ACCESS TO CREDIT AND AGRICULTURAL PRODUCTION IN LESOTHO

By

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DECLARATION

I, Charmaine Motsoari, hereby declare that this dissertation is submitted by me for the degree of Master of Science in Agricultural Economics, at the University of the Free State. To the best of my knowledge, this is my own original work with the exception of such references used. This dissertation has not been previously published or submitted to any University for a degree. I further cede copyright of the dissertation in favour of the University of the Free State.

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ABSTRACT

One of the factors hindering development in Lesotho is the limited access to credit. The development of the rural economy in developing countries depends on growth and development in the agricultural sector and other small and medium enterprises. These enterprises constitute the engine of growth, employment and income for the rural community. In an effort to make the landscape of rural finance more attractive and to fulfil the national objectives of increased production, policy makers and donors adopted the conventional approach of advancing credit, where all practices and operational procedures were geared towards the interests of the borrower. The initiatives to advance credit include amongst others, an emphasis on project appraisals, relaxing collateral requirements and the charging of close to market interest rates. Despite the changes, the problem of limited access to financial services still exists. In fact, these approaches (policies) invariably resulted in distortions in the financial markets, and reduced the number of financial products and services to which farmers have access.

The purpose of this study therefore, was to examine factors that influence small-scale farmers' access to credit, thereby affecting their productivity and to make suggestions for government interventions and for the reduction of market failures in the rural financial markets of Lesotho.

The study was conducted in two agro-ecological zones in Lesotho, namely; the Lowlands and the Highlands regions. A random sample of districts in the regions was done to select representative districts in each region. Leribe, Mafeteng, and Berea districts represented the Lowlands while Mohale's Hoek and Thaba-Tseka districts represented the Highlands region. Stratified random sampling was employed to select borrowers and non-borrowers for the study.

The study employed the logistic regression model (logit) within the principal component regression (PCR) framework to assess factors affecting small-scale farmers' access to credit. PCR was used to take care of the multicollinearity between the variables. Firstly, the variables included in the logit model were subjected to principal component analysis (PCA) in order to reduce the variables into a few uncorrelated principal components (PCs). After principal components (PCs) were calculated, PCs with the smallest eigenvalues were eliminated and then PCR was fitted using standardised variables to improve the estimation power of the logit model.

The empirical evidence of the study indicates that non-farm income, savings and remittances and pensions confirmed that increasing the household's total income reduces the probability of a household being credit constrained. This shows that a better household situation affects the decision of the lender to ration the loan or that the household has less demand for loans because of its own equity capital accumulated through past income earnings. Farm income on the other hand, is positive, confirming that a higher farm income may improve the farmer's creditworthiness and in some cases create a demand to expand production, thus increasing the demand for credit. The study revealed that farm income values of borrowers are higher than those of non-borrowers but lack of baseline data makes it difficult to associate the differences to the loans obtained by borrowers. However, the changes in income among borrowers are linked to the use of credit, confirming the hypothesis that credit has a positive effect on income and improvement of living conditions of credit users.

Research into the behaviour of credit institutions in Lesotho will help to explain some of the actions taken by credit institutions, and at the same time assist policy-makers in formulating appropriate interventions.

TOEGANG TOT KREDIETFASILITEITE EN LANDBOUPRODUKSIE IN LESOTHO

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UITTREKSEL

Die beperkte toegang tot krediet is een van die hooffaktore wat ontwikkeling in Lesotho strem. Die ontwikkeling van die landelike ekonomie van ontwikkelende lande hang grootliks af van die groei en ontwikkeling in die landbousektor en ander klein- en mediumbedrywe. Hierdie bedrywe verteenwoordig die masjien wat groei, werkskepping en inkomste vir die landelike gemeenskap genereer. In hulle pogings om die omgewing van landelike finansiering meer toeganklik en aantreklik te maak en om die nasionale doelwitte ten opsigte van verhoogde produktiwiteit te bereik, het die beleidmakers en donateurs normale praktyk by die verkryging van krediet gevolg, waar die praktyk en gebruiksprosedures alles op die belange van die lener ingestel is. Inisiatiewe om die toeganklikheid tot krediet te bevorder, sluit onder andere die volgende in: klem op die kosteberaming van die projek, die verslapping van sekuriteitsvereistes en die hef van markverwante rentekoerse. Ten spyte van bogenoemde veranderinge is beperkte toegang tot finansiële dienste 'n voortdurende probleem. Hierdie benadering (beleid) het dus dikwels tot 'n verwronge beeld van die finansiële markte gelei, met die gevolglike vermindering van die aantal finansiële produkte en dienste waartoe boere toegang behoort te hê.

Die doel van hierdie studie is dus om ondersoek in te stel na faktore wat kleinboere se toegang tot krediet en derhalwe ook hulle produktiwiteit beïnvloed, asook om

aanbevelings ten opsigte van regeringsingryping te maak en te poog om die mislukkings rakende landelike finansiële markte in Lesotho te verminder.

Die studie is gedoen in twee agri-ekologiese sones in Lesotho, te wete: die Laagland- en die Hoogland-streke. 'n Proef ten opsigte van distrikte in die verskillende streke is op willekeurige wyse gedoen om verteenwoordigende distrikte in elke streek aan te wys. Leribe-, Mafeteng- en Berea-distrikte het die Laagland verteenwoordig, terwyl Mohaleshoek- en Thaba-Tseka-distrikte die Hooglandstreek verteenwoordig het. 'n Stratigrafiese proef is willekeurig gebruik om uitgesoekte leners en nie-leners vir die studie aan te dui.

'n Logistiese regressiemodel (logit) is binne die raamwerk van 'n hoofkomponent-regressie (HKR) vir hierdie studie gebruik, om die faktore wat kleinboere se toegang tot krediet beïnvloed, te evalueer. HKR is gebruik om die multi-kollineariteit tussen die veranderlikes op te los. Eerstens is die veranderlikes wat ingesluit is in die logit-model onderwerp aan hoofkomponent-analiese (HKA) om die veranderlikes te reduseer tot 'n paar ongekorreleerde hoofkomponente (HKe). Nadat hoofkomponente (HKe) bereken is, is die HKe met die kleinste eigenwaardes uitgeskakel, waarna die die HKR deur middel van die gestandaardiseerde afwykings toegepas is om die skattingswaarde van die logistiese regressiemodel te verbeter.

Die empiriese getuienis uit die studie dui aan dat nie-boerderyinkomste, spaargeld, betalings en pensioene bewys dat 'n verhoging in totale huishoudelike inkomste, die waarskynlikheid verminder dat 'n huishouding finansieel gestrem is. Verder getuig dit dat 'n beter huishoudelike leefwyse die besluit van 'n lener kan beïnvloed ten opsigte van verkleining van 'n leningsbedrag of dat die lener minder behoefte aan 'n lening kan hê as gevolg van voldoende eie beskikbare kapitaal uit vorige inkomste. Boerderyinkomste is positief, wat bevestig dat 'n hoër boerderyinkomste die boer se kredietwaardigheid kan verbeter en in sommige gevalle kan lei tot 'n behoefte om produksie te verhoog en gevolglik 'n verhoging in die vraag na krediet. Uit die studie het dit verder geblyk dat boerderyinkomste - waardes van leners hoër is as die van nie-

leners, maar as gevolg van 'n gebrek aan grondige data is dit moeilik om die verskillende lenings verkry deur leners te verbind. Die verskille in inkomste van leners lan met die beskikbaarheid van krediet verbind kan word. Dit versterk die hipotese dat krediet 'n positiewe invloed op inkomste en die verhoging van lewenstandaard van kredietgebruikers mag hê.

Voortgesette navorsing ten opsigte van die optrede van kredietinstansies in Lesotho, sal meer lig werp op sekere aksies van genoemde kredietinstanses en terselfdertyd meehelp dat beleidmakers geskikte ingrypingsaksies kan beplan.

Kernwoorde: Landbou-kredietbeskikbaarheid, kleinboere, landbou-produksie, landelike finansiële instellings, mikro-finansiering, leners, nie-leners, finansiële markte, landelike finansiële ingryping.

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LIST OF ACRONYMS AND ABBREVIATIONS

CGAP   Consultative Group to Assist the Poorest

DFID   Department for International Development

FAO   Food and Agriculture Organisation

GoL   *G*overnment of Lesotho

IFAD   International Fund for Agricultural Development

LADB   Lesotho Agricultural Development Bank

LCH   Life-cycle Hypothesis

Logit   Logistic Regression

MDGs   Millennium Development Goals

MPCS   Multi-purpose Cooperative Societies

NGOs   Non-governmental Organisations

OECD   Organisation for Economic Co-operation and Development

PCA   Principal Component Analysis

PCR   Principal Component Regression

PCs   Principal Components

ROSCAs   Rotating Savings and Credit Associations

RSA   Republic of South Africa

RSCG   Rural Savings and Credit Groups

USAID   United States Agency for International Development

WFP   World Food Programme

1.1   BACKGROUND

Agricultural development is important especially for a growing economy such as Lesotho. According to Spio (2002) economists such as Falcon, Mellor, Ruttan and Timmer have made it clear that new technologies, price incentives and supporting infrastructure are its primary determinants. In Lesotho however, the small scale farming sector continues to battle with the task of moving from a traditional agriculture to a more scientific and technology-based one and this consequently leads to poor performance of the agricultural sector. The poor performance of the agricultural sector in a developing country like Lesotho can also be attributed to lack of economic opportunities in agriculture, opportunities that are rewarding to farmers. There are also other constraints that inhibit agricultural development in less developed countries, and these constraints continue to be treated in an uncoordinated way encouraging their recurrence over time (Spio, 2002). One of these constraints is access to financial services, especially credit, and this forms the basis for this study.

Apart from the efforts of governments to ensure that small-scale farmers have access to credit, Kuhn, Darroch, Ortmann, and Graham (2000) state that the provision of financial services to the small-scale farming sector has generally been stagnant and has even declined in some parts of developing countries because of the risks involved in dealing with farmers and the incompetence of some service providers in dealing with small-scale farmers. As attempts to increase agricultural production become desperate because of the increasing population, the small-scale farming sector continues to live in a dilemma of financial problems; it continues to be excluded from enjoying the benefits of using financial services. These problems contribute to low per capita food supplies; hence most of the small-scale farmers survive on family remittances or move out of agriculture (Spio, 2002). However, policy makers should be convinced of the need to

design and implement policies and programmes that are explicitly intended to improve access to financial services by rural small-scale farmers.

Agriculture is the most important contributor to Lesotho's economy and provides livelihoods to a high proportion of the population. It is a major source of economic growth of the country. Wheat, corn, sorghum, pulses, livestock and barley are the major agricultural products. Livestock is a prime agricultural source of revenue in Lesotho. The majority of the farmers of Lesotho raise livestock to preserve household food security and the animals that are reared include cattle, sheep and goats as they produce milk, meat, good quality wool and mohair. The bulk of crops and livestock are grown in small villages that are positioned far away from the main roadways. Fish production in the villages of Lesotho is another vital part of the agricultural sector of the country.

The agricultural year in Lesotho runs from August to July. Harvests for August to January (first half of the year) include wheat and peas, while maize, sorghum and beans are harvested from February to July (second half). Agro-ecologically, the country is characterised by a low proportion of arable land and high elevations, steep slopes and a thin topsoil layer over much of the area, resulting in high vulnerability to soil erosion and degradation. The quality of the arable land has been declining from around 13% in the 1960s to less than 10% to date (Department of Planning and Policy Analysis, 2003). According to the Department of Planning and Policy Analysis (2003) the decline in arable land has resulted in a decline in total agricultural production and lack of access to financial services especially credit, thereby holding back commercial farming, and hence most farmers (90%) are smallholders (subsistence and small-scale), with some medium-scale commercial farms.

1.2   MOTIVATION AND PROBLEM STATEMENT

As mentioned, one of the factors hindering development in Lesotho is limited access to credit. The development of the rural economy in developing countries depends on growth and development in the agricultural sector and other small and medium

enterprises. These enterprises constitute the engine of growth, employment and income for the rural community. In an effort to make the landscape of rural finance more attractive and to fulfil the national objectives of increased production, policy makers and donors adopted the conventional approach of advancing credit, where all practices and operational procedures were geared towards the interests of the borrower (Spio, 2002).

Rhyne and Otero (1992) highlight that initiatives to advance credit include amongst others, an emphasis on project appraisals, relaxing collateral requirements and the charging of close to market interest rates. The authors elaborate by arguing that despite the changes, the problem of limited access to financial services still exists. Thus, these approaches (policies) invariably resulted in distortions in the financial markets, and reduced the number of financial products and services to which farmers have access. Apart from these policies, financial intermediaries have not been able to serve their rural clientele easily because it is a costly and risky task. Local lenders are faced with risks and high transaction costs and therefore become reluctant to lend to the poor (Kuhn *et al.* 2000).

In Lesotho, inadequate credit facilities and development funds, as well as high input costs, negatively affect agricultural production. The role of the financial sector is crucial for a successful agricultural diversification. However, despite this important role, financial institutions find it difficult to get involved with farmers in the remotely rural regions due to the risk involved. In addition, the high cost of credit that is associated with the provision of credit to scattered farmers in remote rural regions increase the potential of farmers being unable to service their loans, which further increases the risk for financial institutions. Besides, no crop insurance exists for progressive farmers in the country. Thus, farmers are faced with several challenges, most of which stem from an ineffective or non-accessible financial system. Moreover, those farmers who want to remain in business need to procure all required inputs on their own. The high cost of inputs coupled with the lack of access to financial services makes it difficult for these farmers to secure adequate inputs, which subsequently results in lower levels of production.

Agricultural credit used to be provided mainly by the Lesotho Agricultural Development Bank (LADB), but this bank has since been closed. The vacuum left by the closure of this bank makes it crucial that an appropriate institutional framework is developed to address the provision of financial services for rural communities that depend largely on agriculture. The contribution of appropriate financial services to economic development, as well as social welfare, peace and stability can be substantial, if the importance of other development determinants of financial markets are recognised and addressed. According to Spio (2002) the reduction or avoidance of government interventions and market failures in the rural financial markets is only possible if certain supply and demand constraints, which affect the delivery of financial services, are addressed.

Effective poverty strategies require that resources be channelled and reallocated to the rural people. It is certainly not right to exclude people from managing their assets like agricultural land because they are too poor to borrow or because they live in remote areas with limited access to markets. It is believed that accessibility to credit can help reduce poverty and food insecurities by increasing rural incomes through improved agricultural production. The need for this study therefore, is to examine factors that influence small-scale farmers' access to credit, thereby affecting their productivity and to make suggestions for government interventions and for the reduction of market failures in the rural financial markets of Lesotho.

1.3   OBJECTIVE OF THE STUDY

The main objective of the study is to give a general assessment of the formal and informal credit accessibility by small-scale farmers in Lesotho. The study also attempts to assess the effect of credit on the standards of living of credit users. Specific objectives are to:

a) assess the operational procedures of the existing formal and informal credit sources in making credit services available to small-scale farmers;

b) determine socio-economic factors that influence the accessibility of credit by small-scale farmers; and

c) assess the effect of credit on income and the livelihood of credit users.

1.4   HYPOTHESES

The study assumes that given an enabling environment, rural financial institutions play a significant role in the mobilisation of financial resources for the development of rural areas, thus contributing to poverty reduction through economic growth. At individual level, access to credit builds up productive asset levels, reduces risks and increases wealth. Furthermore, the study assumes that rural financial services can provide a broad range of financial services targeting its clientele efficiently in order to expand their incomes and reduce poverty through increased investments.

Within the context of the above assumptions, the study was guided by three main hypotheses:

- Hypothesis 1: Small-scale farmers do not have access to credit.
- Hypothesis 2: Socio-economic factors have a direct influence on the individual's chances of accessing credit.
- Hypothesis 3: There is a link between credit use and increase in income.

1.5   DATA AND METHODOLOGY

This sub-section outlines methods of data collection, sampling techniques, data analysis and model specification.

1.5.1 Data collection

Both primary and secondary data were used in the study. The secondary data were gathered through an extensive desktop study; the primary data used cross-sectional data and were collected by means of a household survey. The desktop study focused mainly on financial services, economic development and the structure of rural financial

markets. Primary data focused on household demographics; household production and incomes, land ownership and credit and savings activities. Refer to the questionnaire in Appendix 2 for specific variables included for this study.

1.5.2 Sampling techniques

Simple random sampling was employed to obtain a sample of small-scale farmers for the study. A sample of 10 villages representing about 30% of the villages was drawn from 33 villages covering the selected agricultural resource centres. About 10% of small-scale farming households within each of the 10 villages were randomly selected for the household survey, making a sample of 100 respondents. Lists of borrowers were obtained from financial institutions and other related organisations in the relevant districts. Stratified sampling was used to select borrowers and non-borrowers. Agricultural data covered the 2007/08 season.

1.5.3 Data analysis

Primary data used cross-sectional data obtained through a farm-household survey covering small-scale farmers in Lesotho. A logistic regression model was used to assess accessibility of credit to small-scale farmers in Lesotho. The model will be discussed in section 1.5.4 below and in more detail in Chapter 5.

1.5.4 Model specification

The study employed the logistic regression model (logit) within the principal component regression (PCR) framework to assess factors affecting small-scale farmers' access to credit. PCR was used to take care of the multicollinearity between the variables. Firstly, the variables included in the logit model were subjected to principal component analysis (PCA) in order to reduce the variables into a few uncorrelated principal components (PCs). After principal components (PCs) were calculated, PCs with the smallest eigenvalues were eliminated and then PCR was fitted using standardised variables to improve the estimation power of the logit model. According to Hair, Anderson, Tatham,

and Black (1998), logistic regression and discriminant analyses are the appropriate statistical techniques when the dependent variable is categorical (nominal or non-metric) and the independent variables are metric. The authors also point out that there are several reasons why logistic regression is an attractive alternative to discriminant analysis whenever the dependent variable has only two categories. The authors further state that discriminant analysis is more appropriate when the dependent variable is non-metric.

However, when the dependent variable has only two groups, logistic regression may be preferred for several reasons. Firstly, discriminant analysis relies on strictly meeting the assumptions of multivariate normality and equal variance-covariance matrices across groups. Logistic regression analysis, on the other hand, does not face these strict assumptions and is more robust when these assumptions are not met, making its application appropriate in many situations. Secondly, logistic regression can handle categorical independent variables easily, whereas in discriminant analysis, the use of dummy variables creates problems with the variance/covariance equalities. Thirdly, logistic regression results parallel those of multiple regressions in terms of their interpretation and the case-wise diagnostic measures available for examining the residuals (Hair *et al.* 1998).

1.6   OUTLINE OF THE STUDY

This study is organised into 6 chapters, with Chapter 1 providing an introduction and background information to the study. Chapter 2 presents a literature review with the aim of examining relevant literature on access to credit by small-scale farmers. Chapter 3 presents a general description of the study area. Chapter 4 presents descriptive results of the survey data. Chapter 5 deals with the empirical procedures and presents empirical results of the study. Chapter 6 presents a summary, conclusions and recommendations of this study.

2.1   INTRODUCTION

This chapter reviews the literature on rural financial markets. It also discusses the theoretical framework of analysis for access to credit and its impact on agricultural production. The chapter is divided into three sections. The first section deals with the relationship between financial and economic development, which entails relationships between financial development and economic growth, financial services and rural poverty and agricultural development and access to credit. The second section gives a clear and detailed distinction between three overlapping concepts: rural finance, agricultural finance and microfinance. These concepts will be used regularly and interchangeably throughout this study. In addition, the section will also give a detailed description of rural financial intermediation. The chapter concludes by presenting a review of empirical and other studies related to this study.

2.2   FINANCIAL SERVICES AND ECONOMIC DEVELOPMENT

2.2.1 Financial development and economic growth

Economists hold conflicting views regarding the underlying mechanisms that explain the positive relation between the degree of development of the financial system and economic development. Some economists do not believe that the finance-growth relationship is important. For instance, Robert Lucas asserted in 1988 that economists badly over-stress the role of financial factors in economic growth. Moreover, Joan Robertson declared in 1952 that "where enterprise leads, finance follows". According to this view, economic development creates demands for particular types of financial arrangements, and the financial system responds automatically to these demands. Gurley and Shaw (1955), as cited by Spio (2002), on the one hand, assert that there has been a tendency among some pioneers of development economics to neglect finance in the mainstream of economic development. However, other economists

strongly believe in the importance of the financial system for economic growth. They address the issue of what the optimal financial system should look like. Overall, the notion seems to develop that the optimal financial system, in combination with a well-developed legal system, should incorporate elements of both direct, market and indirect, bank-based finance. A well-developed financial system should improve the efficiency of financing decisions, favouring a better allocation of resources and thereby economic growth (Duisenberg 2001).

Duisenberg (2001) further states that in the financial system funds flow from those who have surplus funds to those who have a shortage of funds, either by direct, market-based financing or by indirect, bank-based finance. He further states that the former British Prime Minister William Gladstone expressed the importance of finance for the economy in 1858 as follows: "Finance is, as it were, the stomach of the country, from which all the other organs take their tone". The financial system comprises all financial markets, instruments and institutions. According to cross-country comparisons, individual country studies as well as industry and firm level analyses, a positive link exists between the sophistication of the financial system and economic growth. While some gaps remain, the financial system is vitally linked to economic performance.

Bee (2007) adds that development analysts and practitioners have all along been interested in the contribution of finance to the development process. He further states that among the early contributors to this debate is Arthur Lewis (1955) who came up with the idea of a two-way relationship between financial development and economic growth. According to Kirkpatrick and Green (2002), this theory postulates that financial markets develop as a result of economic growth, which in turn stimulates the growth of the real economy. This line of thinking has attracted many researchers and analysts in order to test empirically the causal relationship between finance and development, and understand the functions of the financial system in the development process (Levine, 1997; Levine, Loayza and Beck, 2000, World Bank, 2001).

Coetzee (1997) contributes to the argument by stating that financial services create value that contributes to economic growth. According to Spio (2002), various authors, among them Levine *et al*. (2000), King and Levine (1993) and Montiel (1996), argue that financial institutions contribute to shaping the pattern of industrial progress in many countries. Spio (2002) further points out that according to Coetzee (1997) the growth of the mining and industrial sectors in the Republic of South Africa (RSA) were facilitated by the development of the financial markets, and that of the agricultural sector was facilitated by specialised credit institutions, and as a result the role of financial markets in mobilising savings and channelling funds into productive investment has therefore been the strategy central to economic growth and human development.

The financial system is also particularly important in reallocating capital and thus providing the basis for the continuous restructuring of the economy that is needed to support growth. Duisenberg (2001) says that in countries with a highly developed financial system, it can be observed that a greater share of investment is allocated to relatively fast growing sectors. He further states that when we look back, during the Industrial Revolution, we see that England's financial system did a better job in identifying and funding profitable ventures than other countries in the mid-1800s. This helped England enjoy comparatively greater economic success. The banker and former editor of "The Economist" Walter Bagehot expressed this in 1873 as follows; "In England, however, capital runs as surely and instantly where it is most wanted, and where there is most to be made of it, as water runs to find its level".

In the past, a key component of governments' policy to promote economic development has been the subsidisation of interest rates and the targeting of credit to development priority sectors (Weiss, 2005). These policies in most countries had negative effects on financial market development. In addition, in many countries financial institutions came increasingly under stress, when as a result of developments in world markets (declining commodity prices, increasing borrowing interest rates and declining demand from industrial countries) many borrowers were unable to repay loans. In many developing countries, notably Sub-Saharan Africa, governments were forced to assist financial

institutions or see them collapse under the burden of debts and non-repayment of loans. The collapse of a financial institution involves heavy costs on resource allocation, resource mobilisation and confidence in the financial system (Shende, 2002). These situations have forced many countries to reshape their financial institutions and restructure their entire financial system. Reform towards a more market oriented financial system will contribute to growth through improved resource mobilisation and allocation and risk pooling (Loayza and Soto, 2003).

Today's young innovative high-technology firms will be the main drivers of future structural change essential for maintaining a country's long-term growth potential (Duisenberg, 2001). The contribution of financial markets in this area is a necessity for maintaining the competitiveness of an economy, given the strongly increased international competition, rapid technological progress and the increased role of innovation for growth performance. Duisenberg (2001) also states that the macro-economic institutional framework is essential for a financial system to function efficiently. It is necessary to maintain macro-economic stability to establish a reliable legal, accounting and regulatory system, to specify rules for full disclosure of information and to design taxes that do not excessively burden the financial sector and that do not distort resource allocation. In building a stable and reliable macro-economic policy framework and institutional environment, governments can contribute significantly to the formation of financial systems that will promote economic growth (Duisenberg, 2001)

2.2.2 Financial services and rural poverty

Globally, 1.2 billion people are extremely poor, three quarters live in rural areas and survive on less than $1 a day. Poverty is predominantly a rural phenomenon. Extremely poor people spend more than half of their income to obtain (or produce) staple foods, which account for more than two-thirds of their caloric intake (IFAD, 2001). Most of these people suffer from nutritional deficiencies, and many go hungry at certain times of the year (IFAD, 2001; World Bank, 2003). According to IFAD (2001) rural poverty and hunger fell sharply between 1975 and 1990, but the rate of poverty reduction has since

slowed. The net aid (i.e. official development assistance) to developing countries fell from 0.35% of OECD countries' gross national income in 1982–83, to 0.24% in 2002–03. The real value of net aid disbursed to agriculture in the late 1990s was only 35% of its level in the late 1980s (IFAD, 2001). Peck, Christen and Pearce (2005) state that although the proportion of the economically active population engaged in agriculture has been falling in developing regions, it still exceeds 50% in Africa and Asia.

In recent years, development agencies and national governments have renewed their commitment to reducing poverty, hunger, and other human deprivations, as evidenced by the Millennium Development Goals (MDGs). Among other objectives, the MDGs aim to halve the proportion of people living on less than $1 a day by 2015 (starting from 1990). That means cutting the share of extremely poor people in low and middle-income countries from 28% to 14% (Peck, *et al*. 2005). The MDGs also call for halving the proportion of people suffering from hunger by 2015. Traditionally, poverty was perceived as a problem of people earning low income, which led them to consume too little to attain the minimum socially determined standard of living and owning too few assets to protect themselves against future uncertainties.

Following this line of argument, most poverty reduction strategies focused on employment creation, skills development and redistribution of assets from rich to poor, and consequently, government sponsored poverty reduction programmes included packages that involved the widely discredited targeted credit and technological packages (Meyer, 2001). However, Bee (2007) states that poverty is a complex and multi-dimensional phenomenon that requires a holistic analytical approach. He further states that poverty is about material deprivation reflected through low food consumption and poor housing conditions; low human development resulting from inadequate education, poor health and nutritional status; lack of voice and ability to influence decisions and acute state of vulnerability to adverse shocks such as illness, economic crimes, and natural disasters. Therefore poverty reduction strategies in developing countries should neither depend on targeted credit nor technological packages but on agricultural revolution.

It is therefore, important to recognise that, despite earlier major attempts to expand the supply of agricultural credit and despite the substantial use of public funds for this purpose, the majority of the rural population of the developing countries has actually never had access to formal financial services (Gonzalez-Vega, 2003). According to Gonzalez-Vega (2003), on average, 10 to 15% of all rural households in developing countries had never had access to formal credit by the mid-1970s and this proportion has not changed much over time. He further states that the proportion that has had access to a broad range of sustainable financial services has been less and the proportion of the rural poor who have gained this access would be even less. Thus, he says the unquestionably basic question is: why have the rural populations of these countries never had adequate access and continue not to have access to formal financial services despite their legitimate demands for various types of loans, deposit facilities and other financial products?

Gonzalez-Vega (1998) and Zeller, Schreider, von Braun and Heidhues (1997) assert that indeed, the supply of formal financial services and poverty are related in complex ways. Zeller and Meyer (2002) and Zeller (2003) state that sometimes, formal financial services can release credit constraints and facilitate a fuller exploitation of existing productive opportunities. They further state that whenever this is the case, some households can lift themselves out of poverty. In some cases, financial services can assist in household risk management strategies, thereby stabilising incomes and encouraging productive investment. Poverty and/or vulnerability to risk would be alleviated in these cases. Financial services can also assist in processes of physical and human capital accumulation and allow households to overcome poverty traps (Maldonado, Gonzalez-Vega and Romero, 2002). Definitely, these are expected outcomes when financial services actually play their intrinsic functions. These outcomes will be efficient and sustainable when the associated financial services are efficient and sustainable.

When productive opportunities do not exist, however, repayment capacity will usually be missing and the enforcement of debt contracts will impoverish borrowers. Depending on

the circumstances, credit can thus increase or decrease poverty. Typically, loans cannot create productive opportunities, particularly when other constraints are binding. Credit cannot build the missing roads needed to bring crops to market; credit cannot discover farming technology that does not exist; credit cannot generate key inputs that are not available; credit cannot create or destroy comparative advantages or change consumer preferences (Gonzalez-Vega, 1994 and 1998).

When, in order to avoid the unpleasant effects of foreclosure, loan contracts are not enforced, social capital is eroded (Gonzalez-Vega, 2003). The author further explains that social capital refers to the complex set of social arrangements that support market and non-market interactions among the members of a given community, their common ways of interpreting reality, which reduce transaction costs, and their shared beliefs and perceptions of fairness, which facilitate the design, interpretation, and enforcement of contracts. These arrangements usually include mechanisms for punishing default that go beyond available legal sanctions. Common beliefs about the importance of fulfilling debt contract obligations and the social sanctions that accompany default are frequently described as the culture of repayment. The depth of this culture matters, not only for the emergence of rural credit transactions, but also to the extent to which it shapes social attitudes towards contracting at large (Gonzalez-Vega, 2003).

Moreover, the author further states that costly credit programmes that ignore the true nature of the relationships between finance and poverty may actually have little or no impact on poverty alleviation. In general, financial services, particularly credit, may increase or reduce poverty, depending on the circumstances. When the interventions are based on incorrect perceptions about the nature of these relationships or reflect wrong expectations about the role of finance, the frontier of financial services does not expand in uniform ways. An expansion of the frontier in ways that will benefit the rural poor will need, therefore, further clarification of the potential role that improved access to financial services may play in allowing the rural populations to lift themselves out of poverty (i.e. it is necessary to ascertain when and how finance matters in poverty alleviation) (Gonzalez-Vega, 2003).

2.2.3 The role of agricultural finance in agricultural development

Agricultural development is considered as the foundation of industrial development and, consequently of a country's overall economic development. Agricultural credit is one of the most important policies that has facilitated agricultural development in many developing and developed countries (Meijerink and Roza, 2007). The economies of most developing countries are agriculturally based and thus credit is regarded as a major component of agricultural and rural development programmes and also considered as an important instrument in helping small-scale farmers and micro-entrepreneurs to increase their incomes. Numerous programmes have been established to increase the volume of credit to serve this purpose. Governments design loan programmes to give credit support to farmers for policy-favoured operations, such as mechanisation of farm operations. They also assist agricultural credit institutions and agricultural banks to provide farmers with easy access to ordinary credit to finance their capital needs in production, consumption or investment. Agricultural finance policy is therefore vital in terms of providing adequate credit to support agricultural production in particular, and policy-oriented agricultural development in general (CGAP, 2005).

Advocates of credit as a poverty alleviation measure (e.g. Howse 1978, Adam *et al.* 1984, Boomgard 1989, and Mutua 1996) contend that limited availability of credit services has undermined rural micro-enterprise activities due to lack of capital for investment and has prevented farmers from adopting improved farming practices because of their inability to purchase the necessary inputs required in the production. Low productivity in agriculture is generally attributed to the use of poor technology resulting from limited access to credit. Moreover, it is perceived that the inadequacy of credit facilities has to a large extent discouraged the entry of youth to the farming sector, and leave most of them unemployed because of lack of investment capital and incentive.

A lot of importance has been placed on the role of agricultural innovations in improving the welfare situation of small-scale farmers. Technology adoption significantly

influences agricultural productivity and, in turn, household income. In addition to its importance in income generation, the adoption of new technology is important as an alternative to extensive agricultural practices. However, to undertake productive investments in agricultural technology, small-scale farmers require sufficient access to financial capital. Small-scale farmers may be perpetually trapped in poverty due to the lack of finances needed to undertake productive investments (Von Pischke, Adam and Donald, 1994). Market imperfections in credit markets are assumed to lead some potential borrowers to be rationed out of the credit markets. Credit rationing can cause a misallocation of resource in farm production. The misallocation of inputs in agricultural production leads the credit rationed farmer to have lower profits than the non-credit rationed farmer (Carter, 1989; and Feder *et al.* 1990).

Fafchamps (1997) notes that with insufficient funds, farmers and fishers cannot invest in new equipment and machinery, and it becomes difficult to reach out to new markets and products. He further contends that without financial assistance, small-scale farmers cannot cope with temporary cash flow problems, and are thus slowed down in their desire to innovate and expand. The general perception is that access to external finance is critical for poor entrepreneurs, who may never have funds proportional to their ambitions. Gilla and Lassalle (1994) show that the rapid development reached in Europe and Asia was highly facilitated by the availability of credit to the majority. Countries like India, Indonesia, Burma and even China were reported to have recorded a good pace of development after managing to solve problems of credit availability for the majority.

Gonzalez-Vega (1994), as cited by Kochar (1997), argues that it has long been believed that differential access to subsidised credit from government sources plays an important role in explaining observed differences in input use and consequently in productivity across farms in developing countries and as a result, it is frequently argued that rural development must originate with agricultural credit reform. There is, however, little empirical evidence that farm production has been effectively constrained by lack of access to formal or government-controlled credit. While credit reform may be desirable

for any number of reasons, Kochar (1997) contends that reform of other input markets may have a larger impact on farm incomes. Kochar (1997) also states that the validity of this hypothesis is questionable for land-scarce economies such as India.

Kochar (1997) further states that in such economies, small and fragmented landholdings, low levels of fixed capital, and low levels of infrastructural development limit the working capital requirements of farm households. For many farms such requirements do not require loans from any source. He further states that in other cases the small amounts necessary to finance working capital requirements may be readily available at relatively low cost from informal sources such as relatives and friends and other farm households. Moreover, households also may be able to substitute for formal credit through a variety of rental markets. Under such conditions, lack of access to formal credit may not constrain the production decisions of farm households.

Gulli and Berger (1999) also point out that access to credit is important for micro-enterprise development but not necessarily the main constraint. This view is shared by Von Pischke (1992), who observed that lack of funds is not the most important problem of small-scale farmers and micro-entrepreneurs, noting that product prices, poor education system and training, low output, land tenure, modern input costs and availability and risk turn out to be more important factors limiting small-scale farmers and micro-enterprise development. Access to credit by small-scale producers in many African countries is rather disappointing. Very few small farmers and rural micro-entrepreneurs have been integrated into formal financial markets and many do not use credit, or if they do, they continue to borrow from informal market lenders (Adams, 1984). Gonzalez-Vega (1983) reports that in developing countries only a small fraction of farmers have received formal loans. It is estimated that only 15% of farmers in Asia and Latin America and just 5% in Africa are financed through formal credit sources (Gonzalez-Vega 1983; Braverman and Huppi, 1991).

2.3 RURAL FINANCIAL MARKETS

2.3.1 Different concepts of finance

The debates on access to credit call for a clear distinction between three overlapping concepts: rural finance, agricultural finance and microfinance, thus the relevance of this section.

2.3.1.1   Rural finance

According to Hospes (1996), rural finance is a complex of decisions of individuals and groups regarding savings, financing and insurance. Thus, rural finance in this context is perceived as the intermediation process through which financial assets and debts are exchanged and re-allocated among rural economic entities. The concept of rural financial markets has been used by various authors to define the relationship between buyers and sellers of financial assets in rural economies, i.e. financial products that include borrowing, lending and transfer of ownership of financial assets such as debt claims, promises to pay and ownership claims, giving the holder the right of access, use and control (Moll, 1989; von Pischke, Adam and Donald, 1983; Kumar, Kunal and Rajendra, 2002). According to von Pischke *et al*. (1983), these relations involve a wide range of institutions: formal and informal, intermediaries, enterprises and households. The basic functions of a financial market are therefore, mobilisation of savings and provision of credit. In this regard, financial institutions perform the function of financial intermediation. Von Pischke *et al*. (1983) also point out that the financial intermediation process has costs, which have to be met by its actors. Such costs possess certain advantages as well as disadvantages, which act as incentives and/or disincentives to the end users.

According to Bee (2007), the definition of rural financial markets reveals two kinds of relationships. One is the relationship between the actors: households, enterprises, financial intermediaries and the regulator. The second is the transactions between the parties involved. Bee (2007) further states that for financial transactions to be effective,

parties involved must be loyal to the system and to one another. This is possible if collateral exists, if the lender has knowledge of the borrower, if there is a possibility for legal action and if local lenders can reinforce the agreement.

The financial markets in most developing countries are said to be underdeveloped. Rural financial markets are characterised by certain unique features that reflect their underdevelopment. These characteristics, according to some literature, can be summarised into three groups: limited collateral security, insufficient complementary institutions and covariant risk (Besley, 1994b; Hoff and Stiglitz, 1990). In Lesotho, most rural households have no or few assets that can be used as collateral to secure loan default risks. In a way, this is also a reflection of the underdevelopment of property ownership rights as understood in the modern world. However, property ownership rights and inheritance in most African cultures are based on elaborate family-hood systems and norms, which are unfortunately not acceptable to the standard banking practices (FAO, 2005).

On the other hand, in rural financial markets there is inadequate loan repayment enforcement capacity as well as insufficient insurance services. Mitigation of credit default is a major issue of concern as there are no well established insurance facilities to secure incomes against whatever shocks. There are inadequate records of individual credit histories, as is the case in many of the developed countries (Besley, 1994a). Furthermore, there are no means for enforcing loan repayments due to inadequately developed local leadership capacities with reliable systems of communication upon which financial system can rely. Additionally, there are inadequate effective rural communications and transport infrastructures, which are critical for the development of rural financial markets. Besley (1994a) also states that the situation is further complicated by the degree of illiteracy and innumeracy among the population, which slows down their ability to undertake business between financial institutions and with rural households and rural enterprises.

The functioning of rural financial markets is dictated by the assumptions underlying the rural households and economic environment model as derived by Moll (1989). Rural households make various decisions related to allocation of resources for varied purposes, which are primarily concerned with production and consumption. These decisions are usually made under conditions that are characterised by seasonality, uncertainty and imperfect factor and product markets. However, households' decisions regarding savings patterns are influenced by their geographic and wealth factors. This type of relationship is appropriately explained by the Life-cycle Hypothesis (LCH) that was developed by Modigliani and Brumberg (1954) and further improved by Ando and Modigliani (1963).

The LCH postulates that households do not depend entirely on absolute income but rather on wealth and the expected income stream from labour and household assets. The application of LCH in a peasant economy is appropriate as it attempts to explain how poor households access lump-sum money that they need to meet their life cycle needs, emergencies and demand for investments. In other words, it describes relationships between the income stream of households and their consumption and savings. Households are able to meet their various needs in different ways, such as selling of assets both current and expected, savings, and loans through mortgage of assets. In addition, peasant households have elaborate reciprocities mechanisms as well as inheritances which sustain their livelihood during difficulties and in old age. It is therefore, because of this recognition that the LCH becomes appropriate in studies related to peasant economies as it attempts to describe the rural financial markets in simple ways, based on demographic and wealth considerations (Modigliani, 1986).

2.3.1.2 Microfinance

According to the Rural Finance Knowledge Management (2005), microfinance refers to the provision of financial services to low income people irrespective of where they are, rural or urban at more affordable terms. Microfinance services include micro credit, savings, money transfer, and insurance products (Rural Finance Knowledge

Management, 2005). Over the past 20 years, microfinance has developed into a specialised method of providing these financial services at sustainable rates to economically active poor households, who cannot access the commercial banks of the formal sector, be it for socio-cultural, systemic, geographical, or other reasons.

Target clients of the microfinance industry use and benefit from small savings and loans to grow rather than establish their micro-businesses. The key motivator for microfinance clients is access to (rather than price of) reliable and continuous financial services. The chief motivation for repaying a loan is the promise of future access to another loan and this is often re-enforced with social collateral such as group guarantees (Schreiner, 1999). This is why microfinance can operate successfully in the informal sector without physical collateral, enforceable contracts, and commercial courts or enabling legislature. The laws of microfinance are embedded in good operating practices and reinforced by social contracts.

Microfinance is not simply banking for the poor; it is a development approach with a social mission and a private sector-based financial bottom line that uses tested and continually adjusted sets of principles, practices and technologies (USAID, 2007). The key to successful microfinance lies in the ability of the provider to cost-effectively reach a critical mass of clients with systems of delivery, market responsiveness, risk management and control that can generate a profit to the institution (USAID, 2007). Typically, this profit is ploughed back to ensure the long-term survival of the institution, i.e. the continuous provision of services demanded by its clients. The two long-term goals of microfinance are thus substantial outreach and sustainability. Financial services, especially credit, are being delivered around the world without sufficient knowledge of or attention to these good practices but the short-term losses, and the longer-term unsustainable impact of such schemes ultimately harm the very clients that they were meant to benefit (Yaron, 1997).

Microfinance can be an effective and powerful instrument for poverty reduction, helping poor people to increase incomes, build assets, and reduce their vulnerability in times of

economic stress. But it must be provided by institutions who strive to become effective business entities by developing a strategic vision for viability and the necessary professional skill and capacity (Rural Finance Knowledge Management, 2005). Informal and small-scale lending arrangements have long existed in many parts of the world, especially in the rural areas, and they still survive. Economies rely upon the financial intermediary function to transfer resources from savers to investors. In market economies, this function is performed by commercial banks and the capital markets. More widespread financial intermediation, as well as increasing depth and variety, are characteristics of advancing development. But in many developing countries, capital markets are still underdeveloped, and commercial banks are reluctant to lend to the poor largely because of the lack of collateral and high transaction costs. The poor would borrow relatively small amounts, and the processing and supervision of lending to them would consume administrative costs that would be disproportionate to the amount of lending.

A study by IFAD has confirmed that complicated loan procedures and paperwork, combined with a lack of accounting experience, limit poor people's access to formal sources of credit. Other reports cite the fact that commercial lenders in rural areas prefer to deal mainly with large-scale farmers. In Lesotho, the absence of formal rural financial institutions to support financial intermediation is perceived as the main inhibition to growth of the rural economy. However, various financial institutions both formal and informal, such as rural savings and credit groups (RSCGs), moneylenders, burial societies, financial cooperatives and rotating savings and credit associations (ROSCAs), operate in the country.

The Government of Lesotho (GoL) in pursuit of the national poverty reduction strategy has entered into a commitment with IFAD to improve access of rural people to financial services through the above-mentioned institutions. The approach focuses on small to medium-scale groups that engage in income generating activities to benefit from improved access to working capital. These institutions are characterised by giving out micro loans, with relatively lower interest rates and suitable repayment periods. Women

are a major beneficiary of their activities, and the destination of the funds primarily includes agriculture, distribution, trading, small craft and processing industries. The administrative structure is generally light and the entire process is participatory in nature. The impact of microcredit lending in Lesotho varies widely between rural and urban areas.

2.3.1.3 Agricultural finance

Agricultural finance is essentially a sub-set of rural finance dedicated to financing agricultural related activities such as input supply, production distribution, wholesale processing and marketing (FAO, 2008). Agricultural finance has been one of the most prominent elements of the rural development strategies used by development agencies and national governments. Over the past 40 years, billions of dollars have been provided to support agricultural production and the green revolution (DFID, 2004). Von Pischke (1991) argues that this financing has long been characterised by poor loan repayment rates and unsustainable subsidies. Accordingly, agricultural credit from some donors and multilateral development banks has dropped dramatically in recent decades and is now often considered too risky. For example, agriculture accounted for 31% of World Bank lending in 1979–81, but by 2000–2001 had fallen to less than 10% and is expected to further decline in years to come (World Bank, 2003). This drop was partly due to disappointment with large agricultural finance projects, and partly to the fact that World Bank rural finance increasingly occurred in other areas; through microfinance projects or as part of community development, infrastructure, or rural development projects.

Financing for agriculture still falls outside the scope of the mainstream microfinance industry in many countries. Where rural microfinance providers do exist, they are mostly limited to diversified rural economies and to clients with a number of income sources (Yaron, 1997). Yaron further states that rural areas that are not densely populated, or that are dependent on a few principal crops and livestock activities, have generally been avoided by microfinance institutions because of higher transaction costs, price and yield

risks, seasonal client incomes, and collateral limitations inherent to the agricultural sector. Conventional micro-credit methodologies rely heavily on short-term loans with frequent, regular repayments, which do not fit well with seasonal crop or livestock production (except for poultry) (CGAP, 2005). However, a few innovative microfinance institutions have led the way in adapting their operations and products to expand viably into agricultural lending in more difficult rural areas (CGAP, 2005). The overwhelming failure of state development banks that provided billions of dollars in subsidised agricultural finance to farmers in the 1970s and 1980s, combined with scarce rural penetration by risk-averse commercial financial institutions, has led to a widespread deficiency of agricultural credit. Yet new approaches are increasingly being developed to fill this gap in a sustainable and efficient manner (CGAP, 2005).

Despite the disproportionate concentration of poverty in rural areas around the globe, the provision of financial services to the poor and low-income people has tended to gravitate away from rural borrowers. As the industry matures, however, practitioners are increasingly turning to the vast and largely under-served rural frontier, and to the thorny challenges of financing small-scale agriculture. Delivering small-scale loans and savings mechanisms can be particularly challenging in areas of low population density, where the distance between clients is great, transportation networks are often poor and low income levels tend to translate into impracticably small financial transactions (CGAP, 2005). Given that most rural citizens depend at least in part on agriculture for their livelihood, these conditions make the prospect of operating a self-sustaining, rural agricultural finance institution even more discouraging. The majority of the successful microfinance programmes have been urban-based, however, and the challenges of transferring the new lending technologies to the rural areas are not insignificant.

2.3.2 Rural financial intermediation

In terms of financial intermediation, most developing countries are characterised by weak competition in the financial sector resulting from the underdevelopment of the sector itself, inadequate financial institutions, poor infrastructure and lack of support

services (Schreiner, 1997; Bee, 1996). In most of these countries, their financial markets exhibit the dual character of financial institutions, i.e. formal and informal institutions. The formal and informal financial systems co-exist and operate side by side with one another (Kessler, Marique and Ullmo, 1985). Zeller (1994) observes that each segment of the financial market provides credit services that differ from each other with respect to target group, loan duration, loan amount, its use, interest rates and transaction costs. Formal institutions are more inclined to provide their services to the public sector, upper-income households, large-scale enterprises and non-agricultural activities, while the informal financial institutions tend to match their products and services to the characteristics and demand of the predominantly private, low-income, small-scale and rural population of most developing countries (Germidis, Kessler and Meghir, 1991).

The majority of rural people in developing countries, therefore, do not have access to banks and other formal financial institutions because formal institutions view them as risky borrowers (Mohamed, 2003). The author further points out that the reluctance of the formal banking sector to serve the small borrowers' credit and saving needs has thus shifted the attention of many developing countries' governments to semi-formal credit arrangements. Donor-funded development projects, state-controlled credit schemes and various non-governmental organisations (NGOs) have over the years increased their role in the provision of credit to small-scale farmers and rural micro-entrepreneurs. The majority of these efforts focus on ways of extending institutional credit schemes to small-scale farmers and rural micro-entrepreneurs, typically aiming to provide credit to finance agricultural inputs and other micro-enterprise investments needs.

The GoL like many other governments in developing countries has also supported development programmes aimed at providing better access to credit by small businesses including small-scale farmers. These programmes are in a form of rural financial intermediation and do not directly support production activities, but by

improving access to financial services (including credit), expansion and intensification of agriculture and rural enterprises would be possible. Opportunity would be provided to diversify sources of income, thus putting less pressure on land, enhancing savings accumulation as well as investments in agriculture, livestock and off-farm income generating activities, most importantly, to enhance capacity building and institutional strengthening of grassroots rural financial institutions. The development of rural financial services will lead to an increased financial resource flow to agriculture and the rural economy.

This section therefore aims at highlighting and discussing some of the rural financial intermediaries that most literature on rural finance has outlined. These include (but are not limited to) the traditional credit approach; group lending approach; the cooperative finance paradigm; and the informal finance. A detailed summary on each of the above-mentioned forms of intermediaries will be given below starting with the traditional credit approach.

2.3.2.1   Traditional credit approach

The traditional credit approach has been widely documented and referred to differently by many writers. It is also known as agricultural finance or subsidised and targeted approach (Yaron, 1997; Thillairajah, 1994; Aryeetey, 1996; Besley, 1994a). The traditional credit approach is characterised by government interventions in rural credit markets. Interventions were justified on grounds of market failure to deliver the needed financial services to rural people to support their development initiatives in order to realise the desired effects. Governments in most developing countries started to own commercial banks through the nationalisation of existing private banks or establishing own banks.

According to Besley (1994b), India and Mexico nationalised their banks in 1969 and 1982 respectively in order to force the banks to open up rural branches that would serve the rural people. Lesotho also underwent a similar practice, but instead, the GoL

established the Lesotho Agricultural Development Bank (LADB) in 1980 with the objective to serve as an apex organisation for rural savings and a central source for agricultural credit. LADB was closed in 1998 due to problems of heavy losses, illiquidity and severe capital deficiencies (Department of Planning and Policy Analysis, 2003). In other countries such as Nigeria, regulations were put in place for the banks to serve rural areas. In almost all cases, credit was issued at subsidised interest rates, a situation that called for credit rationing/targeting as demand exceeded supply (Bee 2007).

2.3.2.2   Group lending approach

According to Paxton (1995), the idea of group lending was modified from the informal lending practices. It was first practised by a few NGOs in the 1970s but accelerated during the 1980s through the 1990s. In almost all the programmes, the emphasis was on "credit first". However, over the past few years, the group lending approach has gained popularity especially among donors and financial NGOs. This has partly been prompted by the stories of success of the Grameen Bank model of micro-credit implemented in Bangladesh.

There is an enormous literature on the success of this model, and some scholars and policy makers have even recommended its implementation elsewhere (Yaron, 1992; Vogel, 1984; Berenbach and Churchill, 1997). The justifications for group lending are based on the fact that transaction costs are low; poor people prefer a group approach for all sorts of actions, and repayment rates are more favourable when they borrow and repay as a group (Paxton, 1995). The main idea behind the group model is the presumption that homogenous groups exhibit a high degree of group solidarity and pressure. Under this system, groups apply and receive small amounts of loans that in turn are distributed to each individual member in the group, but the larger group remains liable for the repayment of the total sum. In the modern banking sense, there is no physical collateral, but rather group liability and hence the lender relies on social pressure/cohesion for loan recovery.

In this light, the GoL in an attempt to assist small-scale farmers to improve their production and thus increase their farm incomes, introduced a block farming programme in 2005, whereby small tracts of lands from different farmers were grouped together into larger, more economically viable and productive blocks. The GoL then approached the Standard Lesotho Bank and offered a 100% guarantee on all loans given by the bank to the block farmers. The partnership between GoL and Standard Lesotho Bank on block farming will be discussed in detail in Chapter 3.

2.3.2.3   The cooperative finance paradigm

Cooperatives have played very crucial roles in the provision of agricultural finance. There are also reports that they have been misused by rural elites to accumulate both political and economic power (van Granenburg, 1990; Holmen, 1990). A cooperative society may be defined as a voluntary, democratically controlled association of people with a specific purpose of conducting some kind of business for serving its members. In most countries, cooperatives are legal entities registered under cooperative societies' statutes. They operate in a variety of fields: marketing, input supply, finance and housing to mention but a few.

Many governments in developing countries, Lesotho included, have used cooperatives to achieve a broad array of objectives. Moll (1989) pointed out that both governments and international donor agencies took cooperatives as appropriate instruments for rural transformation in general and agricultural development in particular. As a result, cooperatives were given a broad range of development objectives to fulfil. These ranged from mobilisation of resources for the state, organisation of rural credit, provision of marketing facilities and politics in rural communities (Moll, 1989). In this regard, cooperatives were considered as business entities on the one hand but also as instruments for public policies on the other. A typical cooperative society is a self-financing organisation.

According to Moll (1989) a financial cooperative means, therefore, members contributing to a common fund to be loaned to its members. However, Moll (1989) further states that in many instances, governments and donors financed cooperative activities with the intention of attaining rural development. In other instances, the rural credit component was made part of a marketing society, or at times input supply on credit to farmers was facilitated through cooperatives. In Lesotho, marketing societies were at first charged to administer farm credit to their members from public financial institutions. During the 1980s however, savings and credit schemes were introduced to facilitate credit distribution and payments of crop sales proceeds to farmers (IFAD, 2007). The savings and credit schemes were made units of marketing societies in Kenya, and almost during the same time, Union Banking Sections were introduced under marketing societies in order to mobilise savings and administer credit (Wanyama, 2009).

Cooperatives have more than 50 years of history in Lesotho, and were an important economic factor during the 1980s and 1990s with substantial donor support, but are now on the decline (IFAD, 2007). IFAD (2007) further reports that the Department of Cooperatives keeps records of about 1 700 registered societies in the country, but most of these have ceased to operate. The latest survey revealed about 20 functioning credit unions and an additional 54 multi-purpose cooperative societies (MPCS) with savings and credit activities. Even among these, their records are not impressive, and the value of savings and loan transactions is often very low. In the absence of solid data, one may estimate that these two types of cooperatives mostly have a membership in the range of about 50 to 100, with a total membership of probably 3 500 to 7 000 members. Cooperatives rendering financial services comprise both the single-purpose credit unions and the MPCS (IFAD, 2007).

Financial cooperatives in Lesotho have operated under a framework that has never been appropriate. Firstly, they have been subject to the standard legal provisions that prevailed in most African countries, which are more geared at formalising institutions rather than creating an environment under which low-income people could do their

business more easily than doing it individually. Secondly, the state has always treated cooperatives as a movement that could be employed according to state priorities, instead of permitting or even encouraging the cooperative movement to become independent. Thirdly, many of the provisions of the cooperative law are not understood and appreciated by the co-operators, and are not favourable for rural development, in particular the sections on set-up of committees, functional control and supervision, creation of financial reserves, restrictions to distribute profits only after state audit, record-keeping, and so on. Fourthly, during the tide of donor support in the 1980s and early 1990s, cooperatives were encouraged and induced to change some of the prudential principles of operations, in particular maximum loan ceilings, which led to a huge amount of arrears and irrecoverable loans. The support received by the cooperative movement during this time was substantial, and favoured a general perception that cooperatives are more in the interest of donors and the government than in the interest of the members themselves. Fifthly, the state policy to promote cooperatives created a common perception that loans should not be repaid, as they represented a form of redistribution of wealth to the rural population. Finally, the absence of any serious external control over the operations created opportunities for local elite and well-trained bureaucrats to enrich themselves (IFAD, 2007).

In spite of this legacy, a number of societies are keen to start afresh and have the potential to become intermediaries for bank loans. Credit unions, or cooperative savings and credit societies, are permitted by law to mobilise deposits (and share capital) from their members, and use all funds for lending, within the given prudential guidelines. In other countries, where credit unions have grown bigger and received the authorisation to mobilise deposits from the general public, this has been accompanied by a set of specific regulations and tight supervision, which is executed by a professional body, usually the central bank or a special financial supervision agency (IFAD, 2007). Lesotho is an exception to this universal rule. The revision of the cooperative legislation in 2000 permitted financial cooperatives to mobilise deposits from the general public without linking such permission to qualitative criteria, without making such societies subject to any specific prudential guidelines, without making them subject to tight

supervision by professional bodies, and even without making them subject to any reporting. The Cooperative Department has largely failed to provide closer monitoring and supervision to the credit unions due to lack of adequate capacity. Lack of transport facilities was also highlighted as a major factor that has constrained the department from effectively discharging its supervisory and monitoring role (IFAD, 2007).

2.3.2.4   Informal finance

Informal finance plays an important role in many rural communities in developing countries. Chandavarkar (1988), as cited by Bahta (2003), defines informal financial markets as all legal but officially unrecorded and unregulated financial activities and transactions which are outside the orbit of officially regulated institutional finance. According to Bahta (2003), this category is broad enough to contain a wide variety of arrangements, from moneylenders who extend credit at spectacular rates with no paperwork or requirements, to the more sophisticated but informal approaches based on established norms and procedures. Otero (1989) states that in all cases, the following conditions prevail: transactions are in cash among people who maintain kinship and social relationships; little or no paperwork is required and there is no official registration of borrowing, lending or saving activities for participants; transactions are based on relationships rather than collateral or financial standing; and operations are on a relatively small scale. The operations of informal finance are less costly and location specific. It is a more preferred form even in cases where the cost of accessing it is higher than in formal institutions (Schreiner, 2000).

The operations and practices of informal finance vary widely in terms of form and nature. In many cases, though, the credit system is built around friends, relatives, local moneylenders, kinship arrangements (reciprocal arrangements) and in a slightly more advanced form of credit associations popularly known as ROSCAs (rotating savings and credit associations). Martin *et al*. (2002) grouped providers of informal finance into five categories, namely, (i) lending by individuals on a non-profit (and often reciprocal) basis, (ii) direct but intermittent lending by individuals with a temporary surplus, (iii) lending by

individuals specialised in lending, (iv) individuals who safekeep others' money and (v) group finance. In most cases there are all elements of formal finance: savings, credit and insurance all fuzzed up in informal arrangements.

Lesotho has a blooming informal financial sector, comprising three major types of associations: burial societies, which principally cover burial expenses, and also grant loans from their excess liquidity; ROSCAs; and non-rotating accumulative savings and credit associations. In the absence of any study on this sector, one may estimate that about 20 to 30% of Basotho are members of one or several of these associations. The rural population predominantly depends on local informal organisations, with extremely minimal linkages with formal or semi-formal organisations. While the informal organisations control the large membership, outreach and total amount of loans, they have very low capacity in terms of average contributions, liquidity to be made available for loans and type of services/products to be offered. There are opportunities to build upon and enhance the culture of saving and regular contributions with respect to the membership of informal organisations, with better savings to finance consumption and emergency needs when they occur, as well as the deployment of savings for income-generating activities. Small-scale farmers mostly use services of the informal financial sector to obtain short-term working capital loans.

Although studies on informal finance are growing, there are a lot of untold stories due to the complexity involved in the relationships between actors. Their operations have no office or documentation and in some instances such arrangements are temporary and illegal. Thus, the operations of informal finance are full of ambiguities.

2.4 FACTORS THAT INFLUENCE SMALL-SCALE FARMERS' ACCESS TO CREDIT

Recent theoretical and empirical work in economics has established that credit markets in developing countries work inefficiently due to a number of market imperfections. The literature cites a number of market imperfections which led some potential borrowers to

be rationed out of the credit market. According to Foltz (2004) and Carter (1988), these imperfections include: interest rate ceilings usually imposed by the government; monopoly power in credit markets often exercised by informal lenders; large transaction costs incurred by borrowers in applying for loans; and moral hazard problems. In many cases, a number of these imperfections combine to ration farmers out of the loan market.

Currently, there is no study conducted in Lesotho which has attempted to determine the relationship between access to credit and agricultural production. However, similar studies to this one have been conducted in many developing countries around the world and some of these include: Foltz (2004), Nuryartono, Zeller and Schwarze (2005), Spio (2002), Mokena *et al.* (1997), Mohamed (2003), Eze, Ibekwe and Korie (2009), Kohansal and Mansoori (2009), Subbotin (2005), Mpuga (2008) and Carter (1988). Most of the empirical studies show that variables that influence an individual's chances of accessing credit from formal and non-formal credit sources are age, farm income, non-farm income, financial assets (savings), remittances and pension, farm size, family labour, land ownership, credit awareness, gender, education level and repayment ability. These factors will be discussed below.

2.4.1 Age of household head

Mohamed (2003) used logistic regression analysis to review the operational mechanism of the existing formal and quasi-formal credit arrangements in Zanzibar. The study aimed at determining factors that influence accessibility of formal credit by small-scale farmers and artisanal fishermen. The study results indicate a negative but significant relationship between credit access and age. This finding suggests that older people have poor chances of accessing credit from formal and semi-formal financial institutions. This relationship was expected because older people are always risk averse and would not like to enter into debt obligations. In addition, older people find it difficult to understand the operations and conditions of formal and semi-formal financial institutions and are also afraid of loan conditions. Eze *et al.* (2009) also used logistic

regression analysis to examine women's access to credit from selected commercial banks for poverty reduction in south-east Nigeria and the results showed that age significantly influenced the women's access to credit. Mpuga (2008) found that age has a quadratic relationship with respect to demand for credit (from all the available sources). The results indicated that the odds ratios were positive for age but negative for age squared with respect to demand for credit from each of the sources.

2.4.2 Gender and level of education

Mohamed (2003) found that the estimated coefficient of gender was significant and negative, implying that women had less access to formal and semi-formal credit than men. It is evident from the results that despite the presence of some targeted credit schemes in favour of women, women still face credit access difficulties compared to men. Nuryartono *et al.* (2005) found that human capital indicators such as education (school attendance of head of households) have negative signs and are significant at a 10% level, implying that increasing either of those variables is likely to reduce the household's probability of being credit constrained. The more educated the head of the household is, the more responsible he will be for making decisions for the whole family and tends to be better at calculating the future. Mohamed (2003) expected years of formal education to be a positively significant variable in that it determines ones chances to access formal and semi-formal credit. However, the estimated coefficient of education was negative and this was not expected for this variable, as it was believed that chances to access credit from formal and semi-formal financial institutions improve with increase in levels of education. Nevertheless, this result implied that the available credit services from small credit schemes targeted poor and vulnerable people in the rural areas and the majority of those who had benefited had low education levels.

2.4.3 Household size and family labour

Nuryartono *et al.* (2005) found that the estimated coefficient for household size is positive and significant, meaning that a greater number of household members increase the probability of household being credit constrained. Nuryartono *et al.* (2005) state that

family size as a proxy for risk-bearing capacity indicator confirms that the greater the number of household members, the more likely the household is to suffer from risk. The household size coefficient for credit constrained households was also positive and significant at a 5% level. This result suggests that credit-constrained households have an advantage with increasing family members. Family labour contributes to agricultural activities and increases profit in farm production. Foltz (2004) and Eze *et al.* (2009) found that household size has a greater influence on the demand for loans than on supply for loans. Spio (2002) found that farmers with higher family labour stock are less likely to borrow for farming activities, as family members may substitute labour for cash inputs like herbicides and or sell additional family labour on the market, and in return use off-farm income to purchase cash inputs, hence reducing the need for a loan.

2.4.4 Farm size and land ownership

An estimated coefficient for farm size by Spio (2002) indicated a differential access to loans by small-scale farmers whereby credit accessibility increased as the size of the holding increased. Mohamed (2003) expected that farm size would relate positively to the chances of accessing credit because the owner of a large farm would usually have a higher capital requirement and this could entice the owner to look for external financing opportunities. However, farm size was not a significant variable in the analysed sample. Land tenurial status and having land title deeds were also not significant variables. These results were expected, since all borrowers (those who have accessed credit) obtained their loans from quasi-formal financial institutions where no collateral was asked for and issues of land tenure and ownership were not considered in loan approval and disbursement processes.

Foltz (2004) found that having title to land was expected to have a greater influence on credit supply than demand, because it increases collateral, creating a direct relationship to supply, while the increase in demand due to land titles moves indirectly through an investment demand equation. Land ownership in this study had an indeterminate sign *a priori* dependent on the strength of its influence on either supply or demand. Nuryartono

et al. (2005), on the other hand, found that land ownership as predicted, increased credit supply more than demand, suggesting that the benefits of land title in increasing credit supply may be stronger than the degree to which it increases the desire to invest. It was expected that a larger share of titled land would lead to a lower probability of credit rationing but the estimated coefficient of 0.001, although positive, is fairly small in size and highly insignificant. Hence, the study could not draw a firm conclusion regarding the role of land titling on credit rationing. Subbotin (2005), on the other hand, found asset endowments, such as land ownership to have a very weak effect on the ability to borrow and this was probably a reflection of low collateralisability of farm assets in Russia. This finding deviates from what is normally observed in similar analyses in market economies.

2.4.5 Income level

Foltz (2004) found that household income levels, proxied by expenditure, seemed to increase credit supply more than credit demand, confirming the study's prediction that a wealthier household would be more likely to receive credit, y*et al*so be less likely to need it. Nuryartono *et al*. (2005) also found that total income, as a proxy for welfare status, confirms that increasing the households' total income reduces the probability of a household being credit constrained. This variable is significant at the 10% level', implying that a better household situation affects the decision of the lender to ration the loan or that the household has less demand for loans because of the household's own equity capital accumulated through past income earnings. The lender considers the welfare status of a client or potential client before signing a contract to provide the loan.

Mohamed (2003) found that the relationship between income levels and access to credit was also significant but the coefficient was negative, implying that those with low income had better chances to access credit from formal and quasi-formal financial institutions. The negative coefficient was not expected because most of the credit that was made available to farmers and artisanal fishermen was from quasi-formal financial institutions, targeted to the real poor (those with low income). In addition, most of the

available credit schemes had eligibility criteria favouring people with relatively low income in rural areas. Also, low loan ceiling for credit-assisted activities was a disincentive to comparably better off individuals to ask for loans from these credit schemes. Subbotin (2005) found that farms with higher profitability have a higher probability of borrowing from financial institutions, suggesting that the Russian rural credit system behaves to a certain extent according to market principles.

2.4.6 Awareness of credit availability and loan repayment

Mohamed (2003) found that awareness of credit availability had a positive significant relationship with access to credit, implying that those individuals who are aware of the availability of credit services have better chances of accessing credit than those who are not aware. Foltz (2004) found that credit history as a proxy for loan repayment had estimated parameters of the predicted sign, but was not significantly different from zero. Subbotin (2005) also found credit history did not have an impact on farms' ability to borrow. This may be due to the fact that overdue debt is not an appropriate measure of credit history in an environment with pervasive soft budget constraints.

2.5   SUMMARY

The main focus of this chapter was to review relevant literature and present a theoretical framework for analysis of the factors that influence small-scale farmers' access to credit. A growing body of empirical analysis discussed in this chapter indicate how financial markets and institutions influence and are influenced by economic development, and that there is a positive link between the functioning of the financial system and economic growth in the long-run. Rural households' access to financial services builds up their productive assets and hence improves productivity, and increases opportunities for achieving sustainable livelihoods. This confirms that the development of the financial sector is an important element in any country's economic growth and development. Access to credit (and financial services as a whole) unleashes the economic potential of people who are in most cases bankable but underserved.

The review of literature has revealed studies done by others and how those studies are relevant to this work. Based on the findings of the related studies, it is expected that the identified variables will serve as a guideline for identifying important variables that influence small-scale farmers' access to credit in Lesotho. What is clear from this review is that an efficient allocation of resources can be achieved only through a sound financial structure, which must encompass reasonable regulation, supervision and control, appropriate institutions and financial instruments that are consistent with savers' and borrowers' preferences and needs.

3.1   INTRODUCTION

This chapter presents an overall description of the study area. The chapter is divided into four sections. The first section covers an overview of the areas and livelihood zones of Lesotho. The second section discusses Lesotho's agricultural sector. The third section presents an overview and background of agricultural credit in Lesotho. The last section outlines sampling techniques focusing on identification and selection of the survey sample and on the survey technique for data collection.

3.2   OVERVIEW OF AREAS AND LIVELIHOOD ZONES OF LESOTHO

3.2.1   Geographic location

The Kingdom of Lesotho is a mountainous, land-locked country and is completely surrounded by the Republic of South Africa (RSA). It borders on KwaZulu-Natal to the east, the Eastern Cape to the south, and the Free State to the north and west. It lies between latitudes 28º and 31º south and longitudes 27º and 30º east. It covers an area of approximately 30 350 square kilometres of which about one quarter in the west is lowland country, varying in height above sea level from 1 500 to 1 600 metres, the remaining three-quarters being highlands, rising to a height of 3 482 metres at Thabana-Ntlenyana in the Maluti Range, which forms the eastern border with KwaZulu-Natal. The mountain ranges stretch from north to south and those in the central area, the Maluti, are spurs of the main Drakensberg, which they join in the north, forming a high plateau varying in altitude from 2 700 to 3 400 metres. It is in this area where two of the largest rivers in Southern Africa, the Orange (Senqu) and the Tugela, and tributaries of the Caledon (Mohokare), have their sources (see Figure 3.1 below) (Department of Meteorology, 2008).

Figure 3.1: Physical Map of Lesotho

The original Lesotho consisted of the high plains of the Mohokare valley and adjacent areas. Modern Lesotho lost much of the western part of this land to RSA through a series of wars in the Free State-Basotho war during the 18th century but gained the high mountain ranges in the east, known as the Maluti. The present boundaries of Lesotho follow in part a series of rivers, the Tele, the Senqu, the Makhaleng and the Mohokare (Figure 3.1). Between the Makhaleng and Mohokare, the south-western

boundary follows a beaconed boundary fence, while between the sources of the Mohokare and Tele; the long eastern and southern boundaries follow a high mountain watershed. This section of the boundary is for much of its distance the continental divide between the Atlantic and Indian Oceans, and it is seldom far from dramatic escarpment cliffs which make access to Lesotho on this side extremely difficult. The latitudinal position of Lesotho in the subtropics under the global high-pressure belt (30ºS) makes its latitude the primary factor that determines the country's climate (Department of Meteorology, 2008).

3.2.2 Livelihood zones

Lesotho is demarcated into distinct livelihood zones, namely Lowlands, Foothills, Senqu River Valley and Highlands (also known as Mountains). The Lowlands have been further divided into the Northern and Southern parts. Each of these zones is characterised by types and levels of availability of resources, agro-climatological and ecological conditions. Livelihood patterns clearly vary from one area to another according to local factors such as climate, soil and access to markets. Where a community lives is one factor determining its options for obtaining food and generating income (FAO/WFP, 2006). The Livelihood Zones in Lesotho more or less coincide with the agro-ecological regions (Figure 3.2).
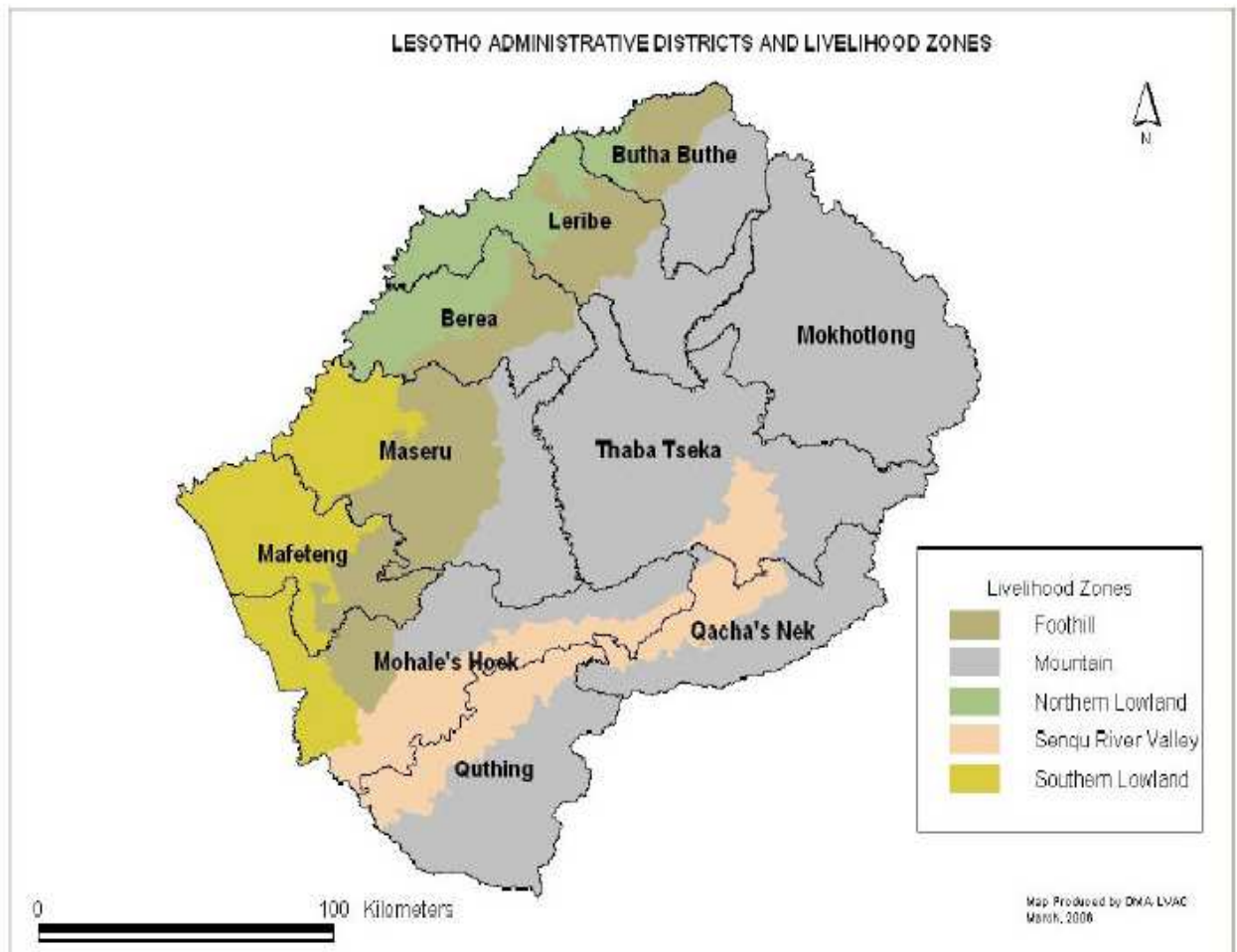
Figure 3.2:   Map of major livelihood zones in Lesotho

The country is divided into 10 administrative districts (Figure.3.2), which differ in terms of size, topography, climate and stages of development across which the livelihood zones can be overlaid (FAO/WFP, 2006). It is further sub-divided into two residential areas, urban and rural. Cutting across all the livelihood zones is the importance of environmental resources such as water, soil, range and forestry supporting both human and livestock requirements. The areas in hectares for the livelihood zones are shown in Table 3.1 below.

Table 3. 1: **Major livelihood zones overlaid on the districts in Lesotho**

District	LIVELIHOOD ZONES				
	Northern Lowlands	**Southern Lowlands**	**Foothills**	**Highlands**	**Senqu River Valley**
	AREA IN HECTARES				
Butha Buthe	102 626	N/A	37 053	38 986	N/A
Leribe	118 780	N/A	79 187	84 843	N/A
Berea	133 317	N/A	77 768	11 110	N/A
Maseru	119 812	N/A	132 649	175 439	N/A
Mafeteng	N/A	171 380	31 350	6 270	N/A
Mohale's Hoek	N/A	81 768	99 544	135 096	39 107
Quthing	N/A	N/A	N/A	162 819	127 929
Qacha's Nek	N/A	N/A	N/A	75 703	160 870
Thaba-Tseka	N/A	N/A	N/A	343 988	85 997
Mokhotlong	N/A	N/A	N/A	410 403	N/A
Total	**474 535**	**253 148**	**457 551**	**1 444 667**	**413 903**

Source: **Ministry of Agriculture and Food Security, 2002.**

N/A = **Not applicable**

A detailed discussion on each of the livelihood zones is presented below.

3.2.2.1   Northern Lowlands

The Northern lowlands cover approximately 474 535 ha of land across the districts of Butha-Buthe, Leribe, Berea and Maseru. This is the most productive arable land in the country that has generally good annual rainfall ranging from 700 mm to 800 mm. The area is estimated to support 430 658 people. Up to 43% of the population in this area is deemed poor (Department of Meteorology, 2008). The population in this area derives its livelihood from the production of field crops such as maize, wheat, soybeans, dry beans and dry peas; production of cash crops such as vegetables, green mealies, green beans and green peas; paid employment; and trade. Crops and livestock sales form an important source of cash income. Livestock holdings in the area are generally high. During years of low agricultural productivity, farmers and pastoralists in this zone resort to petty trade and street vending (Department of Meteorology, 2008).

3.2.2.2   Southern Lowlands

The Southern Lowlands cover approximately 253 148 ha and are generally hotter and drier with annual precipitation ranging from 600 mm to 700 mm per annum. This zone supports approximately 597 175 people. The four main sources of livelihood in this zone are food crops, paid employment, livestock, and trade. Up to 53% of the population is estimated to be poor; they derive most of their income from working in local crop fields as casual labourers, and they obtain the smallest share of their income from selling surplus vegetables, green mealies, green beans and green peas. (Department of Meteorology, 2008).

During times of drought, when rangelands are in bad condition, pastoralists barter their livestock for food cereals to supplement their food requirements. Being close to commercial centres, farmers in this zone migrate to nearby towns to seek employment during years of low agricultural output. In addition to these coping mechanisms, government also distributes donor-provided food aid.

3.2.2.3   Foothills

This is an area that occupies a long strip of rugged terrain that separates the mountains from the lowlands. It supports 235 106 people. Livelihoods in this area are more agriculturally orientated, driven by field crops and livestock holdings. Up to 41% of the population is estimated to be poor. The farmers that inhabit this zone also resort to petty trade and street vending when climatic conditions curtail their farming activities (Department of Meteorology, 2008).

3.2.2.4   Highlands

This is the least densely settled part of the country and communities in this area tend to be more isolated from services and markets. This zone supports approximately 385 991 people. Livelihoods in this area are dependent on field crops and livestock. Up to 55% of the population is poor. People in this area are mostly pastoralists. During years of

drought, they exchange livestock for food cereals to supplement their food requirements (Department of Meteorology, 2008).

3.2.2.5 Senqu River Valley

This area lies along the banks of the Senqu River. It supports an estimated 122 680 people. Livelihoods in this area are derived from crops such as sorghum, and wheat, and livestock rearing. Up to 50% of the population in this area is poor and as a result has the highest prevalence of poverty in the country. This area has low soil fertility, and generally low agricultural output inadequate to meet local demand. Furthermore, this area is located away from trade centres and it is not easily accessible due to lack of proper roads infrastructure. Communities in this zone rely primarily on food aid, as they have no other options to sustain livelihoods (Department of Meteorology, 2008).

3.3 THE AGRICULTURAL SECTOR OF LESOTHO

3.3.1 Agriculture's importance as a basis for economic activities

Economically, Lesotho is resource poor. Agriculture in Lesotho is a major source of economic growth. About 25% of Lesotho's land has potential for agricultural development and the socioeconomic importance of the sector is high. The agricultural sector has historically been a major employer. Agriculture is the mainstay of the rural communities and it provides livelihood support to over 70% of the country's population (Department of Meteorology, 2008). However, the sector's contribution to the GDP has declined from 30% in the 1980s to less than 20% to date. The contribution of the agricultural sector to GDP and export earnings is estimated at 16% and 15% respectively (Department of Meteorology, 2008).

Crop production is virtually all rain-fed and accounts for 70% of the agricultural GDP while livestock production represents 30% (FAO/WFP, 2007). Crop production is characterised by low input-low output traditional rain-fed farming systems that are inadequate to provide for food self-sufficiency at household level. Agricultural practices

are characterised by draught animal power (if available) for seedbed preparation, manual husbandry operations, on-farm produced inputs and household family labour. The increasing incidence of HIV/AIDS however, has reduced availability of family labour which is becoming a major constraint in the subsistence farming. Whereas most farmers are subsistence producers, commercial farmers involved in market-oriented production account for 10% of total output (FAO/WFP, 2007).

Agriculture employs a modest 57% of the labour force, mostly on subsistence farms. This figure is lower than similar developing countries as the mountain environment offers less terrain for growing crops and many adult males work in RSA mines. While the CIA World Fact-book estimates that 35% of the male wage earners work in RSA mines, it also estimates that 86% of the resident population is involved in subsistence agriculture (www.nationsencyclopedia.com/economies/Africa/Lesotho_Agriculture.html).

3.3.2 Crop production

The three main cereal crops grown in Lesotho include maize, sorghum and wheat, covering about 80% of the total area planted. Maize being the most dominant crop accounts for about two-thirds of the crops grown by farmers annually. The overall productivity of main cereal crops significantly decreased during the cropping year 2006/07. The main reason for the reduction in yields was a lack of sufficient rain, particularly at the time of flowering and seed formation. Although several other factors such as low yielding varieties, lack of fertiliser use, pest and weed infestations also contributed to the poor performance of the 2006/07 crops, the continued drought was the main contributing factor. The overall crop yield performance of the 2006/07 cereal crops was expected to be even lower than the already low yields of 2005/06 (see Table 3.2 below). The average yields of maize, sorghum and wheat in the cropping season 2006/07 were estimated at 0.43, 0.42 and 0.52 tonnes/ha respectively. Compared to the 2005/06 cropping season, yields for 2006/07 had decreased dramatically by 42% and 25% for maize and sorghum respectively, and by 4% for wheat (FAO/WFP, 2007).

Table 3.2: Area, yield and production of summer cereals in 2006/07 agricultural year by district

District	Maize			Sorghum			Summer Wheat		
	Area	Yield	Total	Area	Yield	Total	Area	Yield	Total
	ha	t/ha	tonnes	ha	t/ha	tonnes	ha	t/ha	tonnes
Butha Buthe	6 620	0.7	4 634	1 600	0.4	640	163	0.8	130
Leribe	19 009	0.6	10 645	2 141	0.4	856	126	0.5	63
Berea	15 479	0.6	8 668	4 180	0.4	1 756	0	0	0
Maseru	13 361	0.6	8 017	3 254	0.4	1 302	2 110	0.7	1 477
Mafeteng	19 607	0.3	5 882	6 430	0.6	3 601	240	0.3	72
Mohale's Hoek	6 834	0.4	2 734	3 169	0.4	1 268	791	0.4	277
Quthing	8 008	0.3	2 402	2 640	0.4	1 058	881	0.4	335
Qacha's Nek	4 138	0.4	1 655	1 858	0.2	372	1 231	0.5	616
Mokhotlong	8 255	0.2	1 651	30	0.3	8	3 515	0.5	1 758
Thaba Tseka	18 147	0.3	4 537	1 298	0.3	325	1367	0.5	684
Lesotho	**119458**	**0.4**	**50825**	**26600**	**0.4**	**11 182**	**10 424**	**0.5**	**5 411**

Source: FAO/WFP, 2007

3.3.3 Livestock production

The livestock sub-sector is based on the husbandry of diverse species of animals including cattle, sheep, goats, poultry, pigs and rabbits. Livestock plays a significant role in the economy of rural livelihoods through the sale of live animals and products such as wool and mohair. The majority of the farmers of Lesotho raise livestock to maintain food security during drought years when crop yields are low. The bulk of crops and livestock are grown in small villages that are positioned far away from the main roadways. The products are consumed locally with the surplus shipped for sale and profit in outside markets. Fish production or farming in the villages of Lesotho is another integral part of the agricultural sector of the country. The prevailing free grazing system however, has led to overgrazing of the palatable species and degradation of natural pastures. The situation is exacerbated by the lack of sustainable grazing land management practices. Furthermore, livestock theft continues to be one of the most serious problems faced by

the farming communities, affecting not only the household asset base but also seasonal land preparation practices (Department of Planning and Policy Analysis, 2003).

3.4   OVERVIEW OF AGRICULTURAL CREDIT IN LESOTHO

3.4.1   Agricultural policy

From the 1980s up to the mid-1990s, Lesotho's agricultural policies were shaped by the perceived need to reduce dependence on food imports from RSA and to protect domestic producers from competition by heavily subsidised South African producers (Ministry of Development Planning, 2000). With the assistance of donors, the country adopted a strategy of food self-sufficiency that focused on increasing the domestic supply of staple foods. The Food Self Sufficiency Programme (FSSP) initiated in 1980/81 was maintained up to 1993, as a measure and consistent national policy. The objective of this intervention was to reduce the country's dependence on RSA for the supply of staple grains, mainly maize, wheat and sorghum. It provided an integrated package of services in the form of supply, tractor hire services and credit. However, the realisation of the goal of food self-sufficiency proved difficult to achieve due to declining agricultural production. The decline in output that had been observed prior to the Food Self Sufficiency Programme continued during and after implementation of the programme. Given the declining trend in agricultural output, there was corresponding intensification of household food insecurity and rural poverty (UNDP, 1998).

The failure to significantly increase agricultural output after two decades of price subsidies and import controls prompted the government to revise agricultural policies in favour of market-determined prices and diversification of production. The government adopted an Agricultural Sector Development Programme (ASDP) in 1996 (Department of Development Planning, 2000). It marked the beginning of comprehensive agricultural reforms. Price controls were abandoned and various public sector agro-industries were identified for divestiture. A three-year Agricultural Policy and Capacity Building Project (APCBP) sponsored by the World Bank was implemented to create an enabling environment for increased participation by all stakeholders in agricultural development.

Its objectives were to: build the capacity of the Ministry of Agriculture for client responsive delivery of services, decentralise the ministry's activities by increasing the role of districts in decision making in resource allocation and implementation, develop new systems of decentralised management and a sound database, and support a participatory process of land reform (Department of Development Planning, 2000).

A major component of the programme was the Agricultural Sector Adjustment Programme (ASAP), sponsored by the African Development Bank. ASAP had the overall objective of providing the Government with foreign exchange resources. These resources were used for importing agricultural implements, inputs and other related equipment for accelerating private investment in the agricultural sector. Another objective of the programme was to develop capacity in the private sector, to pave the way for commercialisation and divestiture of eligible agricultural parastatals, and assist Government to complete remaining agricultural pricing and marketing policy reforms, and liberalisation for the remaining controlled commodities e.g. bread, fruits and vegetables, dairy products, sugar, pulses, livestock and livestock products (Department of Development Planning, 2000).

Two related programmes, which did not directly fall under ASDP, but which complemented its objectives, were the Sustainable Agricultural Development Programme in the Mountain Areas and the Berea Rural Development Programme. The first programme had as its objectives household food security and rural employment creation through effective and efficient delivery of core agricultural support services. It aimed at responding to the needs of smallholder farmers and also increasing household farm incomes through crop diversification as well as improved livestock production with due attention given to sustainable natural resource use and management. The programme area covered the three mountain districts of Mokhotlong, Thaba-Tseka and Qacha's Nek. The second one aimed to support increased production of food and high value crops among smallholder farmers in the Berea District. This was to be achieved through improvement in the delivery of agricultural credit, promotion of improved farming techniques, protection and improvement of the environment through soil and

water conservation and development of rural infrastructure such as access roads and village water supply (Department of Planning and Policy Analysis, 2003).

The Government of Lesotho established the Lesotho Agricultural Development Bank (LADB) in 1980 with the objective to serve as an apex organisation for rural savings and a central source for agricultural credit. LADB was closed in 1998 due to the problems of heavy losses, illiquidity and severe capital deficiencies, and since its closure, the objectives for its establishment have been seriously undermined (Department of Development Planning, 2000). The Central Bank of Lesotho through its Rural Finance Division has been working on a policy document to address the rural financial intermediation process. This proposed policy aims at, among others, mobilising savings and ensuring that credit is available to self-help groups in rural areas, who would use their own group savings as collateral.

Government policies reduced the opportunities for the poor to generate their livelihoods from agriculture and related activities. The FSSP substituted for sharecropping arrangements that might otherwise have provided the poor with opportunities to generate a livelihood. Although some privately owned Lesotho tractors were used by the FSSP, the majority of tractors and tractor drivers used by the Ministry of Agriculture were either owned or employed by the Ministry itself, or by South African farmers. All of these factors reduced the investment opportunities for potential local entrepreneurs (e.g. men who had returned from the mines or farms of SA with improved skills and possibly some savings), and the employment opportunities that would otherwise have emerged. Poor credit discipline under the FSSP merely served to reinforce the poor repayment record of government sponsored agricultural credit schemes, which in turn undermined the development of rural financial markets (Department of Planning and Policy Analysis, 2003).

3.4.2 Overview of the financial sector of Lesotho

The financial sector of Lesotho is characterised by a formal financial sector, the absence of a sizable micro-finance sector, and a very strong informal financial sector. The formal financial sector is regulated and supervised by the Central Bank of Lesotho (CBL). The sector comprises three fully-fledged commercial banks; one savings-only bank; five insurance companies; 29 insurance brokers; 51 licensed moneylenders; three parastatal institutions providing credit; about 75 to 90 cooperative societies with financial functions, and their apex financial body, the Lesotho Cooperative Credit Union League; one pension scheme; and one unit trust company (World Bank, 2004).

Lesotho has no finance houses or leasing companies. At present, there are also no semi-formal financial institutions, i.e. those that operate under a corporate legal status but without a license. Only one non-governmental organisation (NGO), World Vision, plans to establish a micro-finance institution. In the absence of a regulation for micro-finance institutions, such institutions are not permitted to mobilise deposits, and can therefore only provide credit. The informal sector on the other hand is quite varied, and comprises burial societies, which principally cover burial expenses, and also grant loans from their excess liquidity; rotating savings and credit associations (ROSCAS); non-rotating, accumulative savings and credit associations; pyramid schemes and an unknown, but apparently big number of un-licensed moneylenders, in both rural and urban areas.

The CBL is concerned by the low levels of competition in the country and wishes to encourage more competition. One of the concerns of the CBL is the low level of lending within the country. The causes of these low levels are complex. First, the fully fledged commercial banks are subsidiaries of foreign banks, and their main business is to provide financial services to companies operating in both RSA and Lesotho. Second, the 1998 political events disrupted their confidence in the stability of the country, and it took the banks a long time to gain more confidence in the prevailing situation. Third, the repayment culture of the Basotho is not very pronounced, and many individuals and

companies borrowed from parastatal credit institutions and the Lesotho Bank without being forced to pay back their loans. Fourth, the local infrastructure to avoid over- and double-borrowing, such as a credit bureau and the issue of an identity card to all citizens, is not in place. The fifth cause is probably the most critical, i.e. the absence of a functional commercial court with accelerated proceedings and the rapid execution of court decision against debtors. The gravest concern of the CBL is the absence of suitable legislation related to non-bank financial institutions, and the concomitant human and financial resources to supervise non-bank financial institutions and enforce decisions and compliance (FinMark Trust, 2003).

The current legislation pertaining to credit unions is inadequate, as it permits the mobilisation of deposits from the general public without any prudential regulations and without any form of control. Credit unions are not even regularly audited. The regulations pertaining to moneylenders are outdated and do not impose even the slightest prudential management. In addition, the ceiling on interest rate levels are not at all enforced, reporting is not checked, and the data reported by them are not analysed, due to lack of manpower. Furthermore, there is no legislation pertaining to microfinance institutions, which have in so many other African countries partially filled the gap left by the commercial banks and the informal sector. The absence of a regulation controlling pyramid and investment schemes, which have grown exponentially in the past years, is also of great concern to the CBL and policy makers (World Bank, 2004).

Lesotho does not have a capital market. Recently, unit trusts have been established under the Collective Investments Act of 2001. As there is no stock exchange, unit trusts function more as venture capital funds, investing directly in companies. Government securities are traded through the CBL. The lack of effective long-term capital markets contributes to the inability of banks to engage more in term lending and there is no deposit insurance facility in Lesotho (World Bank, 2004).

3.4.3 Financial institutions in the study area

This section discusses the two major financial institutions serving small-scale farmers in the study area. The two institutions are the CBL and the Standard Lesotho Bank.

3.4.3.1 The Central Bank of Lesotho (CBL)

The CBL originated from Monetary Authority Act No. 18 of 1978, which set up the Lesotho Monetary Authority. The operation of the Authority started in 1980. The Lesotho Monetary Authority Amendment Act No. 2 of 1982 transformed the Authority into the CBL, reflecting the additional functions that were added. A comprehensive legislative revision was carried out in 2000 culminating in the CBL Act No 2 of 2000, which grants the Bank operational autonomy and independence. The most important functions of the CBL today include: to act as the bank to the government; to act as the lender of last resort to licensed commercial banks; to grant licenses to financial institutions; and to supervise all licensed financial institutions (World Bank, 2004).

In 1999, CBL took a policy decision to promote financial intermediation to low income and rural communities throughout the country. The policy aimed at taking advantage of the already existing informal financial sector in the form of savings and credit groups. The envisaged policy was based on the realisation that there is a discrepancy between savings mobilisation and resource utilisation between the rural and the urban areas, as evidenced by the co-existence of excess reserves in the urban banking sector and the shortage of savings and credit extension to low income and rural communities, and on the excellent repayment record that was observed within the savings and credit groups. In most cases, loans extended within the framework of these groups perform even better than those within the formal sector since they are recovered with a 100% rate despite the fact that they are often extended without any form of collateral. This is believed to be due to the inherent characteristics of the informal financial sector, which are based on social and cultural underpinnings (Central Bank of Lesotho, 2001).

Against the above background, the objective of this policy is basically to encourage low income and rural sector borrowing from the formal banking sector for productive activities, thereby raising the incomes and living standards of intended beneficiaries. Strategies to be pursued in order to achieve this objective as outlined by the CBL (2001) are as follows:

- The Savings and Credit Groups will continue to be used as vehicles of credit to the rural and low-income households. The advantage of this is to significantly reduce both the covariant risk and transaction costs for the formal banking sector.

- The groups will be slightly formalised without necessarily changing their current structures. This is deemed to be necessary, as banks will require the groups to have some legal status before they can do any business with them. However, CBL has recognised that there would be a risk that this formalisation exercise may be at the expense of the very informality that keeps the groups alive. Hence there has been the development of a new regulatory piece of legislation that borrows very heavily from the Societies Act of 1966.

- Following their formalisation, the groups will then be linked with the formal banking sector under a linkage-banking programme, which emphasises savings-based credit. To facilitate this programme, the government has established a credit guarantee fund to secure loans that banks extend to the groups in excess of their savings with such a bank.

- Based on the finding that one of the major weaknesses of past attempts at a rural intermediation project has always been failure to follow proper business practices, training and proper supervision of the groups form an integral part of the policy. With regard to training, heavy emphasis is placed on basic principles of bookkeeping and accounting to try and standardise record keeping in all groups.

- Along with the above short-term strategies, the long-run strategy is to encourage the growth and independence of these groups into fully-fledged rural banks. As a result, the envisaged credit guarantee fund will only be a short-term measure, meant to encourage the formal banking sector towards dealing with groups, and will be phased out with time as confidence in the programme grows.

Regarding implementation procedures, groups that wish to benefit from the scheme will first need to register under the relevant piece of legislation, on condition that they meet the stipulated criteria with regard to composition of membership and proof of prior existence. Following registration, a group will submit its application to any commercial bank (in the country) which will appraise group projects independently under its conventional scrutiny, and if the group qualifies, the commercial bank will then forward the application to CBL for guarantee approval. CBL will then advise the relevant commercial bank about the approval, indicating the extent of the guarantee and terms thereof.

In order to avoid opportunistic behaviour by both commercial banks and groups, CBL proposed that only 50% of the risk will be borne by the fund, the banks and groups shouldering 30% and 20% respectively. Moreover, any claims from the fund will have to be supported by concrete evidence that firstly, proper banking practices were followed in issuing the loan and secondly, the best was done by the commercial bank to recover the loan (Central Bank of Lesotho, 2001).

3.4.3.2   The Standard Lesotho Bank

The Standard Lesotho Bank was born of the merger between Standard Bank Lesotho and Lesotho Bank (1999) in 2006. The Standard Bank Group operates 15 branches, with one branch in each of the locations of the district administration. The bank accounts for about two thirds of all commercial bank assets in the country. Most of its business is geared at corporate customers, in particular those operating from RSA. The

bank also offers savings accounts with minimum opening amounts and minimum balances, which are not favourable to the entry of low income population. It also offers personal and small business loans (FinMark Trust, 2003).

In 2005/06 the bank was approached to be the financial partner for the Government of Lesotho's (GoL) block farming vision. This vision was to commercialise Lesotho's agricultural sector by using the concept of block farming to group together small tracts of land into larger, economically viable and productive blocks. Standard Lesotho Bank felt that the involvement of the bank would bring increased efficiency to Lesotho's agricultural sector. In addition, the GoL offered a 100% guarantee on all loans given by Standard Lesotho Bank to the block farmers. Given the extent of the low yields that farmers were experiencing, a pilot project was deemed essential to pave the way forward. Initially, 245 ha were identified for the pilot project to allow farming practices to be closely monitored to ensure that recommendations were carried out with 100 % accuracy. This pilot project was extended to cover 1 000 ha and was termed programme 1. A second block, termed programme 2 was developed a year after programme 1 on a further 2 500 ha (Standard Lesotho Bank, 2008).

Prior to the pilot of block farming, Standard Lesotho Bank had no involvement in Lesotho's agricultural sector. However, as part of the larger Standard Bank Group they were able to call upon Standard Bank RSA's agricultural specialists for advice on how to structure the financing. Standard Lesotho Bank currently has two fully qualified agricultural specialists dedicated to the block farming project. Cash flows for programmes 1 and 2 were supplied by the GoL. Standard Lesotho Bank chose to open one account for each of the different blocks within each programme, amounting to around 30 accounts. The block leader for each of these 30 blocks was then allocated the necessary funds required to farm and provided with a letter of sanction by Standard Lesotho Bank. In total, finance has been provided for production loans to the value of R105 million. However, GoL has given the farmers a 30% subsidy on the production loan, meaning that of the R105 million, only R73, 5 million needs to be repaid by the farmers themselves (Standard Lesotho Bank, 2008).

The most important role of Standard Bank Lesotho as a financier behind block farming was to educate farmers regarding loan repayments. The main purpose of that educational process was to ensure that farmers understood that even when yields are low loans still have to be repaid, changing the mindset of farmers to acknowledge that bank loans are not a subsidy and thus have to be paid back.

Head of personal and business banking, William Stokes says that ideally block farming should help to create at least 10 individual commercial farmers. These farmers would in turn be able to mentor other farmers to follow the same route. Stokes feels that the success of block farming is ultimately the establishment of a number of commercial farmers who would be able to obtain loans on their own merit without a government guarantee or a subsidy. Jacques Taylor (Head: Agriculture, Standard Bank, Africa) as quoted by Standard Lesotho Bank (2008) says that the Bank sees smallholder farming as the engine for economic growth in Africa. The large share of agriculture in GDP across Africa suggests that strong growth in agriculture is necessary for overall economic growth. Given the growth linkages into other economic sectors, growth in the agricultural sector will foster growth in agro-processing and food marketing and demand for intermediate inputs and services. As the concept of block farming in Lesotho gains momentum, the bank will have a key role to play in providing innovative financing solutions to the agricultural sector in that country (Standard Lesotho Bank, 2008).

3.5 SAMPLING TECHNIQUES

Data for this study were therefore collected from the two largest agro-ecological zones of Lesotho, those being the Lowlands and the Highlands. Crops and livestock are predominantly produced in these regions respectively. As mentioned in Chapter 1, a sample of 100 small-scale famers was interviewed in a household survey conducted in 2008.

Sampling involves the determination of the sample size giving recognition to the fact that it should be representative enough to conduct reliable statistical analyses. A sample size depends largely on the degree to which the sample population approximates the characteristics and qualities present in the general population (Montshwe, 2006). Scheaffer, Mendenhall and Ott (1990) as quoted by Montshwe (2006) define a sample as a collection of sampling units drawn from the sampling frame, i.e. a sample is a fixed part of a statistical population whose properties are studied to gain information about the whole population.

The manner in which the sample units are selected is very important. Representativeness and adequacy should be taken into consideration when generalising from the sample to the larger population (i.e. the sample is used to make inferences to a universe). A statistically adequate sample is one that is of such size that the inferences drawn from the sample are accurate to a given level of confidence (Frick and Groenewald, 1999). De Vos *et al*. (2002) add that representativeness means that the sample selected should have approximately the same characteristics as the population relevant to the research in question.

A sample becomes inaccurate mainly due to human factor/bias and distortion due to the selection method. Generally speaking, the components of the sample are chosen from the population by a process known as randomisation (Babbie, 2001). According to Babbie (2001), randomisation means selecting a part of the whole population in such a way that the characteristics of each of the units of the sample approximate the broad characteristics inherent in the total population.

Cross-sectional data obtained from a sample of 100 farmers in the study area were used in this study. The data were collected by means of personal interviews in a sample survey conducted in 2008, among the farmer population of the two largest agro-ecological zones in Lesotho – the Lowlands (both northern and southern) and the Highlands regions. A random sample of districts in the regions was done to select representative districts in each region. Leribe, Mafeteng, and Berea districts

represented the Lowlands while Mohale's Hoek and Thaba-Tseka districts represented the Highlands region. Stratified random sampling was employed to select borrowers and non-borrowers for the study and it entailed dividing the whole farmer population into mutually exclusive strata, and then randomly selecting units from each stratum. Random sampling was applied within each stratum as it often improves the representativeness of the sample by reducing the sampling error (Babbie, 2001).

3.5.1 Identification and selection of survey sample

A guideline of the basic principles of choosing a representative sampling size as given by Jarvis *et al.* (2000) points out that sampling size depends on the amount of variation among samples. A larger sample size will give more information on the variation between samples than would a smaller sample, thus, the more homogeneous the population, be it in terms of household characteristics or variability of the population, the less the need will be for larger sample sets. A random sample of villages appropriate for the study was identified in collaboration with the extension workers from each of the 5 districts, and lists of potential farm households were drawn up with the help of relevant district agricultural offices.

A sample of 10 villages representing about 30% of the villages was drawn from 33 villages covering the selected agricultural resource centres. A stratified random sampling procedure was employed to select borrowers from non-borrowers and to ensure representation of all the sub-centres. About 10% of small-scale farming households within each of the 5 villages were randomly selected for the household survey making a sample of 100 respondents. Due to the time consuming nature of the study and limited resources, the number of farm households targeted in the study was 130 but only 100 were interviewed and of the 100 households sampled, 32 were borrowers and 68 were non-borrowers. The regional distribution is presented in Table 3.3.

Table 3.3:   Distribution of borrowers and non-borrowers

Region	Borrowers	Non-borrowers	Total
Lowlands	19	41	**60**
Highlands	13	27	**40**
Total	**32**	**68**	100

Source: Survey data, 2008

3.5.2 Survey technique

In order to explain the purpose of the study and to establish farmers' willingness to participate, selected farmers were contacted in advance either directly or through the area extension officer. The methods used for data collection were both quantitative and qualitative in nature. The survey instrument used was a questionnaire, completed by means of personal interviews. The questionnaire was administered at household level and where possible, in the farmers' fields. This helped to verify the information provided by the farmer. The household member interviewed was mainly the household head, who could be either male or female.

The information collected in the survey included data on household demographics, land tenure, agricultural production, livestock ownership and credit and savings. The agricultural data used for the study cover the 2007/08 season. Control questions were included in the questionnaire to verify the consistency of the answers given by the respondents on various questions. In addition, enumerators were instructed to use control questions not included in the questionnaire whenever there seemed to be inconsistencies in respondent's answers. A lot of time was further spent in the field and in the office checking the consistency of answers to questions.

3.6   SUMMARY

The development of the rural economy in developing countries depends on growth in agriculture and other small and medium enterprises. These enterprises constitute the engine of growth, employment and income for the rural community. The main challenges of agricultural development in Lesotho are to reverse the negative trend in

per capita food production, through increasing crop and livestock production and related income, based on the effective and sustainable use of natural resources. In Lesotho, however, inadequate credit facilities and development funds, as well as high input costs, negatively affect agricultural production. Agricultural credit used to be provided mainly by the LADB, but this bank has since been closed and the vacuum left by its closure makes it crucial that an appropriate institutional framework is developed to address the provision of financial services for rural communities that depend largely on agriculture.

The data for this study were collected by means of personal interviews in a sample survey conducted in 2008. The study was conducted in Lowlands and Highlands regions of Lesotho. Leribe, Mafeteng, and Berea districts represented the Lowlands while Mohale's Hoek and Thaba-Tseka districts represented the Highlands region. The sample consisted of 100 farmers of which 32 were borrowers and 68 non-borrowers.

CHAPTER 4:   DESCRIPTIVE RESULTS FROM THE SURVEY DATA

4.1   INTRODUCTION

The review of literature in Chapter 2 has shown that access to credit is an essential element to a well performing farm enterprise. Literature has also shown that access to credit is dependent on a number of factors that may be specific to households. To be able to study these factors well, it is essential that information on characteristics of the farming households be obtained.

The objective of this chapter therefore, is to give an overview of data regarding the demographic characteristics of households. Household production and incomes will be presented. Financial transactions of households will also be discussed; finally, qualitative assessment of some important credit aspect will be presented.

4.2   DEMOGRAPHIC CHARACTERISTICS OF HOUSEHOLDS

Responses of respondents regarding the demographic characteristics of households are summarised as follows:

4.2.1   Gender of household head and household size

Table 4.1 presents the gender of all farmers and household size of sampled households in percentages. The sample consisted of 56% males and 44% females and there were 32 borrowers and 68 non-borrowers. Out of the 32 borrowers, 56% were males and 44% were females.

Table 4.1:   Gender of household head and household size

Variable	All Farmers (%) N= 100	Borrowers (%) N= 32	Non-borrowers (%) N=68
Gender			
Male	56	56	56
Female	44	44	44
Household size			
1–3	17	13	19
4–6	38	34	40
7–9	29	44	22
10–12	10	03	13
13–15	06	06	06

Household size on the other hand, ranges between a minimum of 1–3 people to a maximum of 13–15 people. Generally, non-borrowers have more people in most of the ranges than the borrowers and this is in line with findings from Spio (2002), who indicated that larger families have a smaller tendency of obtaining a loan as they tend to use members as labour and may substitute this for cash inputs like herbicides and or sell additional family labour on the market, and in return use off-farm income to purchase cash inputs, hence reducing the need for a loan.

4.2.2 Labour and age of household head

Table 4.2 presents the average age of respondents and the average number of family members that are used as labour. On average, 4 family members are involved in farming; however, with non-borrowers 6 members of the family are involved in farming as opposed to only 3 family members for the borrowers. This could be caused by the fact that poorer families tend to have more children and because it is difficult for them to obtain credit for their farming activities, they opt to use family members as cheap labour. Contradictory to family labour, borrowers hire more labour (10) on average than non-borrowers (6).

Table 4.2:   Family labour and age of household heads

Item	Family labour			Age of household heads		
	All Farmers	Borrowers	Non-Borrowers	All Farmers	Borrowers	Non-Borrowers
Mean	4	3	6	53	50	54
Standard deviation	3.153	2.591	3.843	12.163	9.578	13.020
Minimum	1	1	1	18	29	18
Maximum	14	10	14	80	71	80

The average age of sampled household heads is 53, with non-borrowers being on average 4 years older than borrowers (54 vs. 50).

4.2.3 Levels of education

The educational levels of respondents were determined and they range from no education to university level. The educational qualifications of respondents are presented in Figure 4.1. Only 12% of households in the sample had never received any formal education. Figure 4.1 also indicates that a large percentage (41%) of non-borrowers attended school only up to the primary level, while on the other hand a large percentage (25%) of borrowers attended up to the secondary level.
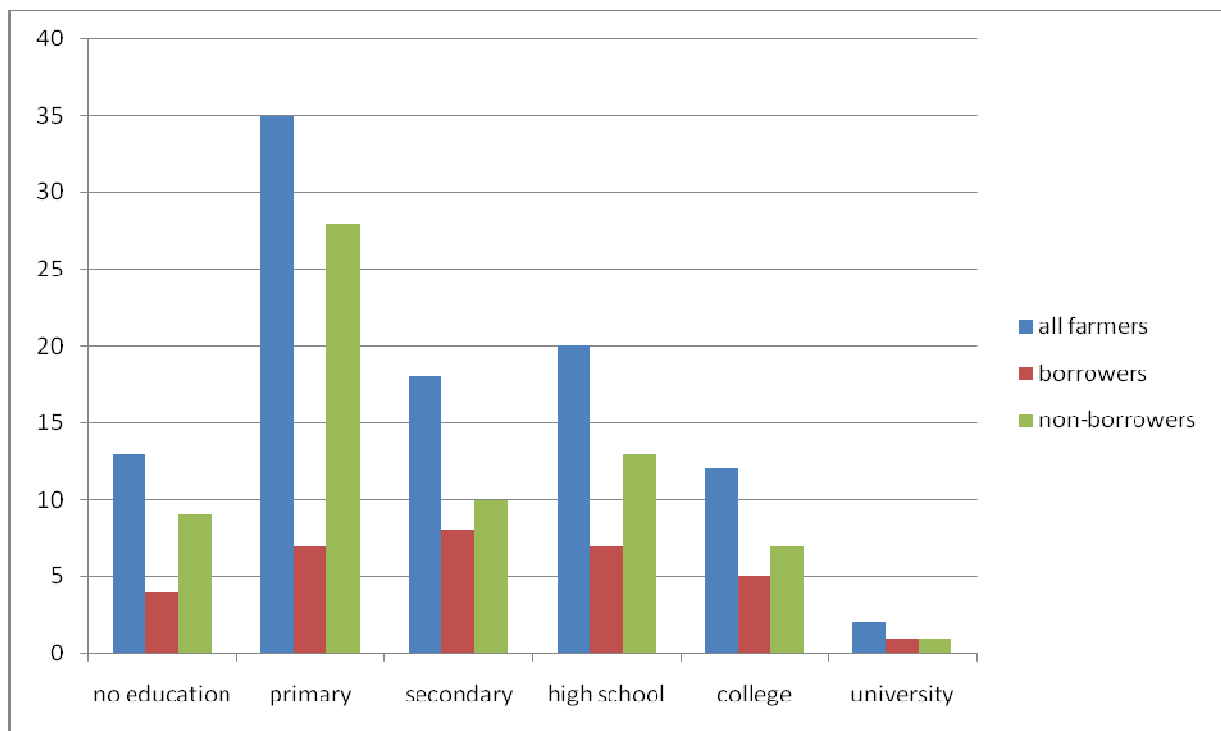
Figure 4.1:   Educational background of respondents in percentage per level

About 19% and 22% of non-borrowers and borrowers had gone through and completed their high school education, respectively. All in all, both borrowers and non-borrowers tend to have attended school at least beyond primary level.

4.2.4 Land ownership (Tenure)

Table 4.3 shows that land ownership (tenure) in Lesotho is characterised by farmers who own their farmlands. About 67% of sampled households hold title deeds to their farmlands, while 33% do not have title deeds. The relatively high percentage of land ownership may be attributed to the fact that land is inherited in Lesotho; hence it is very rare (but not unlikely) to find farmers farming on rented or communal lands. Rented and communal lands, however, are mostly utilised by share-cropping and livestock farmers respectively. The percentage of borrowers without title deeds (66%) is higher than of those with title deeds (34%), indicating that about 66% of borrowers do not necessarily own land that they farm on. One explanation for this could be that these farmers either rent their land or are involved in the government scheme of block farming. This shows that borrowers regard farming as a business from which they can derive their income and improve their standards of living.

Table 4.3:   Land ownership (tenure)

Variable	All Farmers (%) N= 100	Borrowers (%) N= 32	Non-borrowers (%) N=68
With title deed	67	34	82
Without title deed	33	66	18

4.3   HOUSEHOLD PRODUCTION AND INCOMES

Information on household production and income activities for the 2007/08 cropping season was also collected and summarised as follows:

4.3.1 Area cultivated and farm income

Figure 4.2 illustrates average area cultivated and Table 4.3 presents average farm incomes obtained by sampled households during the 2007/08 cropping season.
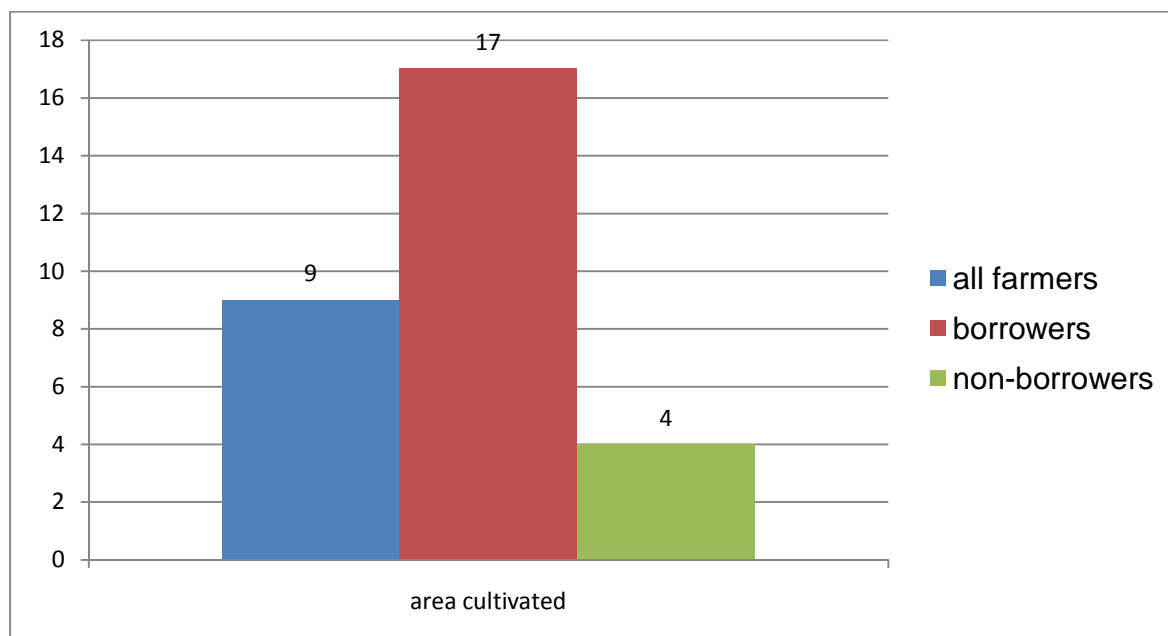
Figure 4.2: Average area cultivated (ha)

The overall average area cultivated in the sample was about 9 ha. Borrowers however, cultivated more than non-borrowers (17 ha vs. 4 ha), hence farm incomes were higher for borrowers than they were for non-borrowers, with borrowers having earned on average R92 585 and non-borrowers having earned on average R18 706. The wide gap between the minimum and maximum amounts earned must, however, be noted. The minimum amounts earned on average were R1 188 and R653 for borrowers and non-borrowers respectively, with a maximum on average of R678 600 and R405 000 for borrowers and non-borrowers respectively.

Table 4.4:   Average farm income

Item	All Farmers	Borrowers	Non-Borrowers
Average	46 411.34	92 585.87	18 706.63
Standard Deviation	114 139.337	165 081.110	52 029.53
Minimum	653.40	1 188.00	653. 40
Maximum	678 600.00	678 600	405 000.00

4.3.2 Non-farm income and remittances and pensions

Table 4.5 presents average non-farm incomes obtained by both borrowers and non-borrowers. Unlike farm incomes where borrowers earned higher incomes, for non-farm income the opposite was true, with non-borrowers having a higher income on average (R3 134 vs. R2 840). One conclusion that could be drawn from this is that many of the non-borrowers might be part-time farmers. Both borrowers and non-borrowers also indicated that they derived some of their income from other sources such as remittances and pensions, as indicated in Figure 4.3.

Table 4.5:   Average non-farm incomes

Item	All Farmers	Borrowers	Non-Borrowers
Average	3 064.29	2 840.00	3 134.38
Standard deviation	4 174.959	2 429.609	4 652.337
Minimum	600.00	1200.00	600.00
Maximum	20 000.00	7 000.00	20 000.00
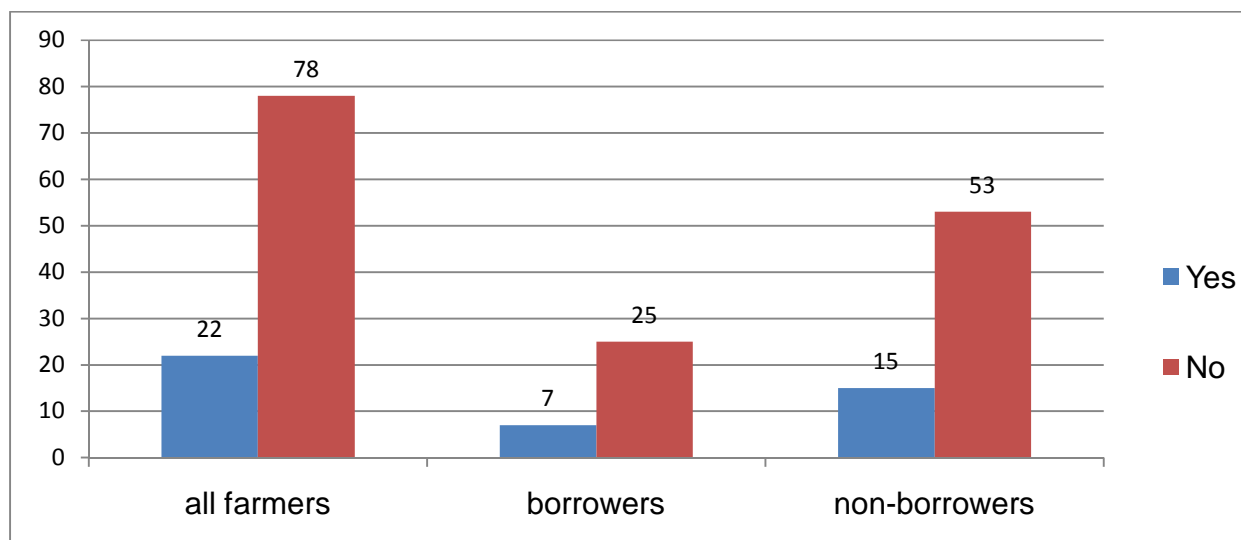
Figure 4.3: Remittances and pensions in percentages

4.3.3 Loans

Apart from deriving their income from farm and non-farm activities, 32% of farmers indicated that they obtained loans to supplement their income. Table 4.6 indicates that on average borrowers borrow an amount of R91 883.

Table 4.6: Average loans obtained by borrowers

Item	All Farmers	Borrowers	Non-Borrowers
Average	29 402.57	91 883.02	
Standard deviation	97 032.288	155 377.031	N/A
Minimum	2 000.00	2 000.00	
Maximum	680 000.00	680 000.00	

Source: Survey data, 2008

N/A = Not applicable

They borrow from as little as R2 000 to as much as R680 000. Even though borrowers have other sources of income to supplement their farm income such as income derived from non-farm activities and remittances and pensions, the combined income earned is in most cases not enough to meet the loan obligations of borrowers and most of the time results in many borrowers defaulting in their loan repayments.

Overall, borrowers have higher values than non-borrowers for most of the characteristics and this could imply that non-borrowers are mostly farming at a subsistence level whereby they produce mainly to consume and sell the surplus, while the borrowers tend to produce mainly for selling.

4.4 FINANCIAL TRANSACTIONS BY HOUSEHOLDS

Data on financial transactions by households for the 2007/08 farming season were also collected and responses of respondents on raised issues are summarised as follows:

4.4.1 Credit status and sources of credit in the survey area

Credit status and sources of credit are presented in Table 4.7. About 32% of sampled farmers had obtained loans in 2008 when the survey was conducted. These loans came from both formal and informal credit sources. The formal sources consist mainly of the commercial banks and the Department of Crops under the Ministry of Agriculture and Food Security, while the informal sources mainly comprise farmers' associations and stockvels.

Table 4.7   Credit status and sources of credit in the survey area

Variable	Number of farmers	% share of total	Interest rate	Collateral
Credit Status				
With loan	32	32	-	-
Without loan	68	68	-	-
Total	**100**	**100**		
Credit sources				
Formal				
Banks	8	25	16	No
Min. of Agric	17	53	15	No
Informal				
Farmers' ass	3	9	30	No
Stockvels	4	13	30	No

Source: Survey data, 2008

Interest rates charged in that particular year (2007/08) ranged between 15% and 30% for the formal and informal sources respectively. None of the farmers indicated that they were asked to provide collateral before getting the loan. Major requirements were land for formal sources and valid membership for informal sources. Thus it appears that collateral is not a major factor constraining the access of small-scale farmers to loans in the study area.

4.4.2 Reasons for not seeking a loan

Reasons for not asking for a loan are illustrated in Figure 4.4. The most common reason given for not asking for a loan was that they preferred to use their own funds, which stood at 31% share of the total. This was followed by those who said they were not aware that the Ministry of Agriculture offered a loan, which was 21% share of the total. The fear that their application would be rejected had the third largest share of respondents among the reasons, at 19%.
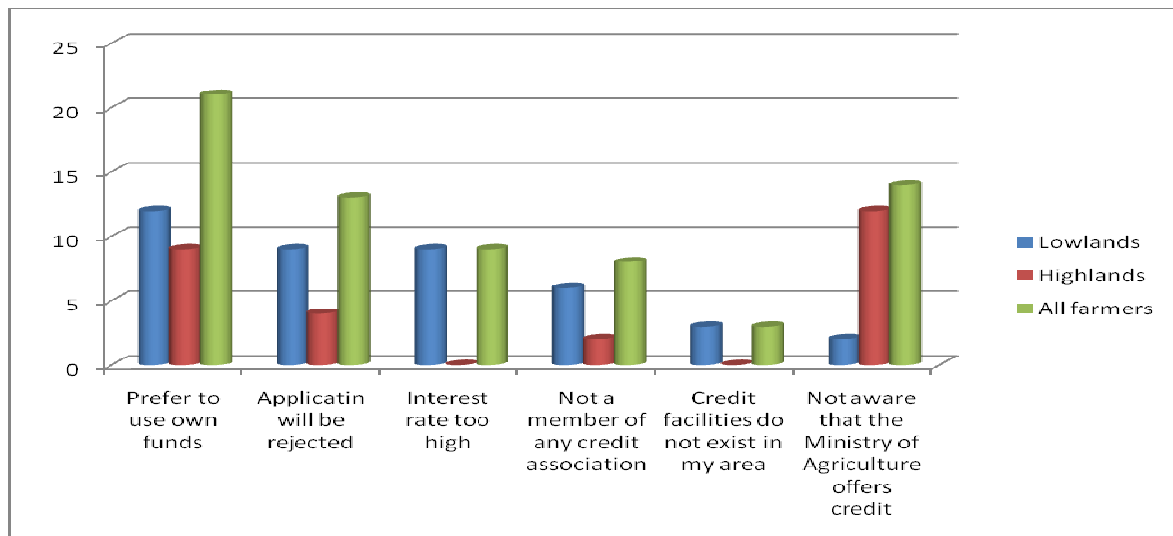
Figure 4.4:   Reasons for not seeking for a loan

4.4.3 Other financial services obtained by sampled farmers

Figure 4.5 presents other financial services obtained by sampled households. About 63% of respondents obtained other financial services from formal financial institutions in the study area while 37% indicated that they had not obtained any other financial service from the formal financial institutions. This shows that respondents do not only require loans from financial institutions but also require other financial services such as bank accounts as shown by Figure 4.6 below.
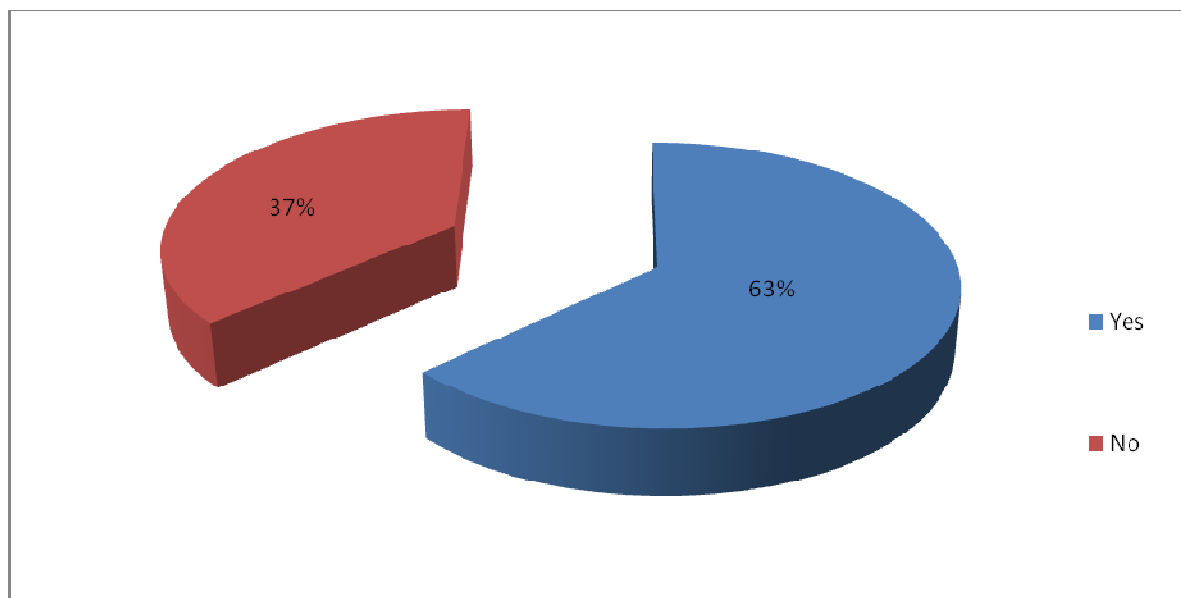
Figure 4.5:   Obtained other financial services
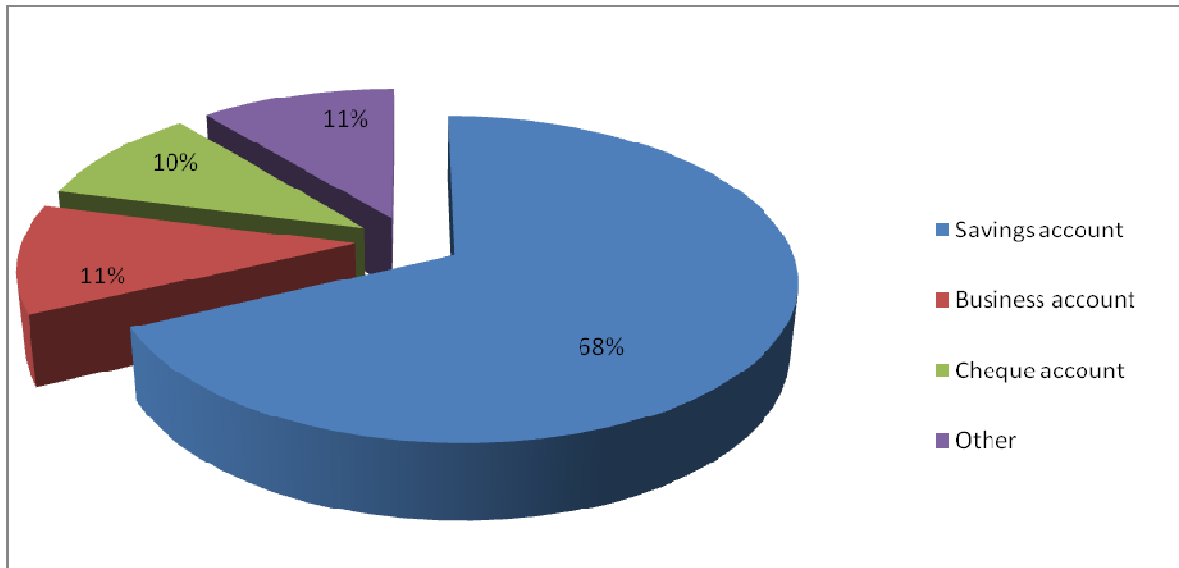
Figure 4.6:   Types of banking services obtained

The most commonly received service was savings accounts (68%) with the usage of the business and other accounts following indistinctly at 11%, and the cheque account at 10%. The results suggest that there is a high demand for other financial services, particularly savings accounts among small-scale farmers in the study area.

4.5   QUALITATIVE ASSESSMENT OF SOME IMPORTANT CREDIT ASPECTS

Some qualitative information was also collected and the responses of the respondents on issues raised are summarised as follows:

4.5.1 Respondents' perceptions on factors limiting their chances to formal credit

The study aimed at capturing respondents' views and opinions on factors that limit their chances to access credit from formal financial institutions. About 4 factors were mentioned and they include: lack of awareness (35%), lack of collateral (28%), prefer to use own funds (23%) and high interest rates (14%).

4.5.2 Impact of credit on household income and expenditure patterns

The 32 respondents who received loans were asked to list their views with regard to the changes in their income and expenditure patterns after receiving loans. Respondents' opinion on the profitability of their farming activities are summarised in Table 4.8 below.

Table 4.8: **Respondents' perceptions of profitability of their farming activities**

Response	No. of cases	Percentage
Yes	26	81
No	4	13
Not sure	2	6
Total	**32**	**100**

About 81% of respondents indicated that they thought their farming activities were profitable and that there was an increase in income and expenditure levels after a loan, whilst only 13% indicated that no changes occurred and the remaining 6% were not sure if there was any change in their income and expenditure levels after a loan.

4.5.3 Loan repayment

Borrowers were also asked to indicate whether they were in arrears or have completed repaying their loans. Out of 32 borrowers, 31% reported that they had completed repaying their loans in time without difficulties, while the remaining 69% were still in arrears and faced difficulties in servicing their loans.

4.5.4 Respondents' attitude towards saving money

Out of the total sample of 100 farmers, 63% showed a positive attitude towards saving money, pointing out that saving is an essential element for increased production as it enables farmers to have access to working capital. However, 37% of respondents did not feel the same way and showed total reservations on saving money they earned.

Table 4.9:   Reasons for not saving money

Reasons	No. of cases	Percentage
Not making any profit	10	27
Use the money to pay labourers	7	19
Use the money for household needs	5	14
Use the money to purchase production inputs	5	14
High transaction costs	3	8
No banks nearby	3	8
Interest rate on saved money is too low	2	5
Do not know of any savings facilities	2	5
Total	**37**	**100**

Table 4.9 presents seven reasons the respondents provided for not saving money, with the reason of not making any profit making top of the list at 27% and low interest rate on saved money and not knowing of any savings facilities being the least mentioned reasons, both at 5%. This group of respondents, even after being given adequate clarifications by interviewers about the importance of saving money still showed reluctance even to at least consider saving part of their earnings.

4.6   SUMMARY

Small-scale farmers in the survey area are on average in their mid-fifties and mostly have title deeds to the land they farm on. About 32% of sampled farmers had access to credit; however, 66% of these farmers do not hold title deeds to their farmlands. Most of the credit used by sampled farmers came from the Ministry of Agriculture and Food Security (block farming programme). Findings indicate that both borrowers and non-borrowers tend to have attended school at least beyond primary level. Findings further indicate that borrowers on average have relatively higher values than borrowers with regards to area cultivated, hired labour and farm income. Non-borrowers, however, have higher non-farm income.

CHAPTER 5: EMPIRICAL PROCEDURE AND RESULTS

5.1 INTRODUCTION

This chapter builds on the results of the previous chapter, which addressed individual characteristics of small-scale farmers. It examines the influence of various factors that form conditions within which small-scale farmers operate. The chapter is divided into two main sections. The first section presents a review of theories on data analysis and the econometric model used. The second section presents and discusses the results of the data analysis.

5.2 MODEL SPECIFICATION

Two econometric models used in this study are discussed in this section. A logistic regression model (logit) was used to assess factors affecting small-scale farmers' access to credit. The second model is the principal component regression (PCR), which was used to solve the problem of multicollinearity.

5.2.1 Analysis of factors limiting small-scale farmers' access to credit

The financial constraints on small-scale farmers in applying modern technology efficiently arise from their low level of income, as well as lack of savings. The only option left is to borrow from either formal or informal credit sources or use insufficient social benefits such as pensions.

When analysing factors that limit small-scale farmers' access to credit, the dependent variable considered takes the form of a *Bernoulli* (binary or categorical) variable (i.e. either 1 or 0), where 1 denotes that a farmer has access to credit and 0 denotes that a farmer does not have access to credit. The method of estimation has been strongly and clearly guided by the form of the dependent variable considered in this study, since the objective is to determine the probability of small-scale farmers' participation in formal

and informal credit markets and the factors that will affect it. Categorical dependent variables require an understanding of their nature for a reliable successful statistical analysis to be performed. The larger the number of categories used for each variable in the model, and the more variables that are being interrelated, the greater the number of cells and sub-cells and thus the more complex the analysis becomes (Montshwe, 2006).

The ordinary least square method (OLS) is probably the most widely used statistical methodology in existence. This method has been highly successful in solving problems with a continuous dependent variable, but given the categorical nature of the dependent variable used in this study, OLS has a tendency to create problems. If there are no restrictions placed on the values of the independent variables, the predicted values of the outcome variables may possibly exceed either of the limiting values of 1 or 0 (Montshwe, 2006).

The classical regression assumption of heteroscedasticity of the error term is also likely to be violated, especially if the proportions in the total sample are close to either 0 or 1. According to Kleinbaum (1994), this difficulty may be seen in connection with the bivariate equation $Y = \alpha + \beta X + \varepsilon$ and evidently generation to the multivariate case. If the Y value for any given individual must be either 0 or 1, and yet X may vary continuously, then the disturbance term cannot be normal and will of necessity be a function of X, contrary to the assumptions required by ordinary least square. Given the violation of the classical regression assumptions, OLS could not be used for the estimation of the model.

Discriminant functional analysis is also a functional form that can be used to analyse a problem with categorical dependent variables. The discriminant functional form $\Sigma L_i \delta_i$ is a linear function of the Xi that gives the smallest probability of misclassification. The Li are coefficients determined in order to satisfy this requirement. Since the Xi follows a multivariable normal, it is known from theory that $\Sigma L_i \delta_i$ is normally distributed. However, if any of the dependent variables are dichotomous or

categorical in nature, then the discriminant functional method tends to give biased results, usually giving estimated odd ratios that are too high. The difference between its mean in the two populations is $\delta = \Sigma L_i \delta_i$ and its variance is $\delta^2 = \Sigma \Sigma L_i L j \delta_{ij}$ (Kleinbaum, 1994). Discriminant functional analysis has been shown by statisticians to be essentially a least square approach (Kleinbaum, 1994). Furthermore, discriminant analysis can only be used with continuous independent variables. Taking into consideration the nature of the independent variables to be used and other aforementioned weaknesses, it therefore means that this functional form could not be employed for the analysis (Kleinbaum, 1994).

There are other alternative models used in modelling the relationship between a categorical dependent variable and a set of independent variables; these include logits, probits, tobits and gompits. According to Shtland and Bartona (1998), probit models are employed when the outcome variable used reflects an underlying quantitative variable and this method uses the cumulative normal distribution. The theory of normal probability distribution in probit models renders it inappropriate when dealing with a categorical outcome variable which is strictly qualitative. For the same reason, the tobit and the double hurdle models, which are more suited to quantitative data, could not be used for analysing factors that limit small-scale farmers' access to credit (Spio, 2002).

Logit, on the other hand, is a predictive analysis which uses binomial probability theory. It is not, however, related to chi-square contingency analysis. Logit is a more general analysis, because the independent variable is not restricted to a categorical outcome variable only nor is the model limited to a single independent variable. Consequently, a logit model will be preferred over OLS and discriminant functional analysis (Peng, Lee and Ingersoll, 2002). Kleinbaum (1994) describes logit as a mathematical modelling approach that can be used to describe the relationship of several independent variables to a categorical dependent variable. It is simply a non-linear transformation of the linear regression. The logarithmic transformation in this model stabilises the variance if the standard deviation in the original scale varies directly as the mean. Instead of the t-statistic, the model chi-square will be used to determine the overall model fit.

Shtland *et al.* (1998) stress the consensus that logit is a very powerful, convenient and flexible statistical tool. Spio (2002) adds that logit may be preferred for the following reasons: first, discriminant analysis relies on strictly meeting the assumptions of multivariate normality and equal variance-covariance matrices across groups. The logit analysis, however, does not face these strict assumptions and is more robust when these assumptions are not met, making its application appropriate in many situations. Second, logit can handle categorical independent variables easily, whereas in discriminant analysis the use of dummy variables creates problems with the variance/covariance equalities. Third, logit results parallel those of multiple regressions in terms of their interpretation and the case-wise diagnostic measures available for examining the residuals.

The logit model therefore has the following advantages:
- It imposes a flexible non-linear relationship,
- It allows for threshold and interaction effects,
- It also allows for examination of social interaction.

This study therefore used logit due to its relevance and strength in dealing with the categorical dependent variable, which has independent variables that are both categorical and continuous. However, like many other models, logit models are subject to certain weaknesses such as multicollinearity, which can be solved without reference to the nature of variables, be it outcome or explanatory. PCR will therefore be carried out to check for and solve the problem of multicollinearity.

5.2.2 Specification and estimation of the logistic regression model

The use or non-use of credit sources is explained with the help of household characteristics, using logit analysis. With logit, one can directly estimate the probability of an event occurring. This analysis predicts whether an event will or will not occur and identifies the variables useful in making this prediction.

Accordingly, a farm household has either borrowed (Y=1) or not (Y=0) during the year in which the farm survey was carried out. The explanation of this binary variable requires the construction of a probability model that links it to a vector of factors, X (Greene, 1993). The probability of borrowing decision can then be expressed as:

$$\text{Prob}(Y = 1) = F(\beta'X) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \quad (1)$$

Where β refers to the vector of parameters that reflect the impact of change in X on the probability of the borrowing decision. The choice of a particular form for the right hand side of the equation (1) leads to an empirical model. Adopting the logit analysis, the probability that a farm household makes a decision to borrow from credit institutions is a regression model given by:

$$\text{Prob}(Y = 1) = \frac{1}{1 + e^{(\beta'X)}} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \quad (2)$$

Using equation (2) the probability of borrowing decision could be written as:

$$\text{Prob}(Y = 1) = \frac{1}{1 + e^{-(\beta'X)}} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \quad (3)$$

Equation (3) is a logistic cumulative distribution function where:

$$\beta'X = \beta_0 + \Sigma\beta_i X_i = v_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \quad (4)$$

Where:

e = natural logarithm

β_0 = the constant term

β_1 = the vector of coefficients

X_i = the vector of explanatory variables

V_i = the error term

The estimation of equation 4 using the maximum likelihood method helps to identify statistically significant explanatory variables. It is hypothesised that borrowing from credit sources can depend upon total operated area; tenure status; family labour; literacy status and age of the household head; farm income; savings; awareness of credit institutions; repayment records and off-farm income. The characteristics are important in two ways: they can influence the household demand for credit, and assessment of borrowers' credit worthiness by potential lenders is more likely to be based on these characteristics.

It is difficult to completely separate the variables affecting either demand or access because decision making at both stages is based on almost similar considerations. Therefore, certain variables included in the regression are more related to small-scale farmers' demand for, rather than access to, credit. These include age of household head; farm income; off-farm income and gender of household head. The data specifications are presented in Table 5.1 below.

Table 5.1:   Data specifications: credit status equation (Logit)

VARIABLE	A PRIORI EXPECTATION
Dependent variable: **1 = Access to loan** **0 = Otherwise**	
INDEPENDENT VARIABLES	
Age of the household head in years	Age is expected to affect the probability of being a borrower negatively as comparatively older farmers are not as active in their farming activities.
Farm income (previous year)	A high farm income may reduce the demand for credit on the other hand, may increase the farmer's creditworthiness and in some cases create a demand to expand production. Hence the effect of farm income is indeterminate.
Non-farm income (previous year)	Non-farm income is expected to reduce demand for credit and can be used to purchase cash inputs. The coefficient is expected to be negative.
Financial assets (savings)	Savings can influence the supply and demand size differently; its sign therefore is indeterminate.
Remittances and pension	This variable is expected to reduce the demand for credit. Its sign is expected to be negative.
Farm size in hectares	Farm size is expected to positively affect the amount of the loan as there is greater need for variable cash inputs, and it is expected to increase capital access.
Family labour stock	The effect of family labour stock is indeterminate.
Land ownership (Dummy: 1 = title deed, 0 = otherwise)	Ownership as opposed to rental and other forms of access to land is expected to increase the long run investment incentives and the collateral value of the land to lenders. Its sign is expected to be positive.
Awareness of credit facilities in the area (Dummy: 1 = Yes, 0 = No)	Farmers' awareness of credit channels available in their area is likely to have a positive bearing on their accessibility to credit.
Gender (Dummy: 1 = female, 0 = male)	Males are expected to have greater access to credit than females; hence the gender sign is expected to be positive.
Education (Dummy: 1 = formal education, 0 = otherwise)	Literacy status is expected to influence farmer's access to credit institutions positively because literate farmers are assumed to have a better technical knowledge and information about markets and facilities provided by financial institutions.
Repayment (Dummy: 1 = good repayment record, 0 = bad repayment record)	Good repayment record is expected to affect borrowing positively. The coefficient is expected to be positive.

5.2.3 Principal component regression

Before logit is applied, the correlation coefficient matrix for independent variables must be computed. This is to identify whether there is a problem of multicollinearity or not. Multicollinearity may cause lack of significance of individual independent variables while the overall model maybe strongly significant. It may also result in wrong signs and magnitudes of regression coefficient estimates, and consequently in incorrect conclusions about relationships between variables.

According to Leedy (1994), a common solution for multicollinearity has been to delete one or more of the offending variables or to use Factor or Principal Component Analysis (PCA). In this study, PCR is considered relevant for dealing with the problem of multicollinearity. However, it must be noted that PCR is an extension of PCA and it has been widely used to deal with the problem of multicollinearity.

5.2.3.1 Specification and estimation of the model (PCR)

PCR solves the inverse matrix problem and has the ability to lessen principal components (PCs) so as to reduce errors in the model. The process involves calculating eigenvalues $\lambda_1, \lambda_2, \dots \lambda_K$ from the correlation coefficient matrix C, by solving the equation $|C - \lambda_j I| v_j = 0$. The correlation matrix C uses both standardised and unstandardised variables. The independent variables were standardised as $(X_i - \overline{X}_i)/S_{xi}$.

The matrix of eigenvectors is thus given by the matrix V in equation 1.

$$V = \begin{bmatrix} v_{11} & v_{12} & \cdots\cdots & v_{1k} \\ v_{21} & v_{22} & \cdots\cdots & v_{2k} \\ \cdot & \cdot\cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot\cdot & \cdot & \cdot \\ v_{k1} & v_{k2} & \cdot & v_{kk} \end{bmatrix}$$ ………………………………………………..… (1)

The matrix V is orthogonal since its columns satisfy the conditions $v'_i\, v_i = 1$ and $v'_j\, v_i = 0$, $for\ j \neq i$

The PCA compresses the individual variables into new variables called PCs by reducing the number of dimensions without much loss of information. The principal component matrix Z (equation 2) contains exactly the same information as the original dataset (X^s), except that the data are arranged into a set of new variables which are completely uncorrelated with each other and can be ranked with regard to the extent of their eigenvalues (Draper and Smith, 1981; Myers, 1986), PCs (Z) are computed as:

$$Z = X^S V$$ ……………………………………………………………………… (2)

Where X^S is n x k matrix of standardised variables; V is eigenvector matrix as defined in equation 2. There are k PCs as there are k variables. The new set of variables (PCs) unlike the original variables is orthogonal, meaning they are not correlated.

After the PCs are computed, the PCs with the smallest eigenvalues are eliminated (see Table 5.2 for the remaining eigenvalues). PCR was fitted using the standardised variables to improve the estimation and prediction of the logit model.

$$Ln = \left(\frac{\Phi}{1-\Phi}\right) = B_o^s + X^s VV'B^s + \varepsilon \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(3)}$$

Table 5.2:   Remaining principal components and eigenvalues

Principal Component	Eigen Values	Individual (%)	Cumulative (%)
PC_1	2.8796	22.15	22.15
PC_2	1.6168	12.44	34.59
PC_3	1.3743	10.57	45.16
PC_4	1.1335	8.72	53.88
PC_5	1.0701	8.23	62.11
PC_6	0.9486	7.30	69.41
PC_7	0.9063	6.97	76.38

After insignificant PCs from equation 4 are identified and eliminated, equation 5 is obtained in terms of retained PCs

$$Ln = \left(\frac{\Phi}{1-\Phi}\right) = B_o^s + Z\gamma + \varepsilon^o \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(4)}$$

Where, $Z = X^s V$ and $\gamma = V'B^s$. Z is an n X λ matrix of retained PCs, V is a k X λ matrix of the eigenvectors corresponding to the λ retained components. Standard errors of the estimated coefficients γ are represented by an λ X 1 vector.

$$Var(\hat{\gamma}) = \hat{\sigma}^2 (Z'Z)^{-1} = \hat{\sigma}^2 diag\left(\lambda_1^{-1}, \lambda_2^{-2}, \dots \lambda_l^{-l}\right) \dots\dots\dots\dots\dots\dots\dots\dots \text{(5)}$$

Where $\hat{\sigma}_2$ is a variance of residuals from equation 3. Therefore standard error of γ is given by:

$$k^s = \left(s.e.\hat{\gamma}_1 s.e.\hat{\gamma}_2 \dots \hat{\gamma}_l\right) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(6)}$$

Results obtained using equation 4 could be changed back to the PC estimators of standardised variables as follows:

85

$$
\begin{bmatrix} B_{1,pc}^{s} \\ B_{2,pc}^{s} \\ \cdot \\ \cdot \\ \cdot \\ B_{k,pc}^{s} \end{bmatrix} = \begin{bmatrix} v_{11} & v_{12}\ldots\ldots & v_{1l} \\ v_{21} & v_{22}\ldots\ldots & v_{2l} \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \\ v_{k1} & v_{k2}\ldots\ldots & v_{kl} \end{bmatrix} X \begin{bmatrix} \hat{\gamma}_1 \\ \hat{\gamma}_2 \\ \cdot \\ \cdot \\ \cdot \\ \cdot \\ \hat{\gamma}_{\ell} \end{bmatrix} \qquad\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. \quad (7)
$$

Where $\hat{\gamma}_i$ is an estimator of γ_i in equation 5 the constant $B_{0,pc}^{s} = \overline{y}$. The standardised coefficients evaluate the relative importance of the explanatory variables in determining the probability of participation by small-scale farmers in credit programmes.

According to Fekedulegn *et al.* (2002), variance of the PC estimators in standardised variables may be given by:

$$
Var\left(B_{pc}^{s}\right) = \Psi_{\ell}^{s} K^{S} \qquad\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. \quad (8)
$$

Where Ψ_{ℓ}^{s} contains the squares of the elements of V_{ℓ}^{s} in equation 1 and K^{S} contains the squares of the elements of the matrix of γ in equation 4. The corresponding standard errors for the estimators of PCs of standardised variables are given by:

$$
s.e.\left(B_{pc}^{s}\right) = \left[Var\left(B_{pc}^{s}\right)\right]\frac{1}{2} \qquad\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. \quad (9)
$$

Following Fekedulegn *et al.* (2002), the appropriate transformation of the coefficients back to the original or unstandardised variables is done by:

$$
B_{j,pc} = \frac{B_{j,pc}^{s}}{S_{xj}}, \; j = 1,2,\ldots, \; k \qquad\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. \quad (10)
$$

and

$$B_{0,pc} = B_{0,pc}^{s} - \frac{B_{1,pc}^{s}}{S_{x1}}\bar{x}_1 - \frac{B_{2,pc}^{s}}{S_{x2}}\bar{x}_2 - ...... \frac{B_{k,pc}^{s}}{S_{xk}}\bar{x}_k \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..\ldots.......(11)$$

Where S_{xj} is the standard deviation of the jth original variable X_j and $B_{0,pc}^{s}, B_{1,pc}^{s} pc, B_{2,pc}^{s}, B_{k,pc}^{s}$ are coefficients of the standardised variables.

Partial effects of the continuous independent variables in determining the probability of participation by small-scale farmers in credit programmes can be calculated by:

$$\frac{\partial \Phi_i}{\partial x_{ij}} = \Phi_i \left(1 - \Phi_i\right) B_{j,pc} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.\ldots \ldots\ldots\ldots\ldots\ldots\ldots.. (12)$$

The partial effects of the discrete variables are calculated by taking the difference of the probabilities estimated when the value of the variable is set to 1 and $0 \left(x_i = 0, x_i = 1\right)$, respectively.

5.3   RESULTS AND DISCUSSIONS

The results of the estimated logit model within the PCR framework are presented and discussed in this section.

5.3.1 Results of the logistic regression analysis

The results of the estimated logit model are presented within the PCR framework. The use or non-use of credit sources is explained by using logit analysis. In logit one can directly estimate the probability of an event occurring. It predicts whether an event will occur or not, and it identifies the variables that are useful in making this prediction. Table 5.3 shows the results of the logit estimates.

Table 5.3: Logistic regression estimates

Variables	Coefficient	Std. Error	t-ratio	Probability
Constant	**-1.8869**	**0.4711**	**-4.0051**	**0.0001**
Gender	0.1763	0.3492	0.5048	0.6149
Age	-0.3049	0.2553	-1.1941	0.2356
Farm income	1.0021	0.2189	4.5785	0.0001***
Non-farm income	-0.0064	0.3779	-0.0169	0.0865*
Remittances and pension	-0.2188	0.4056	0.5393	0.0910*
Savings	-0.5657	0.3332	-1.6978	0.0930*
Awareness	-0.1528	0.2562	-0.5962	0.5525
Educational level	-0.1661	0.2538	-0.6546	0.5144
Tenure	-0.6586	0.2025	-3.2523	0.0016***
Farm size	0.7784	0.2070	3.7605	0.0003***
Household size	-0.4063	0.3619	-1.1228	0.2645
Family labour	-0.3271	0.2677	-1.2218	0.0249**
Repayment	-0.8569	0.2090	-4.0999	0.0001***
Log likelihood	-23.7282			

Source: Field survey, 2008

*** Significant at 1%, ** Significant at 5%, * Significant at 10%

All variables used to explain the household formal and informal credit constraints are a response to both demand and supply-side circumstances. A logit analysis was conducted to determine factors that contribute significantly to credit accessibility. Access to the loan variable (whether an individual has accessed credit or not) was regressed on age, farm income, non-farm income, financial assets (savings), remittances and pension, farm size, family labour, land ownership, credit awareness, gender, education level and repayment ability.

In this model, the coefficients of only eight out of thirteen mentioned explanatory variables are significant, at least at the 10% significance level and were found to influence an individual's chances of accessing credit from formal and non-formal credit sources. These include farm income, non-farm income, remittances and pension, farm size, family labour, land ownership, savings and the repayment ability.

The influence of these variables is summarised as follows:

5.3.1.1 Income levels

Non-farm income and remittances and pensions, as a proxy for welfare status, confirm that increasing the household's total income reduces the probability of a household being credit constrained. These variables have the expected negative signs and are both significant at 10%. These results show that the household has less demand for loans because of its own equity capital accumulated through past income earnings and may use this income to purchase cash inputs.

The finding is consistent with the pecking order theory which states that a farmer will choose from a hierarchy of preferences in deciding on the source of finance to utilise (Spio, 2002). Lapar *et al*. (1995) state that the choice is based on the "safety first principle" with internal funds being the safest among the choices; they further state that the more assets the farmer has, the more likely it is that the farmer will not seek external funds, but utilise internal resources to operate the farm. The results validate this statement. The other reason however, might be the poor repayment rates in the area; most might have been denied the loan because they had previously defaulted. The significant negative coefficient of the repayment variable validates this statement. The lender considers the welfare status of a client or potential client before signing a contract to provide the loan. Farm income on the other hand, is positive and significant at 1%, confirming that a higher farm income may improve the farmer's creditworthiness and in some cases create a demand to expand production thus increasing the demand for credit.

5.3.1.2 Farm size

Farm size has the expected positive sign and is significantly different from zero at 1%, with a coefficient of 0.7784 suggesting that a unit increase in the size of the farm is more likely to increase the chances of a farmer to obtain a loan, and further suggesting that the bigger the farm size, the more likely it is that the farmer would obtain a loan.

Sail and Carter (1996) support this by stating that larger farm sizes affect the amount of the loan needed through a greater need for variable cash inputs, hence increasing the need for credit. The results are further supported by Mbowa and Nieuwoudt (1999), Binswanger *et al.* (1993) by pointing out that transaction costs associated with many small loans act as a disincentive for lenders and that the cost of credit to small farmers is more likely to increase, thus discouraging farmers from asking for a loan. In the presence of fixed transaction costs, the cost of borrowing in the formal credit market is therefore a declining function of the farm size. The result is consistent with other results (Mokoena *et al.* 1997; Kashuliza and Kydd, 1996; Spio, 2002).

5.3.1.3 Family labour

Family labour stock on the other hand, has a negative sign and is significant at 5% and has a coefficient of -0.3271. This result shows that a unit increase in family labour stock will decrease the demand for a loan. On one hand the result suggests that larger farm families have a smaller tendency to obtain loans. Family members may substitute labour for cash inputs like herbicides and or sell additional family labour on the market, and in return use off-farm income to purchase cash inputs, hence reducing the need for a loan. On the other hand this result may mean that households with larger families tend to be poor and in most cases may not qualify for a loan as it has been mentioned earlier that the lender considers the welfare status of a client or potential client before signing a contract to provide the loan. The result is consistent with other results, for instance, Nuryartono *et al.* (2005) reported that households with larger families tend to use family members for labour but a greater number of household members increase the probability of being credit constrained. They further explain that family size as a proxy for risk-bearing capacity indicator confirms that the higher the number of household members, the more likely the households is to suffer from risk.

5.3.1.4 Land ownership

Land ownership (tenure) was expected to improve the ability of a farmer to obtain a loan, because ownership as opposed to rental increases the size of the loan as it may

increase the long-run investment incentives and the collateral value of the land to lenders (FAO, 1996). Land ownership however, in this model, is significant but does not have the expected positive coefficient. The negative relationship between land ownership and access to credit could be because most borrowers were participants in the government's programme of block farming where collateral was not asked and issues of land tenure and ownership were not considered in the loan approval and disbursement process. However, the impact of land ownership on accessibility to credit needs to be investigated further.

5.3.1.5   Savings

Savings are significant at 10% and have a negative coefficient, indicating a negative relationship between access to credit and savings. This shows that savings decrease the demand for credit and are expected to substitute for credit. Savings accounts in the study area had little value to lenders as a source of informal collateral.

5.3.1.6   Loan repayment

A good repayment record is expected to affect borrowing positively. The repayment coefficient was expected to be positive; however, it has an unexpected negative coefficient but is highly significant at 1%. The negative relationship between repayment and access to credit in the case of Lesotho could have been caused by the fact that most loans came from the Ministry of Agriculture and Food Security through its programme of block farming. These loans were mainly production loans. The government of Lesotho offered a 30% subsidy and a 100% guarantee on all loans given to the block farmers. This as a result failed to achieve the objective of changing the mindset of farmers that loans are not a subsidy and thus have to be paid back even when yields are low.

5.4   SUMMARY

The econometric framework discussed in this chapter will make it possible to analyse the impact and accessibility of credit on small-scale farmers in Lesotho. Thirteen independent variables were identified and two econometric models were employed for data analysis: the logit model, which was used to assess factors affecting small-scale farmers' access to credit, and the PCR model, which was used to detect and solve the problem of multicollinearity.

Access to credit was found to be influenced by farm income, non-farm income, remittances and pension, farm size, family labour, land ownership, savings and repayment ability. Gender, age, awareness, household size and educational level were observed as having no direct impact on access to credit. Non-farm income, savings and remittances and pensions are significant at 10% and have the expected negative signs. Farm income however, is positive and significant at 1%, confirming that a higher farm income may improve the farmer's creditworthiness and in some cases create a demand to expand production, thus increasing the demand for credit.

Farm size, on the other hand, has a positive relationship with the demand for a loan and is significantly different from zero at a 1% level. Land ownership was expected to be positive; however, in this model, it is significant but has an unexpected negative coefficient. As a result, a firm conclusion could not be drawn regarding its role in access to credit, hence the impact of land ownership on accessibility to credit needs to be investigated further.

CHAPTER 6:   SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1   SUMMARY

6.1.1   Background and problem statement

Agricultural development is important, especially for a growing economy such as Lesotho. However, the small-scale farming sector of Lesotho continues to battle with the task of moving from a traditional agriculture to a more scientific and technology-based one and this consequently leads to poor performance of the agricultural sector. Spio (2002) states that the poor performance of the agricultural sector in many developing countries can be attributed to lack of economic opportunities in agriculture, opportunities that are rewarding to farmers.

Agriculture is the most important contributor to Lesotho's economy and provides livelihoods to a high proportion of the population. It is a major source of economic growth of the country. The arable land has been declining, from around 13% in the 1960s to less than 10% to date (Department of Planning and Policy Analysis, 2003). According to the Department of Planning and Policy Analysis (2003) the decline in arable land has resulted in a decline in total agricultural production, seriously holding back farmers' ability to commercialise, hence most farmers (90%) are smallholders (subsistence and small-scale), with some medium-scale commercial farms.

Other constraints such as lack of access to credit also inhibit agricultural development in less developed countries, and apart from the efforts of governments to ensure that small-scale farmers have access to credit, the provision of financial services to the small-scale farming sector has generally been stagnant and has even declined in some developing countries because of the risks involved in dealing with farmers and the incompetence of some service providers in dealing with small-scale farmers (Kuhn *et al.* 2000). The development of the rural economy in developing countries depends on growth and development in the agricultural sector and other small and medium

enterprises. These enterprises constitute the engine of growth, employment and income for a rural community. In an effort to make the landscape of rural finance more attractive and to fulfil the national objectives of increased production, policy makers and donors adopted the conventional approach of advancing credit, where all practices and operational procedures were geared towards the interests of the borrower (Spio, 2002). These approaches (policies), however, invariably resulted in distortions in the financial markets, and reduced the number of financial products and services to which farmers have access.

In Lesotho, inadequate credit facilities and development funds, as well as high input costs, negatively affect agricultural production. The role of the financial sector is crucial for a successful agricultural diversification. Farmers are faced with several challenges, most of which stem from an ineffective or non-accessible financial system. Moreover, those farmers who want to remain in business need to procure all required inputs on their own. The high cost of inputs coupled with lack of access to credit makes it difficult for these farmers to secure adequate inputs, which subsequently results in lower levels of production. Agricultural credit used to be provided mainly by the Lesotho Agricultural Development Bank (LADB), but this bank has since been closed. The vacuum left by the closure of this bank makes it crucial that an appropriate institutional framework is developed to address the provision of financial services for rural communities that depend largely on agriculture. It is believed that accessibility to credit can help reduce poverty and food insecurities by increasing rural incomes through improved agricultural production. The intention of this study, therefore, is to examine factors that influence small-scale farmers' access to credit, thereby affecting their productivity and to make suggestions for government interventions and for the reduction of market failures in the rural financial markets of Lesotho.

6.1.2 Literature Review

The main focus of Chapter Two was to review relevant literature and present a theoretical framework for analysis of the factors that influence small-scale farmers'

access to credit. A growing body of empirical analysis discussed in this chapter indicate how financial markets and institutions influence and are influenced by economic development, and that there is a positive link between the functioning of the financial system and economic growth in the long-run. Rural households' access to financial services builds up their productive assets and hence improves productivity, and increases opportunities for achieving sustainable livelihoods. This confirms that the development of the financial sector is an important element in any country's economic growth and development. Access to credit (and financial services as a whole) unleashes the economic potential of people who are in most cases bankable but underserved. What is clear from this review is that an efficient allocation of resources can be achieved only through a sound financial structure, which must encompass reasonable regulation; supervision and control; appropriate institutions; and financial instruments that are consistent with savers' and borrowers' preferences and needs.

The literature suggests several alternatives for assessing factors that influence small-scale farmers' access to credit. Currently, there is no study conducted in Lesotho that has attempted to determine the relationship between access to credit and agricultural production. However, similar studies to this one have been conducted in many developing countries around the world and some of these studies include: Foltz (2004), Nuryartono *et al.* (2005), Spio (2002), Mokena *et al.* (1997), Mohamed (2003), Eze *et al.* (2009), Kohansal and Mansoori (2009), Subbotin (2005) and Carter (1988). Most of the empirical studies show that variables that influence an individual's chances of accessing credit from formal and non-formal credit sources are age, farm income, non-farm income, financial assets (savings), remittances and pension, farm size, family labour, land ownership, credit awareness, gender, education level and repayment ability.

6.1.3 The study area

The Kingdom of Lesotho is a mountainous, land-locked country and it is completely surrounded by the Republic of South Africa (RSA). It lies between latitudes 28º and 31º south and longitudes 27º and 30º east. It covers an area of approximately 30 350

square kilometres of which about one quarter in the west is lowland country, varying in height above sea level from 1 500 to 1 600 metres, the remaining three quarters being highlands, rising to a height of 3 482 metres at Thabana-Ntlenyana in the Maluti Range (Department of Meteorology, 2008). Lesotho is demarcated into distinct livelihood zones, namely Lowlands, Foothills, Senqu River Valley and Highlands (also known as Mountains). Each of these zones is characterised by types and levels of availability of resources, and agro-climatological and ecological conditions. The country is also divided into 10 administrative districts which differ in terms of size, topography, climate and stages of development, across which the livelihood zones can be overlaid (FAO/WFP, 2006).

The financial sector of Lesotho is characterised by a formal financial sector, the absence of a sizable micro-finance sector, and a very strong informal financial sector. The formal financial sector is regulated and supervised by the Central Bank of Lesotho (CBL). The sector comprises three fully-fledged commercial banks; one savings-only bank; five insurance companies; 29 insurance brokers; 51 licensed moneylenders; three parastatal institutions providing credit; about 75 to 90 cooperative societies with financial functions, and their apex financial body, the Lesotho Cooperative Credit Union League; one pension scheme; and one unit trust company (World Bank, 2004).

The study was conducted in the two largest livelihood zones of Lesotho i.e. the Lowlands and the Highlands regions. These regions are predominantly producers of crops and livestock respectively. A random sample of districts in the regions was done to select representative districts in each region. Leribe, Mafeteng, and Berea districts represented the Lowlands while Mohale's Hoek and Thaba-Tseka districts represented the Highlands region. A sample of 10 villages representing about 30% of the villages was drawn from 33 villages covering the selected agricultural resource centres, and about 10% of small-scale farming households within each of the 5 villages were randomly selected for the household survey, making a sample of 100 respondents, of which 56 were males and 44 were females. Stratified random sampling was also

employed to select borrowers and non-borrowers for the study and the sample consisted of 32 borrowers and 68 non-borrowers.

The methods used for data collection were both quantitative and qualitative in nature. Information collected included data on household demographics, land tenure, agricultural production, livestock ownership and credit and savings activities of respondents. The agricultural data used covered the 2007/08 agricultural season. Cross-sectional data for this study were collected by means of personal interviews in a sample survey conducted in 2008.

6.1.4 Characteristics of small-scale farmers in the study area

The small-scale farmers in the survey area are on average in their mid-fifties and mostly have title deeds to the land they farm on. About 32% of sampled farmers had access to credit, however, 66% of these farmers do not hold title deeds to their farmlands, and this could either mean that they rented their land or they belonged to the government's scheme of block farming. About 53% of credit used by sampled farmers came from the government's scheme of block farming through the Ministry of Agriculture and Food Security, with 25% and 22% coming from the commercial banks and the informal credit sources respectively.

Both borrowers and non-borrowers tend to have attended school at least beyond primary level. Borrowers on average have relatively higher values than borrowers with regards to area cultivated, hired labour and farm income. Non-borrowers, however, have higher non-farm income which could mean that farming is a part-time activity for them. Even though borrowers have relatively higher farm income values, the maximum income earned (R678 600) is still low relative to the maximum loans received (R680 000) and this is in line with the assertion that most borrowers could be members of the government's block farming scheme where the conditions of borrowing are not very strict. This situation in most cases results in farmers not being able to meet their loan obligations and consequently defaulting in their loan repayments.

6.2   SUMMARY OF EMPIRICAL PROCEDURES AND RESULTS

6.2.1   Summary of empirical procedures

There are alternative models used in modelling the relationship between a categorical dependent variable and a set of independent variables (e.g. logistic regression (logit), probits, tobits and gompits). However, literature revealed that probit models are more suitable when the outcome variable used reflects an underlying quantitative variable and this method uses cumulative normal distribution. The theory of normal probability distribution in probit models rendered it inappropriate when dealing with a categorical outcome variable which is strictly qualitative. For the same reason, the tobit and double hurdle models, which are more suited to quantitative data could not be used to analyse factors that limit small-scale farmers' access to credit. The logit analysis on the other hand, was preferred over others (OLS, discriminant functional analyses) because it is a more general predictive analysis that uses binomial probability theory. The independent variable in logit is not restricted to a categorical outcome variable only, and the model is also not limited to a single variable.

Based on the above information, the study employed a logit model within the principal component regression (PCR) framework to assess factors affecting small-scale farmers' access to credit.   PCR was used to take care of the multicollinearity between the variables. The study identified 13 variables that influence small-scale farmers' access to credit, these being: age, farm income, non-farm income, financial assets (savings), remittances and pension, farm size, family labour, land ownership, credit awareness, gender, education level and repayment ability. Firstly, the variables included in the logit model were subjected to principal component analysis (PCA) in order to reduce the variables into a few uncorrelated principal components (PCs). The significant PCs were then used to determine individual variables contained in each PC. The estimated coefficients, standard errors, t-ratios and probabilities of the individual variables were calculated to find out the effect of estimated variables on the individual's accessibility to credit.

6.2.2 Summary of empirical results

Access to credit was found to be influenced by farm income, non-farm income, remittances and pension, farm size, family labour, land ownership, savings and repayment ability. Gender, age, awareness, household size and educational level were observed as having no direct impact on access to credit. Non-farm income, savings and remittances and pensions are significant at 10% and have the expected negative signs, confirming that increasing the household's total income reduces the probability of a household being credit constrained, i.e. a wealthier household would be more likely to receive credit, yet also be less likely to need it. Farm income, however, is positive and significant at 1%, confirming that a higher farm income may improve the farmer's creditworthiness and in some cases create a demand to expand production, thus increasing the demand for credit.

Farm size, on the other hand, has a positive relationship with the demand for a loan and is significantly different from zero at 1%, suggesting that the bigger the farm size, the more likely it is that the farmer would obtain a loan. Land ownership was expected to be positive; however, in this model, it is significant but has an unexpected negative coefficient. As a result, a firm conclusion could not be drawn regarding its role in access to credit, hence the impact of land ownership on accessibility to credit needs to be investigated further.

6.3   CONCLUSIONS

The conclusions derived from the results of this study are summarised and presented under two headings: general conclusion and institutional issues.

6.3.1   General

Overall, the study results suggest that rural small-scale farmers in Lesotho have limited access to credit services, a situation which has seriously constrained the agricultural sector's development and to a large extent hampered attempts to alleviate poverty in

the country. The study results indicate that both formal and semi-formal credit institutions are inadequate facilities for meeting the credit needs of small-scale farming communities. Commercial banks were found to have no credit lines for small borrowers and, above all, most of the credit conditions are too difficult for poor, small-scale farmers to meet. Commercial interest rates charged by the banks largely restricted farmers from seeking loans from these sources.

The existing micro-credit programmes were also found to be inadequate. These programmes had limited scope and many were plagued by serious operational inefficiencies. Lending procedures, conditions, scope and target beneficiaries among different credit programmes differ significantly. Interest rates charged by these programmes also vary widely, and are mostly concessionary. Low loan recovery has led to operational inefficiencies of most of these small credit programmes, some of which have even collapsed, thus escalating the problem of credit availability to small-scale farmers.

The study managed to establish eight socio-economic factors important in influencing individual chances to access credit from formal and semi-formal financial sources. They include farm income, non-farm income, remittances and pension, farm size, family labour, land ownership, savings and the repayment ability. Farm income, non-farm income, savings and remittances and pensions confirmed that increasing the household's total income reduces the probability of a household being credit constrained, showing that a better household situation affects the decision of the lender to ration the loan or that the household has less demand for loans because of its own equity capital accumulated through past income earnings. The study revealed that farm income values of borrowers are higher than those of non-borrowers, but lack of baseline data makes it difficult to associate the differences with the loans obtained by the borrowers.

The study revealed that farm size also has a positive relationship with the demand for a loan, as it is significant at 1% and has a coefficient of 0.7784. This suggests that a unit

increase in farm size is likely to increase the individual's demand for a loan and that the bigger the farm size, the more likely it is that the farmer would obtain a loan. Land ownership, on the other hand, showed an unexpected negative relationship with credit. The negative relationship between land ownership and access to credit could be either that most borrowers obtained their loans from semi-formal or informal institutions or that they were participants in the government's programme of block farming where collateral was not asked for and issues of land tenure and ownership were not considered in the loan approval and disbursement process.

Most of the respondents in this study complained that lack of awareness (35% of respondents) and lack of collateral (28%) were the major factors that constrained their access to credit from formal sources. It was claimed that people were not aware of the availability of credit and that information on the conditions and procedures for getting loans from formal and semi-formal financial institutions was limited among small-scale farmers, particularly those living in the rural areas. The findings show that awareness of available credit facilities is an important factor in enhancing credit access by small-scale farmers.

The findings of the study also show that there are still farmers who lack a culture of saving in banking institutions. Of those interviewed, 37% were found to have no interest in saving money. Lack of savings implies that the long-term sustainability of the credit institutions is not assured and chances of growth is limited for small-scale farmers

6.3.2 Institutional issues

Several financial institutions in Lesotho, such as the LADB and agricultural cooperatives, failed because the lending side was not properly managed by the respective institution. Many borrowers could escape the pressure to repay their loans. A culture of repayment, which is considered to be rather low amongst Basotho, should be cultivated through sensitisation, training, corporate culture and product design. Without a nationwide use of ID cards and a credit bureau, it is very difficult to prevent lending to

un-creditworthy clients. None of the existing credit institutions in Lesotho have so far demonstrated its ability to lend and recover from small to medium scale clients. This remains one of the key challenges for any institution interested in entering into this domain.

Lesotho has a variety of different financial institutions in the informal sector (such as farmers' associations, stockvels, etc.), which correspond to a large extent to the demands of the Basotho and help members to arrange their finances to the best possible extent. However, these different types of associations offer only a limited range of services, in particular as regards to the amounts, the duration of funds, the interest rates charged, and the frequency of potential use. A further expansion of the financial sector to further close the enormous gap is therefore indispensable for economic development. Appropriate linkages must be developed between grassroots institutions and formal types of financial institutions in order for the former to receive guidance in conducting their affairs, share knowledge and secure the additional pool of financial resources required to expand and sustain outreach to poor rural households.

Coordination of policies, strategies, approaches and initiatives for rural financial services is important to avoid conflicts, confusion, and ensure transparency and stability of the financial sector. There should be a mechanism put in place to ensure proper coordination among various stakeholders, including development partners. Access to financial services (in particular, credit) is not a solution in itself; borrowers need technical support and management training to improve returns on investment. In this regard, it is important to seek linkages with other activities focused on production and/or productive skills training and service providers.

The financial markets in Lesotho are characterised by a low banking density, with an insufficient number of points where transactions can take place. The commercial banks function properly, mainly because they are affiliated to South African large-scale banks, which have their own strict systems of control, monitoring, reporting and supervision, which are stricter than the ones applicable in Lesotho. The banks, for example, apply

more stringent rules for bad debt. These banks have been set up in Lesotho to serve the large-scale clientele with their home base in the Republic of South Africa (RSA), and further serve the corporate clientele found locally. Their interest in serving the medium-scale business sector is low, and their interest in serving micro and small businesses is at best marginal.

The few loans granted are more an expression of the desire to show that they serve the local clientele, rather than an intrinsic interest in a promising sector. The places where lower income people can make savings deposits are insufficient, and the commercial banks are not keen to accept small deposits, where clients want to make frequent payments and withdrawals. The inability of the formal banking sector to take deposits forces the population to use the informal sector, with its negative consequences for the ability of the financial sector to grant loans. The inability of the formal financial sector also forces all people in need of loans to use the services of moneylenders or burial societies and rotating and cumulative savings and credit associations. The lack of pressure from competition does not force the banks or the moneylenders to look for alternative and more attractive products and services, neither on the credit side, nor as regards savings opportunities.

6.4 RECOMMENDATIONS

As discussed in various chapters of this thesis, access to credit and financial services is important for an improved wellbeing of rural households, especially in advancing agricultural development in developing countries such as Lesotho. However, such access has to be based on the development of broader and deeper financial markets especially in the rural areas. In this context, elimination of obstacles to the growth of rural financial markets is essential. The following recommendations are thus made and presented in this section under policy and recommendations for further research.

6.4.1 Policy

It has been pointed out throughout the study that most commercial banks have continuously and systematically rationed small-scale farmers on the basis of the high cost and riskiness of the enterprise. It is therefore crucial that financial strategies and innovations designed to improve small-scale farmers' access to credit be put in place. These strategies are discussed in this section and may include: interventions by Government and development partners; development of an effective and efficient financial infrastructure; decentralisation of major role players in agricultural financial markets; development of appropriate financial institutions and products; and a new role for financial institutions.

6.4.1.1 Interventions by Government and development partners

The development of rural and agricultural financial markets in a developing country like Lesotho calls for a facilitative intervention. However, the case for intervention should be guided by the government development objective of poverty reduction through economic growth. Direct interventions through subsidies, credit programmes or institutions need to be carefully analysed, as efforts should be made to avoid further failures through state interventions.

In this context, the desired government actions are those focused on the improvement in demand for credit and financial services as a whole. In addition, change in attitudes of the rural population on savings and credit is required in order to improve savings mobilisation and loan repayment culture. In the short run, government intervention through credit guarantee schemes may help to build banks' confidence in the rural areas. This may be associated with other market-based incentive schemes such as tax incentives, product development, and integration of MFIs with commercial banks through linkage banking, capacity building and awareness creation.

6.4.1.2   Development of an effective and efficient financial infrastructure

Financial institutions can only develop sustainable commercial services on a permanent basis, and expand their scope of operation and outreach if they operate within an appropriate financial infrastructure. Both policy makers and financial institutions should therefore focus on critical elements of financial infrastructure, such as the information systems and training facilities necessary for the development of the rural financial systems in Lesotho. The legal framework, supervision and regulation of the financial institutions are important because they facilitate sound growth and improve the capacity of financial institutions to leverage funds in the market and provide competition.

Policy makers are encouraged to ensure that legal and regulatory systems do not discourage financial innovations or stunt institutional growth but that they allow the emergence of a diverse set of dynamic institutions. For instance, the present legal system systematically prevents collateralisation of the type of assets small-scale farmers have, thereby creating an obstacle to innovative lenders to reach this clientele through the use of non-traditional collateral. Cultural constraints that prohibit women, young and disadvantaged persons from accessing credit and other financial services also need to be addressed through various development policies.

6.4.1.3   Decentralisation of major role players in agricultural financial markets

Expansion of banking outlets contributes to rapid credit delivery, increased credit turnover and lower administrative costs due to economies of scale. By reducing costs, decentralising branches and improving credit evaluation, financial institutions could more easily afford to service the small loans and deposit accounts needed by low-income customers such as small-scale farmers.

Financial institutions that are more decentralised in their operations, such as the Grameen Bank in Bangladesh, have achieved much wider coverage and reached a far

higher number of borrowers than those operating from a single head office or a regional office at a distance that may be difficult for some to reach. A centralised system as found in many parts of Africa, even in Lesotho leads to costly delays and high transaction costs.

In the event of difficulties leading to prohibitive costs of decentralised structures, the state can consider some subsidisation of operating costs, provided it will have a reasonably short life, for example not more than ten years, and provided the subsidisation is systematically reduced according to a predetermined time-scale. While decentralisation will obviously entail more branch offices for some institutions, on smaller levels these institutions can be represented by other decentralised structures. These may be local cooperatives, or even local informal borrowing and lending groups. Stockvels may even serve such a purpose.

6.4.1.4   Development of appropriate financial institutions and products

The heterogeneity of the socio-economic status of rural people and the diverse nature and scale of their economic activities imply that the demand for financial services by rural enterprises and households cannot be met by a single financial institution or through a uniform approach. Thus this calls for institutional mix, product innovations and appropriate methodology. Owing to high costs and associated risks with early stages of development of rural financial markets, market forces alone cannot bring about the required financial sector development. Hence some kind of government and donor facilitation is called for.

It is, however, critical to note that such facilitation should be based on a coherent rural financial markets development strategy that involves various actors in the market so as to make them own the development process. Such envisaged rural financial market should be an integrated one, so that the various players in the financial system operate as one, guided by the same regulations and supervision framework.

Financial viability of the infant financial intermediaries is critical. The government has to ensure that such institutions are nurtured through appropriate incentive mechanisms, appropriate financial infrastructure, and legal regulatory and information systems that minimise transaction costs and market risks. In addition, a well designed financial innovation reduces transaction costs and brings about widening, deepening and integration of rural financial markets. In turn, this process stimulates economic growth through enhanced savings, investment and production.

6.4.1.5   A new role for financial institutions

Financial institutions and commercial banks need to revisit their financial terms and conditions in favour of the development of rural financial markets, especially in terms of bank conditions, interest rate spreads, and demand for collateral and requirements for addressing the needs of the poor and small-scale rural farmers.

There is a crucial need for financial institutions to become more innovative in developing new products and services, improvement in organisation of the rural financial institutions, improved delivery mechanisms and establishment of the institutional framework for integration of MFIs into the financial system. All in all, product development and pricing need to be based on clients' needs and flexibility.

6.4.2 FURTHER RESEARCH

Further research on the following two aspects is recommended:

- Research into the behaviour of credit institutions in Lesotho will help to explain some of the actions taken by credit institutions while at the same time assisting policy-makers in formulating appropriate interventions.

- A literature study on credit models for small-scale farmers and business people in a developing country like Lesotho is highly recommended. This will give a

clearer light on what has worked elsewhere, why it has worked and how that can be adjusted to suit the requirements of Lesotho.

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FARMER QUESTIONNAIRE ON ACCESS TO CREDIT AND AGRICULTURAL PRODUCTION IN LESOTHO

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Name of interviewer			
Date of interview	DD	MM	YYYY
District			
Questionnaire number			

INSTRUCTION: Speak to the farmer i.e. the person responsible for the day-to-day activities of the farm

A. DEMOGRAPHIC INFORMATION OF THE HOUSEHOLD

A. 1 Gender of the Farmer	
Male	1
Female	2

A. 2 Age of the Farmer		Years

A. 3 Household size	
1-3	1
4-6	2
7-9	3
10-13	4
14-16	5
>16 (Specify)	6

A. 4 Household composition (include absentees)	Number
1. Boys 1-17yrs	
2. Girls 1-17yrs	
3. Males 18-35yrs	
4. Males 36-65yrs	
5. Males >65yrs	
6. Females 18-35yrs	
7. Females 36-65yrs	
8. Females >65yrs	

B. HUMAN CAPITAL ENDOWMENTS

Education

B. 1 Do you have any formal education?	
Yes	1
No	2

B. 2 If yes, what is the highest level of education successfully completed?	
Primary	1
Secondary	2
High school	3
College	4
University	5
Other (specify)	6

B. 3 Please indicate whether you have the following language abilities						
	1. Talk		2. Read		3. Write	
	Yes	No	Yes	No	Yes	No
1.English	1	2	1	2	1	2
2. Sesotho	1	2	1	2	1	2

B. 4 Indicate your arithmetic abilities	
None	1
Little	2
Average	3
Good	4
Excellent	5

C. EXTENSION SERVICES
The extension officer must leave you and the farmer alone at this stage (arrange this with him/her before the visit)

C. 1 Do you need any extension advice?	
Yes	1
No	2

C. 2 If yes, is any of the following extension officers available when you need them?		
	Yes	No
1Government extension officers	1	2
2. NGO extension officers	1	2
3. Research officers	1	2

C. 3 How often have you been visited by an extension officer in the last growing season (2007/08)?		
1Government extension officers		Per season
2. NGO extension officers		Per season
3. Research officers		Per season

C. 4 Do you think the extension officer has enough knowledge to supply you with the necessary information you need on your technical and financial management needs?

	Technical		Financial	
	Yes	No	Yes	No
1Government extension officers	1	2	1	2
2. NGO extension officers	1	2	1	2
3. Research officers	1	2	1	2

D. LAND OWNERSHIP AND FARM SIZE

Land Ownership

D. 1 Kind of farm (land tenure status)	
Private	1
Communal	2
Rental	3
Sharecropping	4
Block farming	5

Farm Size

D. 2 What is the size of your farm? (ha)	
< 2ha	1
2-5ha	2
6-10ha	3
11-15ha	4
>15ha (please give size)	5

E. RESOURCES

Inputs

E. 1 Do you use any high yielding seeds on your farm?	
Yes	1
No	2
E. 2 If yes, how do you acquire these?	
Use own funds only	1
Buy on credit only	2
Combination of own funds and credit	3
Other (specify)	4

E. 3 If no, why not?	
High yielding seed too expensive	1
Cannot get credit to buy high yielding seeds	2
Not available in local markets	3
No information on how to acquire them	4
Not interested in using high yielding seeds	5
Other (specify)	6

Labour

E. 7 How many of your children and relatives work on your farm?		Number

E. 8 Do you employ permanent / casual labour?	
Permanent	1
Casual	2
Both	3

E. 9 If permanent labour, how many/year?		Labourers
E. 10 If casual labour, how many/year?		Labourers
E. 11 If casual labour, how many days/year?		Days

F. FINANCIAL MANAGEMENT AND SERVICES

Financial Management

F. 1 Do you keep any financial records?	
Yes	1
No	2

F. 2 If yes, what type of records do you keep?	
Crop production records	1
Animal production records	2
Cost Records	3
Income Records	4
Labour Records	5
Inventory Records	6
Cash Flow	7
Other (Specify)	8

F. 3 Do you think that record keeping is important?	
Yes	1
No	2

F. 4 If yes, how important is record keeping to you?	Not important	Important	Very important
1. Determining financial position of the farm	1	2	3
2. Decision making and planning	1	2	3
3. To keep the bank or coop manager happy	1	2	3
4. Other (specify)	1	2	3

F. 5 Do you find your farming activities profitable?	
Yes	1
No	2

Financial Services

F. 6 Do you save money earned from farm activities?	
Yes	1
No	2

F. 7 If yes, how?	
Savings account	1
Cheque account	2
Business account	3
In the house	4
Other (specify)	5

F. 8 If no, why not?	
Too costly to save money	1
Interest rate on saved money is too low	2
Transaction costs are too high	3
Do not know of any saving facilities	4
There are no banks / savings institutions nearby	5
Other (specify)	6

G. FARM AND NON FARM INCOME

Income from crops

G. 1 Please provide the following information regarding last season's crops (2007/08)					
Crop	1	2	3	4	5
Specify					
1. Area planted	Ha	Ha	Ha	Ha	Ha
2. Yield per hectare	Ton/ha	Ton/ha	Ton/ha	Ton/ha	Ton/ha
3. Price per ton	R/ton	R/ton	R/ton	R/ton	R/ton
4. Total income	R	R	R	R	R
5. Cost per hectare	R/ha	R/ha	R/ha	R/ha	R/ha
6. Total cost	R	R	R	R	R
7. Net income (total income – total cost)	R	R	R	R	R

Income from livestock

G. 2 Please provide the following information regarding livestock in the last season (2007/08)					
Animal	1	2	3	4	5
Specify					
1. Number of animals					
2. Animal sales	R	R	R	R	R
3. Product sales	R	R	R	R	R
4. Manure sales	R	R	R	R	R
5. Total income	R	R	R	R	R
6. Cost / unit	R	R	R	R	R
7. Total cost	R	R	R	R	R
8. Net income (total income – total cost)	R	R	R	R	R

Other farm income

G 3 Do you render services to other farmers?	
Yes	1
No	2

G. 4 Are you paid for these services?	
Yes	1
No	2

G. 5 If yes to G. 4, please state source and amount received?	
Source	Amount (R)
Total per season	

Non-farm income

G. 6 Do you have any occupation other than farming?	
Yes	1
No	2

G. 7 If yes, please state that other occupation

G. 8 Please state income you receive from this	
	Rands

G. 9 Does anyone in the household have any other form of income which is also used for farming operations?	
Yes	1
No	2

G.10 If yes, please choose salary according to the scale to complete the table below

Salary (Rands per year)	Code
< 5000	1
5 000 – 10 000	2
10 001 – 15 000	3
15 001 – 20 000	4
20 001 – 25 000	5
> 25 000	6

Member of household	Code (R)
1. Males 18-35yrs	
2. Males 36-65yrs	
3. Males >65yrs	
4. Females 18-35yrs	
5. Females 36-65yrs	
6. Females >65yrs	
7. Total Income	

H. Access to credit

Awareness and Credit Accessibility

H. 1 Are you aware of any credit institutions in your area?	
Yes	1
No	2

H. 2 Do you know in advance which institutions to approach if ever you need credit?	
Yes	1
No	2

H. 3 Do you have access to any of the following credit institutions?		
1. Formal Sources	Yes	No
1. Commercial bank	1	2
2. Agricultural Cooperative	1	2
3. Ministry of Agriculture	1	2
4. Other (specify)	1	2
2. Informal Sources		
1. Credit unions	1	2
2. Farmers' association	1	2
3. Family and friends	1	2
4. Stokvels	1	2
5. Other (specify)	1	2

H. 4 If no to H. 3, what is the reason?	
1. Formal Sources	**Reason**
1. Commercial bank	
2. Agricultural Cooperative	
3. Ministry of Agriculture	
4. Other (specify)	
2. Informal Sources	
1. Credit unions	
2. Farmers' association	
3. Family and friends	
4. Stokvels	
5. Other (specify)	

H. 5 If yes to H. 3, what are the requirements regarding access to credit?	
1. Formal Sources	**Requirements**
1. Commercial bank	
2. Agricultural Cooperative	
3. Ministry of Agriculture	
4. Other (specify)	
2. Informal Sources	
1. Credit unions	
2. Farmers' association	
3. Family and friends	
4. Stokvels	
5. Other (specify)	

H. 6 Please specify your debt commitments for the period 2007/08					
Source	Type (Hire purchase/bond/ overdraft/production loan etc	Initial amount (R)	Interest rate (%)	Installment (R)	Outstanding debt (R)
1. Formal Sources					
1. Commercial bank					
2. Agricultural Cooperative					
3. Ministry of Agriculture					
4. Other (specify)					
2. Informal Sources					
1. Credit unions					
2. Farmers' association					
3. Family and friends					
4. Stokvels					
5. Other (specify)					
6. Total					

Income and expenditure

H.7 INCOME	QUANTITY	R/UNIT
1. Sale of goods		
2. Salary		
3. Pension/remittances		
4. Social grants		
5. Other (specify)		
6. Total		
H. 8 EXPENSES		
Operational costs (Farm costs)		
1. Seed		
2. Fertilizer		
3. Pest control		
4. Weed control		
5. Harvesting costs		
6. Crop insurance		
7. Feed		
8. Vet / medicines		
9. Cleaning chemicals		
10. Transport / marketing costs		
11. Other (specify)		
Fixed costs		
1. Fuel & lubricants		
2. Electricity		
3. Telephone & stationery		
4. Repairs & maintenance		
5. Bank charges		
6. Salaries		
7. Other (specify)		
Non - farm expenses (family expenses)		
1. School fees		
2. Medical expenses		
3. Food & entertainment		
4. Rent		
5. Clothing		
6.Other (specify)		
7. Total		

Assets and liabilities

H. 9 Assets	Value (R)
1. Current assets (working capital)	
1. Bank	
2. Debtor	
3. Stock in hand	
4. Short-term investments	
5. Marketable livestock	
2. Medium-term assets (movable assets)	
1. Equipment	
2. Vehicles	
3. Livestock	
4. Medium-term investments & loans to others	
3. Fixed assets	
1. Land owned	
2. Houses	
3. Other (specify)	
4. Total assets	

H. 10 Liabilities	Value (R)
1. Current liabilities (repaid within 12 months)	
1. Bank overdraft	
2. Creditors	
3. Income tax	
4. Medium-term loan repayment	
5. Long-term loan repayment	
6. Other (specify)	
2. Medium-term liabilities (repaid over a period of 1-10 years)	
1. Medium-term loans	
2. Other (specify)	
3. Long-term liabilities (repaid over a period of 10 years or longer)	
1. Mortgage loans	
2. Long-term loans	
3. Other (specify)	
4. Total liabilities	
5. Net value (total assets–total liabilities)	