban resident has a positive and significant effect (at the 5% significance level) on informal credit demand in eastern region. But being an urban resident negatively and significantly influences informal credit demand in northern and western regions at the 10% and 1% significance levels respectively.

9.4.3 Logit Models for Rural/Urban Informal Credit Demand

The rural/urban decomposition suggests that informal credit demand in the rural sector is positively and significantly influenced at the 1% significance level by the following variables: age, sex, education level, dependency ratio and household expenditure (see table 9.6). Land holding has a negative and significant effect (at the 1% significance level) on credit demand.

Within the urban sector, informal credit demand is positively and significantly influenced (at the 1% significance level) by age, education level and dependency ratio. Household expenditure is positive and significant at the 10% significance level. Household size has a negative and significant effect (at the 1% significance level) on informal credit demand in the urban sector. The rest of the variables were statistically insignificant.

Table 9.6: Logit Models for Informal Credit Demand [Rural and Urban]

Dependent Variable: ***level*** *(=1 if applied for bank or informal credit, otherwise zero)*		
Explanatory Variables	Rural	Urban
Lnage	0.622 (8.08)***	1.235 (5.53)***
Sex (Male=1)	0.751 (11.59)***	0.175 (1.05)
lnhhsize	0.034 (0.57)	-0.483 (3.26)***
lneduc	0.029 (6.27)***	0.050 (2.85)***
lndepr	0.384 (4.37)***	0.637 (2.89)***
lnhhexp	0.327 (5.47)***	0.248 (1.74)*
Dummy: Migration	-0.026 (0.41)	0.274 (1.59)
Lnlan	-0.115 (4.44)***	-0.025 (0.59)
lnastva	0.049 (1.37)	-0.140 (1.63)
Constant	-6.585 (15.44)***	-6.440 (5.70)***
Number of Observations	13,705	1,828
LR Chi2	393.2	65.47
Prob>Chi2	0.000	0.000
Pseudo R2	0.0460	0.0567
Absolute value of z-statistics in parentheses		
* significant at 10%; ** significant at 5%; *** significant at 1%		

9.4.4 Multinomial Logit Model for Choice of Informal Financial Institutions

A multinomial model was estimated to analyze the determinants of the choice of credit from different informal financial institutions, with relatives/friends/community funds being the reference category (see table 9.7). As stated earlier, informal lenders were categorized into Co-operative credit societies / NGOs, Moneylenders / commercial firms, Relatives /friends/ community funds, and Government agencies.

The results suggest that relative to the friends/relatives/community funds, the choice of credit from the Co-operative /NGO sector is positively and significantly influenced at the 1% significance level by education level, household size, household expenditure and asset values. Age and land holding have positive and significant effects at the 10% and 5%

significance levels respectively. The probability of choice of credit from the co-operative/NGO sector, relative to the reference category, is negatively and significantly influenced at the 1% significance level by sex and migration status. The negative and significant coefficient for sex may be explained by the fact that most NGOs target especially women with their credit. This is closely associated with the economic empowerment concerns that some NGOs are especially out to address. The group lending methodology that entails the self-selection process, group guarantee and peer monitoring as an alternative form of security makes the NGO credit more attractive to women. In the Ugandan situation, group lending is almost synonymous with women and that is why the groups are often referred to as *"women groups"* even if there are some male members. Relative to the reference region (northern), the choice of credit from the cooperative societies/NGOs relative to the friends/relatives/community funds, is negatively and significantly influenced by regional location.

The choice of credit from money lenders/commercial firms, relative to the reference category, is positively and significantly influenced by household size (at the 5% significance level) and by household expenditure (at 1% significance level). Being male has a negative and significant effect (at the 5% significance level) on choice of credit from the money lenders/commercial firms. The choice of government credit relative to the reference category, is positively and significantly influenced (at the 1% significance level) by age, household expenditure and education level. The coefficient for household size is positive and significant at the 5% significance level. Regional location has a negative and significant effect on choice of credit from government agencies, relative to the reference region.

Table 9.7: Multinomial Logit Model for Borrowers' Choice of Informal Financial Institutions

Variable	Co-operatives / NGOs	Money Lender/ Firm	Government Agency
lnage	0.392 (1.64)*	-0.283 (0.7)	0.982 (3.07)***
Sex (Male=1)	-0.675 (4.59)***	-0.490 (1.95)**	0.058 (0.27)
lnhhsize	0.457 (2.83)***	0.675 (2.28)**	0.501 (2.29)**
lneduc	0.039 (3.29)***	0.010 (0.59)	0.073 (3.75)***
lndepr	-0.055 (0.25)	0.556 (1.43)	-0.036 (0.13)
lnhhexp	0.722 (4.87)***	1.374 (5.29)***	1.106 (5.81)***
Dummy: Migration	-0.447 (2.91)***	-0.236 (0.88)	-0.166 (0.83)
lnlan	0.149 (2.39)**	-0.061 (0.79)	0.097 (1.23)
lnastva	0.225 (2.48)***	-0.067 (0.43)	-0.164 (1.40)
Dummy: Urban	0.152 (0.68)	-0.323 (0.74)	-0.474 (1.43)
Dummy: Central Region	-1.815 (5.61)***	-2.410 (3.37)***	-2.645 (6.86)***
Dummy: Eastern Region	-2.162 (7.03)***	-2.597 (3.68)***	-2.468 (7.06)***
Dummy: Western Region	-2.363 (7.58)***	-0.345 (0.59)	-2.459 (6.98)***
Constant	-5.148 (4.68)***	-7.990 (4.22)***	-9.166 (6.37)***
Reference Category: Relatives/Friends/Community Funds Reference Region: Northern Region			
Number of observations	1,414		
LR chi2 (39)	386.02		
Prob>chi2	0.000		
Pseudo R2	0.123		
Absolute value of z-statistics in parentheses			
* significant at 10%, ** significant at 5%, *** significant at 1%			

9.4.5 Heckman two-step Selection Model for Value of Informal Credit Demanded

The results of the Heckman two-step Selection Model for the amount of informal credit demanded are presented in table 9.8.

Table 9.8: Heckman two-step Selection Model for Value of Informal Credit Demanded – [National Level]

Equation of Interest: Dependent Variable ***lninfdd*** *(amount of informal credit demanded)*	
lnage	0.766 (5.91)***
lneduc	0.049 (8.00)***
lnhhexp	1.061 (15.93)***
Dummy: Migration	-0.097 (1.15)
lndepr	0.210 (1.70)*
Constant	-3.787 (5.55)***
Selection Model: Dependent variable ***boro*** *(=1 if applied for informal credit)*	
Sex (Male=1)	0.271 (2.97)***
lnhhsize	0.121 (4.66)***
lnlan	-0.023 (1.92)*
lnastva	0.032 (2.10)**
Dummy:Urban	-0.009 (0.19)
Dummy: Central Region	0.165 (1.98)**
Dummy: Eastern Region	0.275 (3.39)***
Dummy: Western Region	0.378 (4.79)***
Interaction: sex and central region	0.064 (0.58)
Interaction: sex and eastern region	0.234 (2.21)**
Interaction: sex and western region	0.108 (1.06)
Constant	-2.174 (23.17)***
lambda	-0.638 (3.26)***
rho	-0.400
sigma	1.595
Number of observations	16,786
Censored observations	15,366
Uncensored observations	1,420
Wald chi2(5)	412.22
Prob>chi2	0.000
Absolute value of z-statistics in parentheses	
* significant at 10%, ** significant at 5%, *** significant at 1%	

The results suggest that the OLS parameter estimates would have been biased, given that lambda is statistically significant (at the 1% significance level). The value of informal credit demanded is positively and significantly influenced at the 1% significance level by age, education level and household expenditure. The coefficient for dependency ratio is positive and significant at the 10% significance level. These results are consistent with the logit regression results.

9.5 Determinants of Lenders' Credit Rationing Behaviour in the Broader Financial Sector

9.5.1 Heckman Probit Model with Sample Selection for Credit Rationing[20]

The Heckman probit model with sample selection was used to estimate the determinants of credit rationing in the broader financial sector and then later specifically for the informal sector. For the broader financial sector, the dependent variable for the model of interest was *lessmo (=1 if credit rationed in the formal or informal sector, otherwise zero)*. For the selection model, the dependent variable was the probability of applying for credit from the formal or informal financial sectors *level (=1 if applied for credit in the formal or informal financial sectors, otherwise zero)*. For the informal sector credit rationing model, the dependent variable for the model of interest was *ration (=1 if credit rationed in the informal sector, otherwise zero)*, and the dependent variable for the selection model was the probability of applying for an informal loan *boro (=1 if applied for an informal loan, otherwise zero)*. Table 9.9 presents regression results for credit rationing.

[20] *Credit rationing refers to a state in which the lender grants the borrower less amount than was originally demanded or completely rejecting the borrower's loan application*

Table 9.9 Heckman Probit Model[21] with Sample Selection for Credit Rationing in the Broader Financial Sector [National and Regional]

Equation of Interest: Dependent Variable lessmo (=1 if credit rationed formal or informal sector)					
Explanatory Variable	National	Region			
		Central	Eastern	Northern	Western
lnage	-0.163 (1.83)*	0.361 (1.31)	-0.163 (1.81)*	0.310 (1.86)*	-0.178 (0.78)
Sex (Male=1)	-0.251 (2.80)***	0.098 (0.26)	-0.455 (2.50)***	0.405 (3.05)***	0.075 (0.29)
lneduc	0.004 (1.06)	0.020 (1.28)		0.005 (0.69)	
lndepr	-0.204 (3.20)***	0.387 (1.56)	-0.349 (2.99)***	0.263 (1.22)	-0.134 (0.77)
lnhhexp	0.093 (2.03)**	0.228 (1.28)	0.026 (1.09)	0.176 (4.21)***	0.145 (1.24)
Dummy: Migration	0.028 (0.72)	0.230 (1.36)	-0.001 (0.01)	-0.033 (0.40)	0.062 (0.55)
lnastva	-0.099 (3.89)***	-0.006 (0.06)	-0.044 (0.57)	0.073 (1.06)	-0.020 (0.21)
lnlan	0.001 (0.06)		0.007 (0.93)	0.026 (0.74)	-0.024 (0.52)
Dummy: Urban	-0.130 (1.69)*	-0.128 (0.57)	-0.067 (1.74)*	-0.257 (1.28)	-0.157 (0.82)
Dummy: Central Region	-0.360 (2.63)***				
Dummy: Eastern Region	-0.538 (2.70)***				
Dummy: Western Region	-0.522 (2.78)***				
Constant	2.193 (3.52)***	-3.621 (1.62)	2.084 (5.98)***	-4.271 (6.23)***	-0.001 (0.00)
Dependent Variable for Selection Equation: *level (=1 if applied for formal or informal credit)*					
lnage	0.289 (10.43)***	0.286 (4.80)***	0.175 (2.32)**	0.223 (2.32)**	0.493 (9.00)***
Sex (Male=1)	0.418 (15.37)***	0.382 (6.53)***	0.524 (2.94)***	0.358 (3.68)***	0.331 (7.02)***
lndepr	0.253 (6.98)***	0.063 (0.81)	0.300 (3.25)***	0.336 (2.18)**	0.271 (4.47)***
lnlan		-0.037 (1.95)**			
lnastva	0.131 (13.94)***		0.067 (0.92)	0.219 (4.13)***	0.145 (7.97)***
lneduc					0.014 (3.98)***
Constant	-2.945 (25.85)***	-2.585 (10.87)***	-2.289 (7.46)***	-3.159 (6.33)***	-3.477 (16.55)***
/anthro	-1.603 (2.76)***	0.395 (0.31)	-8.965 (0.10)**	10.512 (0.07)	-0.658 (0.98)
rho	-0.922	0.376	-1.000	1.000	-0.577
Number of Observations	20,034	4,038	5,404	3,426	5,873
Censored Observations	18,505	3,707	4,941	3,309	5,252
Uncensored Observations	1,529	331	463	117	621
Wald chi2	164.6	12.82	76.19	56.42	5.15
Prob>chi2	0.000	0.118	0.000	0.000	0.741
Absolute value of z-statistics in parentheses					
* significant at 10%, ** significant at 5%, ***significant at 1%					

[21] *The choice of explanatory variables for the selection equations was based on those that yielded the more significant effects, hence the variation of variables across the national, regional, and rural/urban models.*

The results suggest that at the national level, the lender's credit rationing behaviour is negatively influenced at the 1% significance level by sex, dependency ratio and asset values. The significant coefficient for the dependency ratio was quite surprising. As discussed earlier, the dependency ratio variable was constructed as a proxy for the income earning capacity of the household, thus implying an inverse relationship between dependency ratio and income earning capacity. By implication, households with high dependency ratios would be judged to be less creditworthy, thus increasing their probability of being credit rationed. Age and being an urban resident have negative and significant effects on the probability of being credit rationed at the 5% significance level, while the coefficient of household expenditure is positive and significant at the 5% level. Again, the positive and significant coefficient for household expenditure was quite surprising. Regional location, relative to the reference category (northern) negatively and significantly influences the probability of being credit rationed (at the 1% significance level).

At the regional level, the lenders' credit rationing behaviour in central and western regions is not significantly influenced by any of the variables. In eastern region, the probability of being credit rationed is negatively and significantly influenced by age and being in the urban sector (at 10% significance level), by sex and dependency ratio (at 1% significance level). In northern region, credit rationing is positively and significantly influenced at the 1% significance level by sex and household expenditure, and age (at the 10% significance level).

The results of the rural/urban dissagregation (see table 9.10) suggest that the lenders' credit rationing behaviour for borrowers located in the rural sector is positively and significantly influenced by household expenditure (at the 5% significance level) and education level (at the 10% significance level). Asset values have a negative and significant effect (at the 1% significance level) on the probability of being credit rationed in the rural sector. For the

urban sector probit model, the probability of being credit rationed is negatively and significantly influenced by age, dependency ratio and asset values (at the 1% significance level) and migration (at the 5% significance level). The only variable that positively and significantly influenced the probability of being credit rationed in the urban sector was land size (at the 1% significance level).

Table 9.10: Heckman Probit Model with Sample Selection for Credit Rationing in Broader Financial Sector [Rural/Urban]

Equation of Interest: Dependent Variable *lessmo (=1 if credit rationed in the formal or informal sector)*		
Explanatory Variables	Rural	Urban
Lnage	-0.003 (0.02)	-0.622 (6.96)***
Sex (Male=1)	-0.184 (0.94)	-0.061 (1.37)
lneduc	0.011 (1.65)*	-0.0008 (0.2)
lndepr	-0.121 (1.10)	-0.334 (3.57)***
lnhhexp	0.175 (2.30)**	0.016 (0.65)
Dummy: Migration	0.055 (0.84)	-0.068 (1.94)**
lnastva	-0.151 (3.31)***	-0.130 (4.04)***
Lnlan	0.041 (0.96)	0.007 (2.64)***
Constant	0.301 (0.18)	4.124 (11.03)***
Selection Equation: Dependent Variable *level (=1 if applied for formal or informal credit)*		
Lnage	0.226 (7.49)***	0.604 (10.2)***
Sex (Male=1)	0.459 (15.40)***	0.169 (5.07)***
lndepr	0.197 (4.83)***	0.386 (5.11)***
lnastva	0.138 (11.80)***	0.183 (9.96)***
Constant	-2.759 (22.11)***	-4.207 (16.73)***
/athrho	-0.827 (1.24)	-11.2 (8.14)***
rho	-0.679	-1.000
Number of Observations	16,215	3,677
Censored Observations	14,892	3,471
Uncensored Observations	1,323	206
Wald chi2	29.56	7186
Prob>chi2	0.000	0.000
Absolute z-statistics in parentheses		
* significant at 10%, ** significant at 5%, *** significant at 1%		

9.5.2 Heckman Selection Model for Value of Credit Supplied in Broader Financial Sector

One alternative to understanding the dynamics of lenders' credit rationing behaviour is through the estimation of the credit supply function (see table 9.11).

Table 9.11 Heckman two-step Selection Model for Amount of Credit Supplied in Broader Financial Sector [National]

Equation of Interest: Dependent Variable *lnrecivo (amount of loan received)*	
Explanatory Variables	Coefficients
Lnage	0.185 (1.42)
lnhhexp	1.251 (16.64)***
lnastva	0.201 (4.04)***
Lnlan	0.040 (1.26)
lnhhsize	0.918 (10.26)***
Constant	-6.047 (9.35)***
Selection Equation: Dependent Variable *level (=1 if applied for formal or informal credit)*	
Sex (Male=1)	0.396 (13.67)***
Dummy: Urban	-0.087 (2.20)**
lndepr	0.200 (5.02)***
Dummy: Central Region	0.438 (7.37)***
Dummy: Eastern Region	0.636 (11.08)***
Dummy: Western Region	0.765 (13.60)***
Constant	-2.146 (35.73)***
lambda	-0.394 (2.40)**
rho	-0.272
sigma	1.445
Number of Observations	20,003
Censored Observations	18,730
Uncensored Observations	1,273
Wald chi2(5)	618.6
Prob>chi2	0.000
Absolute value of z-statistics in parentheses	
* significant at 10%, ** significant at 5%, *** significant at 1%	

Intuitively the households' characteristics that positively and significantly affect the a lenders' decision to supply credit can be inferred to have a negative and significant effect on

the lenders' credit rationing behaviour, and the reverse also holds true. For this reason the Heckman two-step selection model was estimated for the amount of credit supplied from the whole credit sector (both formal and informal). The results suggest that the amount of credit supplied is positively and significantly influenced (at the 1% significance level) by household expenditure, household size and asset values. The positive and significant coefficient for household size was surprising though. The inference is that households with high household expenditure and asset values will be rated as creditworthy, and this reduces the likelihood of their being credit rationed.

9.6 Determinants of Informal Credit Rationing

9.6.1 Heckman Probit Models with Sample Selection for Informal Credit Rationing – National and Regional

The factors affecting informal lenders' credit rationing behaviour were also analyzed using the Heckman probit model with sample selection (see table 9.12). The dependent variable for the model of interest was the probability of being credit rationed *ration (= 1 if respondent was credit rationed in the informal financial sector, otherwise zero)*, with the explanatory variables being the socio-economic characteristics of the household. The dependent variable for the selection model was the probability of applying for an informal loan *boro (=1 if applied for an informal loan, otherwise zero).* The major factor expected to influence the informal lenders' credit rationing behaviour is their perception of the borrowers' repayment capacity. The higher the repayment capacity, the lower will be the probability of their being credit-rationed, and vice versa.

Table 9.12: Heckman Probit Model with Sample Selection for Informal Credit Rationing – [National and Regional]

Equation of Interest: Dependent Variable *ration (=1 if rationed in informal sector)*					
Variable	National	Region			
		Central	Eastern	Northern	Western
lnage	-0.226 (4.01)***	-0.069 (0.23)	0.192 (0.71)	0.173 (0.24)	-0.288 (0.48)
Sex (Male=1)	-0.308 (5.22)***	-0.204 (0.90)	0.275 (0.85)	0.160 (0.23)	-0.134 (0.12)
lneduc	0.002 (0.830)	0.015 (0.92)		0.002 (0.10)	0.003 (0.24)
lndepr	-0.220 (4.32)***	0.227 (0.73)	-0.123 (0.44)	-0.309 (0.84)	-0.191 (0.47)
lnhhexp	0.064 (1.71)*	0.171 (1.10)	0.130 (0.94)	0.408 (0.93)	0.149 (0.27)
Dummy: Migration	0.014 (0.58)	0.150 (0.92)	-0.035 (0.22)	-0.182 (0.60)	0.067 (0.37)
lnastva	-0.086 (4.91)***	-0.038 (0.49)	0.086 (0.94)	-0.322 (2.30)**	-0.003 (0.01)
lnlan	0.001 (0.170)	0.029 (0.43)	0.020 (0.41)		-0.029 (0.23)
Dummy: Urban	-0.078 (1.56)	-0.121 (0.58)	-0.335 (1.38)	-0.600 (0.67)	-0.049 (0.31)
Dummy: Central Region	-0.269 (2.87)***				
Dummy: Eastern Region	-0.357 (2.76)***				
Dummy: Western Region	-0.355 (2.97)***				
Constant	2.614 (7.00)***	0.578 (0.20)	-2.926 (1.29)	-0.762 (0.10)	1.146 (0.10)
Selection Equation: Dependent Variable *boro (=1 if applied for informal credit)*					
lnage	0.275 (9.77)***	0.229 (3.93)***	0.295 (4.95)***	0.196 (2.12)**	0.393 (8.12)***
Sex (Male=1)	0.401 (14.59)***	0.339 (5.99)***	0.436 (7.99)***	0.281 (3.03)***	0.376 (8.20)***
lndepr	0.260 (7.09)***	0.188 (2.48)***	0.324 (4.76)***	0.238 (1.76)	0.274 (4.43)***
lnlan				0.071 (1.57)	
lnastva	0.114 (12.35)***	0.054 (2.90)***	0.044 (2.29)**	0.158 (3.54)***	0.121 (7.12)***
lneduc			0.019 (4.52)***		
Constant	-2.844 (24.73)***	-0.2626 (10.88)***	-2.550 (11.38)***	-2.802 (7.07)***	-3.123 (15.84)***
/athrho	-2.410 (2.70)***	-0.856 (0.74)	0.076 (0.10)	-0.617 (0.29)	-1.379 (0.23)
rho	-0.984	-0.694	0.076	-0.549	-0.881
Number of Observations	20,070	5,305	5,365	2,309	5,932
Censored Observations	18,606	4,999	4,915	2,199	5,334
Uncensored Observations	1,464	306	450	110	598
Wald chi2	255.02	9.64	9.55	11.16	21.97
Prob>chi2	0.000	0.380	0.298	0.193	0.009
Absolute value of z-statistics in parentheses					
* significant at 10%, ** significant at 5%, *** significant at 1%					

At the national level, the informal lenders' credit rationing behaviour is negatively and significantly influenced at the 1% significance level by sex, age, dependency ratio, and asset values. The significance of the age coefficient may be explained in terms of older persons controlling more of the household resources which raises their creditworthiness and lowers the likelihood of their being credit rationed. The results differ from those of Zeller (1994) which suggested a positive and significant relationship between age and the probability of being credit rationed (at the 5% significance level). Zeller (1994) however qualified his results on the grounds that older persons were more likely to apply for large amounts of loans, therefore raising their probability of being credit rationed in the informal financial sector.

Sex of the respondent has a negative and significant effect on the probability of being credit rationed. This result suggests that the women are discriminated against in the informal credit sector. This result is not consistent with the arguments in the literature that women, who have limited borrowing opportunities from the formal financial sector due to lack of collateral security, tend to be more disciplined in servicing loans from the informal credit markets so as not to lose access to such credit (Morduch, 1999). Though men mainly control productive resources, which could be offered as collateral for the loans, the use of collateral substitutes (such as group guarantee) in the informal financial sector enable the women to be creditworthy even in the absence of physical collateral. This therefore is assumed to reduce the likelihood of women being credit rationed. Zeller (1994) however found no statistically significant relationship between sex and the probability of being credit rationed.

Households with higher dependency ratios were less likely to be credit rationed in the informal financial sector, which result is quite surprising. The expectation was that lenders

may associate high dependency ratios with lower household repayment capacity and hence credit ration such households.

Household asset holding significantly lowers the probability of being credit rationed in the informal financial sector. The assets can be liquidated to repay the loan in cases of default, hence the lenders perceive households with high asset values to have high repayment potential thus reducing the likelihood of their being credit rationed. These results are consistent with Zeller (1994) who found a negative and significant relationship between informal credit rationing and value of assets owned by the household.

Education level has a positive but insignificant effect on the probability of being credit rationed in the informal financial sector. The positive coefficient may be explained by the fact that though education level tends to increase the effective utilization of the loan and increases returns from credit, it may not necessarily improve loan repayment. More educated people who are better informed of legal issues may be more demanding borrowers. Since the informal financial sector activities are not regulated by law, what may be more critical to the informal lender is trustworthiness of the borrower as compared to education level.

Migration (= 1 if household head migrated to current location, otherwise zero) also has a positive effect on being credit rationed, but again it is not statistically significant. A positive coefficient would suggest that informal lenders discriminate against immigrants in their loan granting decision-making. As informal loans are secured mainly by collateral substitutes, immigrants may be cautiously handled given the fact that they may easily relocate, making loan recovery difficult. In addition, there may be few people of good social status within the community willing to guarantee immigrants for loans, especially if the immigrants have not

stayed in the area for a sufficiently long time and their behaviour is not well known. It may also be explained by the weak social relations between informal lenders and immigrants. This may be true in a scenario where lenders prefer to lend only to people with whom they have strong social ties and on whom the traditional community laws can be applied in case of default.

Household expenditure has a positive and significant effect (at the 10% significance level) on the probability of being credit rationed. These results are not consistent with the expectation that wealthy households may be perceived by the lenders to have a high repayment capacity, and that they are therefore less likely to be credit rationed. This result is quite surprising because if the lenders were rational, one would expect to observe low-income borrowers being more constrained in their access to credit as compared to large income borrowers.

Land size has a positive but insignificant effect on the probability of being credit rationed in the informal financial sector. The positive coefficient was contrary to the a priori expectation that households with large land holding have a higher repayment potential (as land can be sold to repay the loan) and therefore are less likely to be credit rationed. However the lack of a statistical relationship between credit rationing and land holding was not surprising given the current land tenure system where most of the land, especially in the rural areas, is held under the customary land tenure system (without any title deeds), which makes it difficult to sell in cases of default, as the land market is undeveloped.

Being in an urban area reduces the probability of being credit rationed as compared to those in rural areas, though the relationship is not statistically significant. The negative coefficient conforms to the expectation that urban households have more diversified income bases for

loan repayment, as compared to rural households who depend mainly on agricultural income, which is prone to high variability due to exogenous production and price shocks. The higher the income variability, the lower the repayment potential and hence the higher the probability of default, thus increasing the likelihood of being credit rationed.

Being located in other regions, relative to the northern region the reference category, has a negative and significant effect on the probability of being credit rationed. This result is not surprising because based on Uganda's poverty statistics, the northern region is the poorest. By implication, borrowers in other regions are on average wealthier and more credit worthy as compared to those in northern region.

At the regional level, most coefficients were statistically insignificant, apart from northern region where informal lenders' credit rationing behaviour is negatively and significantly influenced at the 5% significance level by household asset values.

9.6.2 Heckman Probit Models with Sample Selection for Informal Credit Rationing – Rural and Urban

In the rural sector (see table 9.13), the informal lenders' credit rationing behaviour is negatively and significantly influenced (at the 1% significance level) by sex and asset values, while positively and significantly influenced by education level (at the 5% significance level) and by household expenditure (at the 1% significance level). In the urban sector model, the probability of being credit rationed is negatively and significantly influenced by the dependency ratio (at the 5% significance level), age (at the 1% significance level) and asset values (at the 1% significance level). However informal credit rationing in the urban sector is positively and significantly influenced by land size (at the 10% significance level).

Table 9.13: Heckman Probit Model with Sample Selection for Informal Credit Rationing – [Rural/Urban]

Equation of Interest: Dependent Variable *ration (=1 if credit rationed in informal sector)*		
Explanatory Variables	Sector	
	Rural	Urban
Lnage	-0.054 (0.54)	-0.634 (7.4)***
Sex (Male=1)	-0.231 (2.46)***	0.010 (0.14)
lneduc	0.0096 (1.93)**	-0.001 (0.17)
lndepr	-0.115 (1.27)	-0.309 (2.20)**
lnhhexp	0.152 (2.62)***	0.022 (0.79)
Dummy: Migration	0.029 (0.51)	-0.072 (1.84)
lnastva	-0.130 (3.37)***	-0.082 (2.83)***
lnlan	0.035 (0.98)	0.008 (1.75)*
Constant	0.786 (1.04)	4.007 (10.91)***
Selection Equation: Dependent Variable *boro (=1 if applied for informal credit)*		
lnage	0.212 (6.99)***	0.574 (9.61)***
Sex (Male=1)	0.447 (14.91)***	0.107 (1.78)*
lndepr	0.202 (4.93)***	0.365 (3.23)***
lnastva	0.134 (11.44)***	0.135 (7.97)***
Constant	-2.700 (21.5)***	-3.978 (15.99)***
/athrho	-1.025 (3.23)***	-8.916 (1.13)
rho	-0.772	-1.000
Number of Observations	16,218	3,708
Censored Observations	14,929	3,533
Uncensored Observations	1,289	175
Wald chi2	32.3	140.3
Prob>chi2	0.001	0.000
Absolute values of z-statistics in parentheses		
* significant at 10%, ** significant at 5%, *** significant at 1%		

9.6.3 Heckman two-step Selection Model for Amount of Informal Credit Supplied

The Heckman selection model parameter estimates (see table 9.14) suggest that informal credit supply is positively and significantly influenced (at the 1% significance level) by household expenditure, asset values and household size. Again, the positive and significant coefficient for household size was quite surprising.

Table 9.14: Heckman two-step Selection Model for Value of Informal Credit Supplied – National Level

Equation of Interest: Dependent Variable ***lninfss*** *(amount of informal credit received)*	
Explanatory Variables	Coefficients
Lnage	0.187 (1.44)
lnhhexp	1.190 (15.41)***
lnastva	0.159 (3.12)***
Lnlan	0.044 (1.36)
lnhhsize	0.879 (9.74)***
Constant	-5.648 (8.70)***
Selection Equation: Dependent Variable ***boro*** *(=1 if applied for informal credit)*	
Sex (Male=1)	0.382 (13.04)***
Dummy: Urban	-0.162) (3.89)***
lndepr	0.205 (5.06)***
Dummy: Central Region	0.434 (7.17)***
Dummy: Eastern Region	0.645 (11.08)***
Dummy: Western Region	0.757 (13.24)***
Constant	-2.142 (35.15)***
lambda	-0.337 (2.06)**
rho	-0.238
sigma	1.413
Number of Observations	20,034
Censored Observations	18,806
Uncensored Observations	1,228
Wald chi2 (5)	465.35
Prob>chi2	0.000
Absolute value of z-statistics in parentheses	
* significant at 10%, ** significant at 5%, *** significant at 1%	

9.7 Conclusions

This chapter had set out to analyze the specific factors that influence credit demand and credit rationing in the informal financial sector in Uganda. The study estimated different models to investigate the different components of the research problem as follows: the logit model (for the estimation of the factors that influence households' borrowing behaviour), Heckman probit model with sample selection (for estimation of factors that influence the lenders' credit rationing behaviour), Heckman two-step selection model (for estimation of factors that influence the amount of credit demanded and supplied), multinomial logit models (for estimation of the factors that influence the borrowers' choice between the formal and informal financial sectors, and between different informal institutions). The analysis was done for the full sample (both formal and informal financial sectors) and specifically for the informal financial sector at the national, regional and rural/urban levels.

The conclusions from the chapter are as follows:

(i) At the national level, households' borrowing behaviour from the informal financial sector is positively and significantly influenced by age, sex, education level, dependency ratio, household expenditure, and regional location (northern region being the reference category). The education level and household expenditure variables are closely related to the capacity of the household to effectively utilize the loans, and generate increased returns from investments. However land size has a negative and significant effect on informal credit demand.

(ii) At the national level, informal lenders' credit rationing behaviour is negatively and significantly influenced by age, sex, dependency ratio, asset values, and regional location (northern region as reference category). The negative and significant coefficient for the dependency ratio was unexpected and quite surprising. The asset values are closely related

to the creditworthiness of the borrower. Informal lenders' credit rationing behaviour is positively and significantly influenced by household expenditure, which result was unexpected and also quite surprising. The expectation was that household expenditure is an indicator of repayment capacity, and a rational lender would not credit ration such wealthy households.

(iii) There are variations across regions and rural/urban sectors in significance levels of estimated parameters both in the credit demand and credit rationing models.

(iv) The borrowers' choice between the formal and informal financial sector (relative to those that did not apply for any credit as the reference category), is positively and significantly influenced by age, sex, education level, dependency ratio, and household expenditure.

(v) The borrowers' choice between different informal institutions, relative to the reference category (friends/relatives/community funds) is positively and significantly influenced by household size, and household expenditure.

Given the empirical findings of the key determinants of credit demand and credit rationing, the question that arises and is addressed in the next chapter is: what policy measures should be put in place to improve households' access to the broader financial sector given the fact that households demand credit for both investment and consumption smoothing purposes, and that lenders, who are weary of loan default, are keen to ration households that are perceived to be less creditworthy based on conventional parameters (such as wealth and asset values)?

CHAPTER 10: SUMMARY OF FINDINGS AND POLICY RECOMMENDATIONS

10.1 Introduction

The overall motivation of the study was to investigate the factors that influence households' credit demand and lenders' credit rationing behaviour so as to design policies to improve household access to financial services from the broader financial sector. Credit is important to households for investment and consumption smoothing purposes so as to improve their welfare and move out of poverty. As indicated earlier, lack of access to investment and consumption smoothing credit is rated as one of the key causes of poverty (MFED, 2001c).

The study involved a literature survey with regard to the functions of the financial sector (as the informal financial sector is part of the broader financial system), the theoretical framework for the existence of the informal financial sector, the characteristics of the Ugandan financial sector, and the theoretical underpinnings and the empirical evidence on the determinants of informal credit demand and credit rationing based on similar studies done elsewhere. The study estimated the following models using UNHS 1999/00 data set: the logit model for determinants of households' borrowing behaviour, the Heckman probit model with sample selection for determinants of lenders' credit rationing behaviour, the Heckman two-step Selection model for factors that influence the amount of credit demanded and supplied, the multinomial logit model for factors that influence the borrowers'choice between formal and informal sector credit and also the choice between various informal financial institutions. The purpose of this chapter is to summarize the key findings from the study and suggest policy recommendations to enhance household access (especially for small borrowers) to the broader financial sector.

10.2 Main Findings and Policy Recommendations

10.2.1 Improving the Stability of the Financial Sector

The broader financial sector plays a key role in resource intermediation, thereby promoting economic growth. In Uganda, as in all other developing economies, the informal financial sector co-exists with its formal counterpart. To enhance the broadening of the financial sector and reap the benefits of higher economic growth, appropriate regulation of the financial sector is important to maintain its stability and protect consumers. The recent enactment of the MDI Act (2003) to regulate deposit-taking microfinance institutions in Uganda is a policy instrument in the right direction. As regulation imposes certain costs to the institutions, the policy objective must be to keep the regulatory compliance costs to a minimum so as not to stifle the sector. The specific recommendation here regards the detailed regulations to be prescribed by the Bank of Uganda to operationalize the MDI Act 2003, which should not impose excessive compliance costs (such as detailed and regular reporting requirements on numerous small borrowers).

10.2.2 Improving Household Access to the Broader Financial Sector

Evidence from the empirical literature review suggested that poor households need credit for both investment and consumption smoothing. The formal financial sector provides mainly investment credit, while the informal financial sector provides mainly consumption smoothing credit, and some households participate in both markets. By implication, the welfare of poor households will improve if they have access to the broader financial system. The participation of poor households in formal financial markets is constrained by their lack of collateral, which is used as a measure of creditworthiness. The results from this study bring out two important revelations. First, there is credit rationing in both the formal and informal financial sectors in Uganda, with the severity of credit rationing being highest in

the informal financial markets. Secondly, the lenders' credit rationing behaviour is negatively and significantly influenced by asset values in both the broader financial sector and the informal credit markets. What this points to is that lenders are concerned with the risk of default on their loans and use asset values as an indicator of the creditworthiness of the borrowers. Informal lenders have developed additional mechanisms to those used in the formal sector to control default risk, which include joint liability contracts and interlinked credit contracts. Thus policy options to increase smaller borrowers' access to the broader financial sector can be put in two main categories: policies that reduce the risk of default to the lender (such as provision of incentives to banks to serve smaller borrowers, establishment of credit reference bureaus, and development of innovative insurance products), and policies that increase the capacity of the household to acquire more wealth to improve their creditworthiness.

10.2.2.1 Provision of Incentives to Banks to Serve Smaller Borrowers

Limited access to formal sector credit among the poor is accounted for by banks' perception of the high default risk and high transaction costs. The high transaction costs (especially informational costs) involved in small credit transactions and the lack of acceptable collateral by small borrowers make the banks averse to participating in the lower end retail market. This motivates the banks to serve mainly urban-based corporate clients, leaving the majority of the population that is engaged especially in the agricultural sector under served. The policy instruments to motivate banks to serve the small borrowers include provision of market-oriented incentives (such as setting up of guarantee schemes). The guarantee fund will act as alternative collateral to the banks for lending to the small borrowers, which reduces the cost of default risk to the lenders. However the design and implementation of the guarantee schemes has to be done with care in terms of the risk-sharing ratio to avert potential moral hazard behaviour by banks, and clarity of rules of getting the refund. In

addition, adjustments may have to be made to the regulations so as to minimize the costs of having to report on a regular basis the detailed portfolio of numerous small borrower accounts.

10.2.2.2 Establishment of Credit Reference Bureaus

There is significant progress in the setting up a credit reference bureau for commercial bank clients under the Uganda Institute of Bankers. The recommendation is that a credit reference bureau be set up for clients of the deposit-taking microfinance institutions. Credit reference bureaus reduce informational costs on potential borrowers and provide the lenders with vital credit history of borrowers on which they can base their financing decisions. In addition the credit reference bureau puts pressure on clients to service their loan obligations so as to create a good credit history in order not to be blacklisted in the credit markets, thereby improving their creditworthiness. In the Ugandan situation, one of the pre-conditions for setting up a well functioning credit reference bureau is the establishment of a national identification system, where all persons have unique identification numbers which cannot be falsified.

10.2.2.3 Development of Innovative Insurance Products for the Poor

One of the ways of improving the creditworthiness of borrowers is to provide them access to innovative insurance products that cover the risks in the activities in which they derive their livelihood. Of particular concern are the small agricultural households that face exogenous production and price shocks, which cause high variability in their incomes. Such households are rated by lenders as being less creditworthy on account of the high variability of their incomes. The development of innovative insurance products like crop insurance products will go a long way in improving the creditworthiness of poor households, where lenders can

rely on the crop insurance premium as alternative collateral and grant more credit to the households for investment and/or consumption.

The steps that have so far been taken by insurance companies to design "microfinance insurance" products in Uganda provides hope on the possibility of the successful design of crop insurance products. Under the "microfinance insurance" scheme, the insurance companies undertake to refund the microfinance institution the balance of the loan amount in case of the death of the client. The insurance is only valid during the loan period and the clients pay an insurance premium of about 1% of the loan amount received from the microfinance institution. The insurance premium is collected by the MFIs and remitted to the insurance companies. There are also some benefits that the insurance company pays directly to the bereaved family in case of death of the insured's spouse or any of the registered dependants. This innovative microfinance insurance product greatly helped the clients (in terms of reducing the burden to pay back loans for dead group members as required by the joint liability credit contracts), the MFIs (in terms of maintaining a high repayment rate despite the death of clients), the insurance companies (in terms of generating new business opportunities), and communities (in terms of minimizing discrimination against those who are HIV positive at the group level).

10.2.2.4 Policies to Increase Wealth Creating Capacity of the Small Borrowers

Policies to increase the capacity of the smaller borrowers to acquire wealth and improve their creditworthiness in credit markets are very broad in nature but include provision of high yielding seeds to agricultural households, infrastructural development (such as rural roads) to improve their access to markets, and maintaining macro-economic stability.

In a nutshell, the improvement of the creditworthiness of the smaller borrowers is good for the borrowers themselves, the financial institutions, and the economy in general. A high level of creditworthiness will ensure that the borrowers are not credit rationed in credit markets, thereby increasing their access both to production and consumption smoothing credit. This will enable them to earn more investment income and move out of poverty. For the financial institutions, an improvement in the borrowers' creditworthiness will result in low loan default, and higher profitability. The economy wide effects of improved creditworthiness of the borrowers will be that it will result in the stability of the financial system and greater economic progress.

10.2.3 Capacity Building in Financial Services Management

The results of this study also suggest that household credit demand is positively and significantly influenced by education level and household expenditure in both the broader financial sector and the informal financial sector. These variables are closely linked to the capacity of the household to utilize the loans. As argued by Musinguzi and Smith (2000), households need not only increased access to credit but also training in financial services management so as to increase the effective utilization of the loans so as to generate income and move out of poverty. Education enhances human capital which increases returns from investments. The positive correlation between household expenditure and credit demand may imply that wealth motivates more risk taking so as to generate more wealth. Thus the more educated and the wealthy have a higher capacity to make better use of the loans.

10.2.4 Development of Linkages Between Formal and Informal Financial Sectors

The informal financial sector is part and parcel of the broader financial sector. To enhance the broadening of the financial sector, a further policy option may be to develop linkages

between the two sectors. This may be through wholesale credit arrangement where banks lend in bulk to informal lenders, who in turn on-lend to their clients. The other option is to encourage savings arrangements where informal lenders deposit savings mobilized from their clients with the banking system, where such savings deposit accounts may act as collateral for bank loans. However these linkages between the formal and informal financial institutions can only flourish if there is high customer confidence in the banking system, which again brings into play the importance of financial regulation to enhance stability of the financial system and consumer protection.

10.2.5 Additional Credit Information from Household Surveys

The lack of price information related to credit transactions at the household level (interest rates and other related transaction costs) from the UNHS 1999/2000 data constrained analytical work in terms of estimating the effect of interest rates on credit demand and credit rationing. Since microfinance is one of the interventions that have been prioritized for poverty alleviation, it is recommended that subsequent national household surveys collect detailed credit price information so as to enable the evaluation of the impact of various policies at the household level. For example most of the literature on informal finance is rife with statements such as "*what matters to the poor is access to credit but not interest rates*" which would be important to test empirically.

Appendix 1: Summary Statistics for Variables for the Study

Variable	Mean	Median	Standard Deviation	Skewness	Kurtosis	Number of Observations
Age (years)	36.75	32.00	16.07	1.03	3.50	22,922
Sex (Male=1)	0.47	0.00	0.50	0.11	1.01	22,932
Household size	6.38	6.00	3.72	1.68	9.97	22,926
Sick days	10.00	7.00	8.72	1.22	3.44	6,617
Education level (years)	4.92	5.00	4.15	0.49	2.39	22,742
Dependency ratio	0.47	0.50	0.23	-0.51	2.91	22,932
Household expenditure (US$)	224.99	223.28	419.75	9.08	157.33	22,926
Migration (=1 if migrated)	0.41	0.00	0.49	0.37	1.14	22,932
Land size (acres)	1.32	0.75	16.19	40.54	1,880.73	16,975
Household assets (US$)	49.41	22.50	485.65	40.57	2,246.99	22,896
Loan amount demanded (US$)	241.76	38.89	1,800.21	27.38	832.19	2,148
Loan amount received (US$)	137.66	16.67	1,285.33	38.70	1,652.10	2,097
Loan period (months)	6.03	4.00	23.57	38.66	1,623.67	1,941

Appendix 2: Financial Sector Performance Indicators

Indicator	Economic Regulation Period (1980 – 1986)[22]	Financial liberalization Period (1987 – 2003)
Deposit Rates (Average)	13%	17%
Lending Rates (average)	19%	27%
Intermediation Margins	6%	10%
Commercial Bank Deposits[23] as a percentage of GDP	7%	8%

Source: Compiled by Author from International Financial Statistics Yearbook, published by the International Monetary Fund (IMF)

[22] *Information on deposit and lending rates was available only from 1980. The lending interest rates were missing for period 1992 – 1994. The averages were based on the periods for which data was available. These are nominal interest rates.*

[23] *Commercial bank deposits include demand and time deposits*

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