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DETERMINANTS OF CREDIT CONSTRAINTS ON MICRO AND SMALL ENTERPRISES IN THE NORTHERN PROVINCE OF SOUTH AFRICA

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ABSTRACT

DETERMINANTS OF CREDIT CONSTRAINTS ON MICRO AND SMALL ENTERPRISES IN THE NORTHERN PROVINCE OF SOUTH AFRICA

By

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There is a widespread belief in South Africa that the contribution of micro and small enterprises (MSEs) to employment and income generation is limited by credit constraints. However, there is limited knowledge of the significance and determinants of such credit constraints. This study is concerned with determining the proportion of MSEs that are credit constrained and identifying determinants of credit constraints on MSEs in the Northern Province of South Africa. A logit framework, using data obtained from 270 peri-urban and rural MSEs, is employed to identify determinants of credit constraints on MSEs. The estimation of the proportion of credit constrained MSEs and identification of determinants of credit constraints are done for the overall credit market, formal credit market and informal credit market.

An important finding of this study is that many but not most MSEs included in the analysis are credit constrained. Forty-eight percent of all the MSEs in the sample are credit constrained in the overall credit market. The proportions of credit

constrained MSEs in the formal and informal credit markets are 30 and 42 percent, respectively.

The results of the study indicate that the most important determinants of credit constraints in the overall credit market are household/business wealth, location of the business, and the economic sector in which it operates. MSEs that are more likely to be credit constrained in the overall credit market are (a) from poor households; (b) located in rural areas; and (c) in the manufacturing sector. The most important determinants of credit constraints in the formal credit market are education and gender of the MSE operator, and the economic sector in which the MSE operates. MSEs in the manufacturing sector, and those operated by less educated and male entrepreneurs are more likely to be credit constrained in the formal credit market. Determinants of credit constraints in the informal credit market are household/business wealth, whether the firm is officially registered as a business, and location of the business. MSEs from poor households, not officially registered as business concerns and located in rural areas are more likely to experience credit constraints in the informal credit market.

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CHAPTER ONE

INTRODUCTION

This chapter outlines the socio-economic problems confronting South Africa and highlights the emphasis placed on the promotion of micro and small enterprises (MSEs) as a partial solution to the problems. The research problem, research questions and hypotheses of the study are also described in this chapter.

1.1 General problem

South Africa is experiencing problems of high unemployment, skewed income distribution and poverty. The problem of unemployment can be attributed mainly to previous government policies that favored capital-intensive production (World Bank, 1994b) and inadequate attention to employment generation in the former homelands. Apartheid policies that discriminated against the majority of the population and favored the white population have contributed to poverty and created the most unequal distribution of income in the world.

Among Africans, only 47 percent are employed in the formal sector (World Bank, 1994b). The formal sector is no longer able to provide employment for a large number of people seeking employment. The labor absorption capacity of the formal sector in urban areas has declined rapidly. In 1965-70 the urban formal

sector could absorb 75 percent of annual labor entrants but the absorption capacity dropped to only 12.5 percent in 1985-89 (Ligthelm and Kritzinger-van Niekerk, 1990). The inability of the urban formal sector to absorb a large proportion of labor entrants contributes significantly to unemployment in the former homelands. Many of the unemployed are in the former homelands, with women experiencing higher rates of unemployment than men. Men who are less than twenty-five years of age have greater difficulty in finding employment (World Bank, 1994b).

Approximately 50 percent of South Africa's population of forty million can be classified as living below the poverty datum line (SAIRR, 1993). More than 36 percent of all households are classified as poor (Data Research Africa, 1995). Poverty is more pervasive in rural areas, with the incidence of poverty being the same in the rural areas of the former white areas and the former homelands (World Bank, 1994b). The proportion of the poor living in rural areas of South Africa is estimated at 70 percent (Government of South Africa, 1995). Approximately 50 percent of all rural households and 68 percent of rural people are poor. In urban and metropolitan areas, 39 and 17 percent of the population, respectively, can be classified as poor (Data Research Africa, 1995). The incidence of poverty in rural areas is highest among Africans: 71 percent of poor rural households are African. Carter and May (1997) note that 77 percent of the poorest decile of the population of South Africa are Africans living in rural areas and control just over one percent of household and adult equivalent expenditure. The wealthiest ten percent of South African households account for 40 percent of the household and adult equivalent

expenditure and only four percent of these households are Africans living in rural areas.

South Africa has the world's most unequal distribution of income (Deininger and Squire, 1996). The per capita incomes of whites in 1987 was on average 9.5 times that of Africans. Gini coefficients are estimated at 0.69 for aggregate income in 1980, 0.82 for farmland ownership in 1989, and 0.82 in the manufacturing sector in 1982 (Bureau for Market Research, 1993; World Bank, 1994b). In 1993, the Gini coefficient is estimated to be 0.65 (see Blumenfeld, 1997). These coefficients are among the highest in the world.

The alleviation of poverty, unemployment and income inequalities (problems inherited from the previous apartheid government) are major priorities of the South African government. The government's plans to deal with these problems are outlined in a document entitled The Reconstruction and Development Program (RDP) (African National Congress, 1994). The RDP emphasizes the role of micro and small enterprises in poverty alleviation and narrowing the income gap between different race groups through employment and income generation. The potential contribution of MSEs to equitable income distribution and employment and income generation in South Africa is also acknowledged in the White Paper of the Department of Trade and Industry (Department of Trade and Industry, 1995).

The role of MSEs in employment creation and poverty alleviation is, thus, undisputable. However, to date, the contribution of MSEs to employment and income generation and poverty alleviation in South Africa is considered to be inadequate. The limited contribution of MSEs may be attributed to constraints they

face. These constraints include insufficient capital and tend to be severe in rural areas, especially among women (Department of Trade and Industry, 1995).

Capital for MSEs can be accumulated from various sources of household income, including wage employment in farm and nonfarm sectors, remittances from migrants, agriculture, self-employment in farm and nonfarm sectors, old-age pension, and loans from informal, formal and semiformal lenders. Carter and May (1997) identify remittances from migrant workers, employment in the secondary market[1], and agricultural production as the three most important (in terms of the proportion of households that indicated that they derive income from the various sources) sources of income for rural households. However, income from agriculture for rural households is relatively small (Carter and May, 1997; May 1996). Old-age pensions is also an important source of capital for MSEs. Ardington and Lund (1996) note that old-age pensions are of critical importance to household income. Some MSE operators manage more than one business and income from one business can be reinvested in the other business. Another source of capital for MSEs is credit from formal (e.g. commercial banks, development corporations, etc.), semi-formal (e.g. NGOs) and informal lenders (family and friends, traders, etc.).

The high unemployment rate and the declining labor absorption capacity of the formal sector in South Africa imply that the proportion of households generating

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[1] Burawoy (1975) distinguishes between primary and secondary labor markets. Primary labor market refers to that labor market in which workers are well paid and have job security and prospects of career advancements. The secondary labor market is defined as that labor market with low-paying jobs and little job security and career advancement.

income from wage employment and remittances is likely to decline. Thus, the relative importance of wage employment and remittances as sources of household income will decrease. The dependence of smallholder agriculture on erratic rainfall means that rural households cannot rely on agriculture as the main source of income. Income from old-age pensions is inadequate for the financing needs of households and MSEs. Capital accumulation from self-employment in other businesses is likely to be limited because of the small number of MSE operators who can afford to own more than one business. Therefore, in addition to other efforts to solve the problem of insufficient capital, it becomes important to pay attention to credit as a possible tool for removing capital constraints on MSEs. Credit has the potential to alleviate capital constraints on MSEs and, thus, enable them to increase their contribution to income and employment generation and poverty alleviation.

1.2 Specific problem

Many analysts and policy makers in South Africa believe that credit constraints are among the major constraints limiting the contribution of MSEs to employment, income generation and poverty alleviation (African National Congress, 1994; Department of Trade and Industry, 1995; Coetzee et al., 1994). Credit constraints occur in a firm when its effective demand for credit exceeds its supply of credit at the rate of interest prevailing in the market. Effective demand for credit is demand which reflects wants translated into action (which is borrowing coupled with the ability to repay a loan), not mere intention or desire to borrow (notional

demand). The supply of credit to the firm refers to the schedule of quantities of credit lenders are willing to make available to the firm at prevailing rates of interest.

Credit constraints are reported to be the most persistent complaint of operators of small businesses in South Africa (Moore and Schoombee, 1995; World Bank, 1993; Zeidler, 1994). The belief in the existence of credit constraints is often based on results from surveys in which MSE operators are asked to indicate whether lack of credit is a problem. These surveys usually do not ask whether respondents did attempt to obtain credit and, if so, whether they obtained the requested amount of credit. Ideally, determining whether credit constraints exist should entail comparing the firm's supply of credit and its effective demand for credit. However, due to difficulties often encountered in gathering data to determine the effective demand for credit, the distinction between effective and notional demand for credit is usually not made in the literature. To determine whether there is effective demand or not requires assessing the ability of potential borrowers to repay loans. This is difficult because it requires judgments about the future behavior of borrowers and the future profitability of an investment project.

Results from surveys which only ask whether lack of credit is a problem for MSE operators are not very useful for policy because they do not separate people who are credit constrained from those that are not credit constrained. Government and donor agencies may expend resources to remove credit constraints on people who do not face such constraints. This may result in misallocation of society's resources which could be used to remove other important barriers to firm growth.

Therefore, there is a need for research to determine whether credit constraints on MSEs in South Africa exist recognizing that such constraints occur only when the firm's demand for credit exceeds its supply of credit. Determining whether credit constraints exist will enable policy makers and others to know the proportion and type of MSEs whose credit constraints should be removed. However, to draw conclusions about which MSEs are credit constrained requires knowledge of the viability of projects people want to use credit for. This is very difficult to determine from a survey and involves guesses about the future.

Currently, there is a paucity of information on what determines credit constraints on MSEs in South Africa. Research focusing on determining whether credit constraints exist among MSEs in South Africa and, if so, what determines the constraints would be interesting to policy makers in other countries because of the historical exclusion of blacks from the mainstream economy. Knowledge of what determines credit constraints is important because it sheds light on possible policy measures that could be taken to remove the constraints.

1.3 Research questions

This study addresses the following questions:

(a) What is the proportion of MSEs that are credit constrained?

(b) What are the determinants of credit constraints on MSEs and, therefore, which types of MSEs are likely to be credit constrained?

These questions will be addressed in a specific study area, namely, the Northern Province of South Africa.

1.4 Hypotheses

The hypotheses of this study focus on the determinant variables that reflect key problems associated with credit constraints in the literature. These problems are common characteristics of the credit market of the Northern Province. They include high transaction costs of borrowing and lending, insufficient collateral for loans, imperfect information, and institutional constraints. These problems are described in more detail in chapter 3.

The specific hypotheses of the study are:

Hypothesis 1: MSEs from poor households are likely to experience credit constraints.

Many formal lending institutions in South Africa and elsewhere require collateral for loans. This means that firms that cannot provide collateral or can only provide insufficient collateral are likely to be credit constrained, especially in the formal credit market. Poor firms are the ones that fail to provide sufficient loan collateral and, therefore, are likely to be credit constrained.

However, there is some ambiguity in this hypothesis. It is possible that MSEs from poor households may not face credit constraints because they do not demand credit. A possible reason for this is that MSEs from poor households may lack investment opportunities which generate the demand for credit. Thus, the richer may actually face more credit constraints than the poorer.

Hypothesis 2: MSEs located in rural areas are more likely to be credit constrained than those in peri-urban areas.

Peri-urban areas are defined to include townships in which black people reside in the former homelands and some of the areas that were designated for occupation by white people located near cities and towns. A possible reason to expect MSEs in rural areas to be more likely to be credit constrained include high transaction costs of borrowing and lending associated with credit transactions involving lending and borrowing in rural areas. Transaction costs include actual monetary expenses and the opportunity cost of time involved in executing credit transactions (see chapter 3 for further discussion).

However, it may also be possible that MSEs in rural areas are less likely to be credit constrained because of little or no demand for credit. This could happen if there are limited investment opportunities to generate demand for credit.

Hypothesis 3: MSEs operated by less educated persons are more likely to be credit constrained.

Less educated MSE operators are not likely to obtain the amount of credit they ask for because lenders tend to associate repayment ability with the level of education achieved by the borrower. In rural areas, less educated persons are not visible to lenders and, therefore, the cost of information to evaluate their applications for credit is relatively high.

Hypothesis 4: Younger businesses are more likely to be credit constrained than older ones.

Information required by lenders to evaluate and process loan applications from younger businesses is not likely to be readily available because these businesses often do not have an established track record . Thus, transaction costs

associated with lending to younger businesses are likely to be relatively high. Furthermore, younger businesses are not likely to meet the loan collateral requirements of lenders because they have not accumulated sufficient assets.

Hypothesis 5: MSEs in the manufacturing sector are more likely to be credit constrained.

MSEs operating in the manufacturing sector require relatively large investments in assets. These asset requirements coupled with problems manufacturing MSEs experience in obtaining credit are likely to lead to these MSEs being credit constrained. Assistance programs for MSEs tend to neglect manufacturing MSEs in favor of MSEs in other sectors. However, there is also a view that assistance programs are biased towards manufacturing MSEs.

Hypothesis 6: Female-operated MSEs are more likely to experience credit constraints.

Rural women in South Africa were considered to be minors in terms of past laws of the country. This means that they could neither own land nor enter into loan agreements with lenders without the consent of their husbands. Furthermore, women tend to be less educated than men. These factors are expected to make it more difficult for women to obtain the amount of credit they request.

Hypothesis 7: MSEs operated by younger people are more likely to be credit constrained.

Younger people are expected to have little business experience. In addition, according to the life-cycle hypothesis, younger people are likely to have accumulated little wealth and, therefore, they cannot provide their own finance.

Hypothesis 8: MSEs registered with government as business concerns are less likely to be credit constrained.

Evidence from other countries indicates that formal registration is a requirement for obtaining credit from formal lenders. This implies that unregistered businesses may experience difficulty in obtaining credit from formal lenders. Furthermore, formal registration may overcome problems of imperfect information and this could make formal lenders interested in lending to registered firms. However, there is some ambiguity in the hypothesis. Unregistered businesses are likely to be engaged in activities that do not require credit. Thus, they may be expected to be credit unconstrained because their demand for credit is zero.

1.5 Outline of subsequent chapters

This study is organized into eight chapters.

Chapter 2 provides background information on the Northern Province. This chapter also describes the small business sector and sources of capital for MSEs in South Africa.

Chapter 3 focuses on explaining the meaning of a credit constrained firm. This chapter also provides a theoretical framework for the determinants of credit constraints.

The data source and characteristics of the sample analyzed in this study are described in Chapter 4.

Chapter 5 reviews methods used in previous studies to identify credit constrained firms/households.

Chapter 6 specifies the regression model and describes the estimation procedure. This chapter also outlines the approach adopted in this study to classify firms as credit constrained or unconstrained.

The results of the study are presented in Chapter 7. This chapter begins with a description of the characteristics of MSEs according to their credit status (i.e. whether credit constrained or not). The findings of the study on determinants of credit constraints on MSEs are then presented. Determinants of credit constraints are outlined for each credit market (i.e., overall credit market, formal and informal credit markets).

Chapter 8 presents a summary of the study and also draws implications of the findings of the study for policy and future research.

CHAPTER TWO

BACKGROUND ON THE NORTHERN PROVINCE, THE SMALL BUSINESS SECTOR AND SOURCES OF CAPITAL

This chapter provides background information on the Northern Province including a description of the small business sector in South Africa and sources of capital for MSEs.

2.1 Geographical location

Northern Province is one of the eight provinces in South Africa. The province is located in the northern part of South Africa and shares borders with Botswana, Mozambique and Zimbabwe. Three former homelands and former white areas comprise the province[2]. The three former homelands are Gazankulu, Lebowa, and Venda. Each former homeland area is divided into magisterial districts. A

[2] Former homelands refer to areas that were set aside for black people to "govern themselves" in terms of past apartheid policies. Some of these homelands were later granted political "independence" by the apartheid regime. Venda was one of these "independent" homelands. White areas were meant for white people and people belonging to other racial groups were not allowed to live or do business in these areas.

magisterial district consists of a number of villages. Some of the magisterial districts may consist of only rural villages while others include both rural and peri-urban villages.

Peri-urban areas are usually located not too far from towns and cities because blacks were supposed to commute from there to cities and towns to work and shop. Towns and cities are located in the former white areas. Some of the major towns and cities in the Northern Province include Pietersburg, Louis Trichardt, and Tzaneen.

2.2 Socio-economic characteristics

Northern Province is one of the poorest provinces in South Africa. Poverty and unemployment are more pervasive in the former homelands which are predominantly rural. About 70 percent of the population in the province live below the poverty line. Kirsten (1996) notes that 62 percent of households and 69 percent of individuals live in poverty. It is estimated that 49 percent of the economically active population in the formal economy in 1994 were unemployed. More than 90 percent of the economically active population who are unemployed are in the rural areas. The promotion of small businesses is considered to be one of the ways to alleviate the problems of unemployment and poverty in the province.

2.3 The small business sector in South Africa

The small business sector in South Africa is comprised of survivalist, micro, small, and medium enterprises (Department of Trade and Industry, 1995). The

Department of Trade and Industry (1995) defines these four categories of enterprises as follows: Survivalist enterprises encompass activities undertaken by poor people in an attempt to survive. Microenterprises are "... very small businesses, often involving only the owner, some family member(s) and at the most one or two paid employees." Small enterprises are considered to be part of the formal economy, employing between five and fifty people per enterprise. Medium enterprises, often difficult to distinguish from small and large businesses, include businesses that employ between fifty and two hundred persons and with capital assets not exceeding five million rands[3].

Microenterprises in this study are defined as any enterprise employing less than six persons[4]. Microenterprises are, thus, defined to include survivalist and non-survivalist enterprises. Defining microenterprises in this manner is not meant to suggest that we ignore the fact that survivalist and non-survivalist enterprises are different and, therefore, may require different strategies for growth. This definition is adopted mainly because, in practice, it is difficult to separate survivalist from non-survivalist enterprises. Small enterprises in this study are as defined by the Department of Trade and Industry above.

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[3] Rand (R) is the South African monetary unit equivalent to about US$0.20

[4] This definition is different from that in USAID guidelines where microenterprises are defined as any enterprise employing less than ten persons (see Boomguard et al., 1989; Boomguard, 1991). By South African standards, a firm employing more than five persons would be considered too large to be described as a microenterprise.

The small business sector in South Africa is dominated by the retail sector, followed by service and manufacturing sectors (Zeidler, 1994). However, Tendler (1996) notes that the number of manufacturing MSEs is underestimated. The majority of retailers are street vendors. The sectoral composition of the small business sector is as follows: retail (40-70%), manufacturing (14-36%), and service (9-38%) (Zeidler, 1994). These statistics should be viewed as rough estimates because there is no agreement among researchers on their validity. The sectoral breakdown of the small business sector in the Northern Province as provided by Kirsten (1996) is as follows: trade (48%), manufacturing (13%), service (6%), construction (4%), transport (19%), repairs (5%) and food processing (4%). These figures may not provide a representative picture of the sectoral composition of the small business sector in the Northern Province because they are derived from a case study.

Based on survey results involving two townships in South Africa, McPherson (1992) finds that the majority of MSEs are run by females. Female-run MSEs tend to be smaller than those run by males.

McPherson (1992) observes that the majority of MSE activity in Southern Africa is in the rural areas. In South Africa, the disproportionate share of rural and township MSEs is the result of restrictions on blacks to live and own businesses in former white areas. Restrictions on blacks date back to the 1920s when they were regarded as only temporary residents in former white areas and were there solely to provide labor for the white-owned industry (Krige, 1988). These restrictions were lifted in the early 1990s. Legislation became more restrictive in the 1960s when

black entrepreneurs living in urban areas were encouraged to move to newly established "homelands". Legislation required that black businesses be located in black residential areas and their market was limited to areas in their vicinity. Black businesses were not permitted to serve customers from other racial groups (Krige, 1988; Kahn, 1983; Southall, 1980).

2.4 Sources of capital for MSEs

Sources of capital for MSEs may be divided into credit and noncredit sources. Credit sources include loans from informal lenders and formal and semi-formal lenders. Noncredit sources consist of remittances from migrant workers, old-age pensions, self-employment in farm and nonfarm sectors and wage employment.

2.4.1 Credit sources

The credit market may be subdivided into formal, semi-formal and informal credit markets. The formal credit market is comprised of all lenders whose activities do not fall within the regulatory framework of the country's central bank. The semi-formal credit market includes all lenders that cannot be easily classified as formal or informal lenders. This is because some of the lending activities of these lenders may resemble those of formal lenders while others appear to be informal. The informal credit market encompasses lenders whose activities are not regulated by the country's central bank.

2.4.1.1 Formal lenders

The formal credit market is comprised of commercial banks in the private sector and parastatals (development corporations and development banks) in the public sector.

Commercial banks are located mainly in urban areas (Commission of Inquiry into the Provision of Rural Financial Services, 1996) and have traditionally directed their lending mainly to big businesses. Because commercial banks are located mainly in the former white areas, MSE operators have to travel long distances to obtain financial services such as credit. Some of the major banks and other lending institutions have outlets in the townships. This means that the distance traveled by MSE operators in townships to banks is shorter than for rural MSE operators. There are virtually no banks in rural areas although some commercial banks provide mobile banking services (perhaps once a week and provide mainly withdrawal and deposit services). Commercial banks are not well adapted to the needs of disadvantaged people and have been reluctant to lend to the small business sector (Zeidler, 1994). The reluctance may be attributed to a number of factors, including, high transaction costs associated with lending to the small business sector, problems related to loan security and the perceived high probability of default on loans.

Commercial banks usually require collateral for loans and many businesses in the small business sector are not able to meet this requirement. These banks also charge market rates of interest on loans. Some of the assets owned by the poor such as land are usually not acceptable to commercial banks as collateral.

This is because land in the rural areas is largely communally owned and cannot be sold.

Development corporations include former homeland development corporations and the Small Business Development Corporation. These corporations were established to provide financial and other services for black people. The Small Business Development Corporation is located in a former white urban area and has branches in smaller towns, including, peri-urban areas in the former homelands. Former homeland development corporations are located in peri-urban areas in the former homelands. Development corporations provide loans to small black businesses at subsidized rates of interest. These interest rates are usually fixed and do not vary with the characteristics of the borrower. Loan collateral requirements for some of the development corporations have not been as stringent as those for commercial banks. Loans may be granted on the basis of potential to repay rather than on the availability of collateral.

Development banks include the Development Bank of Southern Africa and former homeland development banks. The Development Bank of Southern Africa was established to act as a multi-sectoral institution providing financial and other services to the former homelands. The bank is located in a former white urban area. Former homeland development corporations obtained substantial amounts of money for on-lending from the Development Bank of Southern Africa. Former homeland development banks are registered as commercial banks and are located in peri-urban areas in some of the former independent homelands. They were

established to provide financial services in predominantly rural areas (Commission of Inquiry into the Provision of Rural Financial Services, 1996).

2.4.1.2 Semi-formal lenders

Semi-formal lenders include nongovernment organizations (NGOs) and savings and credit cooperatives. These organizations became involved in the financing of MSEs in South Africa recently and little is known about their lending activities. Zeidler (1994) notes that these organizations are concentrated in black townships and are less engaged in rural areas. Zeidler (1994) estimates that the formal credit sector and NGOs reach only one percent of MSEs in South Africa.

2.4.1.3 Informal lenders

Informal lenders include individuals (e.g. relatives, friends, neighbors, moneylenders, traders - input or raw material suppliers, etc.) and groups (e.g. rotating and savings associations or 'stokvels', burial societies, etc.). The informal credit market is the main source of credit for rural households in South Africa. Coetzee (1988) found that 71 and 57 percent of MSE credit transactions in the former homelands of Lebowa and KaNgwane, respectively, occurred in the informal financial market.

Loans from friends and relatives are a significant source of finance in many developing countries. This is also true for South Africa's rural areas and townships. Friends and relatives are the biggest source of credit for MSEs in South Africa (Coetzee et al., 1994). Liedholm and Mead (1987) and Liedholm and McPherson

(1991) observe that family and friends are the most important source of funds for working capital and fixed assets for MSEs.

Rotating and savings associations or 'stokvels' (as they are called in South Africa) also play a significant role in informal finance in South Africa. However, they are more important in the townships. Moore and Schoombee (1994) note that a third of the black population in metropolitan areas participate in 'stokvels'.

Traders (including input and raw material suppliers) are also important role players in rural financing in many developing countries. Fafchamps (1997) notes that trade credit provided by suppliers is the principal source of external finance that firms owned by Africans have access to. However, this conclusion does not seem to be valid for South Africa. Results from several studies indicate that the most important source of credit for MSEs in South Africa are family and friends. In South Africa, firms from which MSEs purchase their supplies are located mainly in cities and towns. These firms are owned mainly by whites. A large number of these firms sell only on cash basis.

2.4.2 Noncredit sources

Rural households derive income from various sources such as wage employment, remittances, self-employment in the farm and nonfarm sectors, old-age pension and agriculture. Since MSEs and households are intertwined, these income sources also serve as sources of capital for MSEs. The composition of income for black rural households in South Africa is as follows: wages (34.1%), remittances (22.1%), transfers (22.4%), informal sector/other (15.3%) and

agriculture (6.1%) (see Ardington and Lund, 1996). Remittances from migratory workers and old-age pensions (transfers) are the second and third most important sources of household income, respectively. Income from MSE (informal) sector activities and agriculture rank fourth and fifth, respectively, in terms of their contribution to household income. However, if importance of household income sources is measured in terms of the proportion of households that derive income from a particular source, agriculture ranks as one of the top three sources.

CHAPTER THREE

CONCEPTUAL FRAMEWORK

This chapter describes the meaning of a credit constrained firm. Previous studies are reviewed to find out how other researchers define a credit constrained firm. A theoretical framework is presented to provide an understanding of determinants of credit constraints. Because whether a firm is credit constrained or not depends on its demand for and supply of credit, this chapter also provides theoretical explanations of determinants of demand for and supply of credit.

3.1 Credit in the context of other sources of capital

Firms require fixed and working capital for operation and growth. The capital may be derived from various sources, including credit and noncredit sources, as outlined in previous chapters. It is within the context of multiple sources of capital that credit as another source must be placed. Noncredit and credit sources of capital may substitute or complement each other. On the one hand, access to capital from credit sources may eliminate the demand for capital from noncredit sources. On the other hand, having access to capital from noncredit sources may make it unnecessary for the firm to borrow. It is typical for capital from noncredit sources to serve as collateral for a loan.

Firms usually use their own resources to finance their operations and projects and resort to external sources of capital when their resources are inadequate. Thus, noncredit sources will be sought first and only when capital from these sources are inadequate for their financial needs will firms consider credit sources. Also within the credit market, MSEs usually borrow from informal lenders first, especially family and friends, and approach formal lenders when they cannot raise sufficient capital from informal lenders.

A firm faces capital constraints when the amount of capital is inadequate for its financing requirements. The amount of capital may be inadequate because capital raised from either credit or noncredit sources or both is not sufficient. Credit constraints are a sufficient condition for a firm to be capital constrained.

3.2 What is a credit constrained firm?

A firm is credit constrained when it obtains less credit than it requested at the prevailing rate of interest and cannot secure more credit by offering to pay a higher interest rate (Feder et al., 1990; Jaffe and Russell, 1976). Carter and Olinto (1994) describe a credit constrained household or firm as one that is willing to borrow more than what the lender is willing to supply at the given rate of interest. In the economist's language, the interest rate is 'sticky' because it does not adjust to allow market clearing in the credit market. The 'stickiness' of the interest rate is an important explanation for the divergence between the amount of credit the firm demands and the amount it obtains. The interest rate may be sticky because lending institutions find it unprofitable to raise the rate of interest above a certain

level in the presence of imperfect information (see section 3.4.1). That is, lenders do not use the price of credit (interest rate) to ration credit and market clearing does not occur.

Stiglitz and Weiss (1981) define credit rationing as a situation in which either (a) among loan applicants who appear to be identical some obtain loans while others do not - those who do not obtain loans are unable to do so even if they offer to pay a higher interest rate or (b) some identifiable group within a population are unable to obtain a loan at the given supply at any given interest rate even though they would with a larger supply of credit (see section 3.4.1 for further discussion). Thus, we may distinguish between two situations under which credit rationing might arise. First, a firm or household may be credit rationed even though the lender has adequate funds to lend. Second, the lender may have a fixed amount of money to lend and, therefore, only a certain number of firms or households obtain credit.

Kochar (1992:17) distinguishes between "access rationing" and "quantity rationing." Access rationing refers to a situation in which the amount of credit supplied to a household/individual/firm is zero at the given rate of interest. This situation is depicted in Figure 3.1(a) and corresponds to the definition of credit rationing as provided by Stiglitz and Weiss (1981). In Figure 3.1(a), firm-level supply of credit (i.e., borrower's access to credit) at the rate of interest (r) is zero although demand for credit is positive. The firm (borrower) faces a vertical supply curve for credit which coincides with the y-axis. Quantity rationing occurs when the borrower gets less credit than requested at the given rate of interest, i.e. when

demand exceeds supply. Quantity rationing is illustrated in Figure 3.1(b). The focus in this study is on access rationing.

Conning (1995) suggests that to determine whether a borrower is rationed or not the demand for and the largest supply of credit at the current rate of interest should be compared. In Figure 3.1(b), the largest quantity of credit supplied to the firm at the current rate of interest (r) is Q_S while the quantity demanded is Q_D. The amount of credit received by the firm is less than the desired amount by Q_SQ_D. The downward-sloping demand curve reflects the inverse relationship that exists between the amount of credit demanded and the rate of interest on a loan. At lower rates of interest, there are a number of possible projects that a borrower can invest in and earn a good rate of return to his/her investment. Thus, more credit is demanded. However, as the rate of interest rises, the number of projects with a good rate of return declines. This causes the borrower to demand less credit. The upward-sloping supply curve for credit indicates the positive relationship that exists between the rate of interest on a loan and the amount of credit the lender is willing to supply to the firm. As the interest rate rises, the lender expects to earn more from lending and will be willing to supply more credit to the firm.

A distinction is often made between price and nonprice credit rationing. Price rationing occurs when the lender allocates the amount of credit by varying the rate of interest. Nonprice credit rationing refers to credit allocation that occurs not as the outcome of varying the rate of interest. In credit markets with imperfect loan information, information costs may be significant. In such situations, the lender may find it optimal to ration credit through nonprice means rather than raise interest

rates even though there is excess demand for credit (see section 3.4.1 for explanation). Such nonprice means may include measures taken by the lender to make it difficult or impossible for loan applicants to obtain a loan (e.g. requiring a loan collateral, loan application procedures requiring lots of documentation, soliciting bribes, etc.). Carter and Olinto (1996) note that quantity rationing occurs in formal credit markets where imperfect information problems are more relevant. Imperfect information problems are less relevant in informal credit markets because informal lenders deal with a small clientele known to them. Informal credit is, thus, often price rationed.

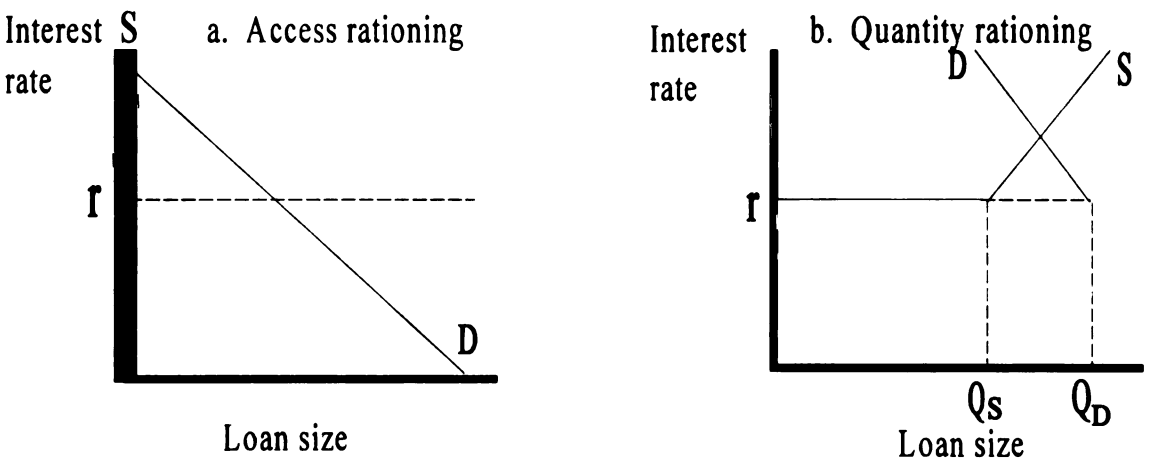

Figure 3.1. Access and quantity rationing

Determining whether a firm is credit constrained requires comparing the firm's effective demand for credit and its supply of credit at a given rate of interest. The firm's supply (firm-specific supply) of credit refers to the schedule of quantities of credit available to the firm at current rates of interest. A firm whose demand for credit exceeds the supply of credit would be considered to be credit constrained.

The gap between the amount demanded and received is a measure of the extent of the credit constraint. Barham et al. (1996) classify firms into three categories: fully constrained, partially constrained, and unconstrained (see Figure 3.2). A fully constrained firm has a zero supply of credit and a positive demand for credit (access rationing). A firm is partially constrained when it receives some credit and its demand for credit is positive and greater than its supply of credit (quantity rationing). A partially constrained firm fails to obtain a loan large enough for it to be on its demand curve.

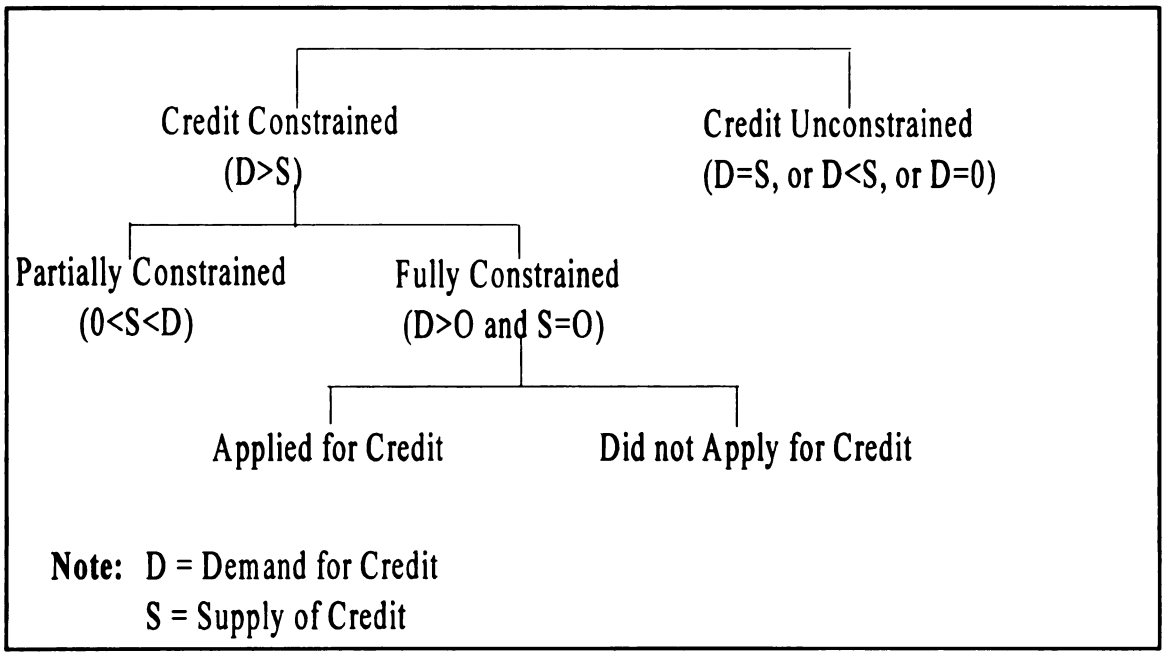

Figure 3.2. Credit constrained and unconstrained firms

A credit unconstrained firm is a firm whose demand for credit is less than or equal to its supply of credit. Carter and Olinto (1994) describe a credit-unconstrained firm or household as one whose demand for credit is less than or equal to the amount offered by the lender at the prevailing rate of interest.

A firm or household may be credit unconstrained because it has no demand for credit or its demand for credit equals its supply at the prevailing rate of interest. These situations are depicted in Figure 3.3. In Figure 3.3(a), the quantity of credit demanded at the prevailing rate of interest (r) is zero and at this rate the lender is willing to supply Q_S. Figure 3.3(b) depicts a situation in which the quantity of credit demanded and supplied to the firm at the prevailing rate of interest is the same (Q).

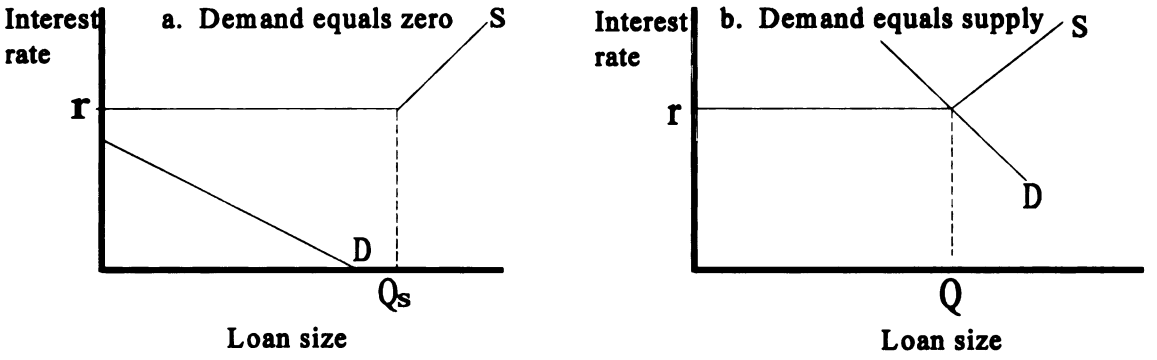

Figure 3.3. Credit unconstrained when demand equals zero and supply equals demand

Since the firm's demand for and supply of credit determine whether the firm is credit constrained, an insight into what determines the firm's supply of and demand for credit is crucial to understanding determinants of credit constraints.

3.3 Determinants of firm-specific demand for credit

The firm's demand for credit refers to the schedule of quantities of credit the firm is willing to obtain (and able to repay the loan) at different rates of interest, *ceteris paribus*. The firm's demand for credit is derived from its demand for capital. Firm-specific demand for credit may be expressed as a function of household

wealth, cost of borrowing, asset requirement, and expected return to investment in the economic activity to be financed. Algebraically, the relationship may be expressed as follows:

$$D_c = f(C,W,A,R) \quad \text{..... ..... (1)}$$

where:

D_c = amount of credit demanded by the firm;

C = cost of borrowing (includes interest on loan and transaction cost);

W = household wealth;

A = asset requirement of the firm; and

R = expected return to investment in the activity for which is credit sought.

Determinants of firm-specific demand for credit may be divided into those that (1) cause a movement along the demand curve and (2) shift the demand curve. These two categories of determinants are discussed below. In explaining the effect of each determinant on demand for credit, we shall assume that all other factors which may affect credit demand are constant.

A change in interest rate results in a movement along the demand curve and, thus, affects the quantity of credit demanded. Interest rate is the price paid by the borrower for credit. Therefore, the quantity of credit demanded by the firm and the

rate of interest are inversely related. An increase or decrease in interest rate causes the quantity demanded to decrease or increase, respectively.

Demand curve shifters include transaction costs, household wealth, expected return to investment, and asset requirement.

Transaction costs of borrowing include the actual monetary expenses incurred by the borrower and the borrower's opportunity cost of time involved in acquiring a loan (e.g., traveling to and negotiating with the lender and completing application forms). Transaction costs of borrowing determine the position of the demand curve. This means that a borrower facing higher transaction costs will have his/her demand curve more to the left relative to the demand curve for a borrower with lower transaction costs. If the borrower's transaction costs are currently high and something happens lowering the transaction costs, the demand curve for credit for the borrower will shift to the right indicating a rise in the demand for credit. Anything that increases the borrower's transaction costs would shift the demand curve for credit to the left implying a decrease in demand for credit. This means that at a given rate of interest, a smaller quantity of credit will be demanded.

The firm's demand for credit changes with household wealth and resource endowment. Household wealth could affect demand for credit positively or negatively. Wealth might cause the firm not to demand more credit because it no longer needs credit (i.e. economic activities can be financed from household wealth). On the other hand, knowing that there is sufficient collateral for loans made possible by a higher level of household wealth might encourage the firm to demand more credit. Thus, an increase in household wealth may shift the demand curve for

credit either left or right. However, in conventional analysis of the relationship between wealth and demand for credit, it is usually assumed that an increase in wealth shifts the demand curve for credit to the right.

The firm's requirement for assets affects its demand for credit. An increase in the firm's asset requirement results in an increase in the firm's demand for credit. Asset requirement is related to the economic sector in which the firm operates. Firms in certain sectors will require more money to invest in equipment, machinery, buildings, labor and raw materials than firms in other economic sectors. That is, the nature of economic activities the firm engages in determines the level of investment required and, thus, asset requirement of the firm. Firms engaged in economic sectors which require a high level of investment are likely to demand more credit.

The expected return to investment in the activity for which credit is to be used and demand for credit are positively related. Changes in expected return to investment can result in a movement along the demand curve for credit or a shift in the demand curve. At a lower rate of interest, a borrower in a particular economic sector might expect a higher pay-off from his/her project, and, therefore, the quantity of credit demanded increases (a movement along the demand curve). If the borrower decides to switch to another sector which promises to yield a better return to investment, the demand curve for credit shifts to the right. This implies that at any given rate of interest the borrower demands more credit than before the change to the sector with a higher return to investment. If the borrower shifts to a sector with a lower expected return to investment, the demand curve for credit shifts to the left.

3.4 Determinants of firm-specific supply of credit

Firm-specific supply[5] of credit is the schedule of quantities of credit the lender is willing to supply to the firm at the current rates of interest, *ceteris paribus*. The firm's supply of credit is a function of the cost of lending, firm's ability to repay the loan as perceived by the lender, and the lender's expected return on the loan. Firm-specific supply of credit may, thus, be expressed as follows:

$$S_c = f(C_l, B, R) \quad \text{..... (2)}$$

where

S_c = amount of credit supplied to the firm;

C_l = cost of lending;

B = firm's ability to repay a loan; and

R = lender's expected return on a loan.

As in the case of demand for credit, it is useful to distinguish between credit supply determinants that shift the supply curve from those that cause movement along the supply curve. In the discussion below, we shall explain the effect of each determinant of firm-specific supply of credit by assuming that all other factors affecting the firm's credit supply are constant.

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[5] Firm-specific or individual supply of credit is not the same as market supply of credit. Market supply of credit refers to the schedule of quantities of credit the lender is willing to make available to all firms in the credit market at the current rate of interest.

Interest rate is the price the lender receives for the loan. Therefore, interest rates are positively related to supply of credit. A higher interest rate encourages the lender to provide more credit. Changes in interest rates result in movements along the supply curve.

Whether the firm obtains credit depends on the lender's assessment of the firm's ability to repay the loan. If the lender perceives the firm's ability to repay the loan to be good, the lender will be willing to make credit available to the firm. The firm's ability to repay the loan as perceived by the lender is a function of wealth, debt obligations, expected return to investment in the project to be financed and characteristics of the operator (e.g. business experience, level of education, etc.) and business. Changes in these variables cause a shift in the firm's supply curve for credit.

An important component of the cost of lending is transaction cost. Transaction costs of lending include the actual monetary expenses incurred by the lender and the time cost involved in evaluating, disbursing and collecting loans. The higher the transaction costs of lending to the firm, the less willing will be the lender to make credit available to the firm. Transaction costs of lending determine the position and slope of the firm's supply curve for credit. Higher transaction costs mean that the firm's supply curve for credit will be more to the left. Lower transaction costs imply that the firm's supply curve for credit will be more to the right. This means that at a given rate of interest, lower and higher transaction costs of lending result in larger and smaller amounts of credit, respectively, received by the firm.

Lenders are interested in earning a good return on money they lend and, therefore, consider the expected return on loans to be an important factor in considering whether to lend or not. A higher expected return on a loan is an incentive for lending. The expected return on a loan is affected by the profitability of the activity to be financed.

3.5 Determinants of firm-level credit constraints

Credit constraints at the firm level are a function of firm-level supply of and demand for credit, given the interest rate. Algebraically, the relationship between credit constraints and their determinants may be expressed as follows:

$$CONSTR = f\{D_c = h(C, W, a, R);\ S_c = g(C_1, B, R)\} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3)$$

where CONSTR is the credit status of the firm (i.e. whether the firm is credit constrained or not).

The existence of credit constraints is evidence of a mismatch between the firm's demand for and supply of credit. Credit constraints occur when there is excess demand for credit. Thus, both demand for and supply of credit are important in determining whether credit constraints occur.

The role of demand for credit in determining whether a firm is credit constrained is often ignored. Kochar (1992) notes that participation in borrowing is often modeled as being determined solely by the lender's decision with no consideration of the household's demand for credit. Such an approach assumes

that demand for credit is always positive (and high) and, therefore, only the lender's decision supply credit will determine participation in borrowing. Kochar (1992) shows that ignoring demand for credit results in the overestimation of the level of credit rationing. In a model where demand for credit is ignored, Kochar (1992) finds that the probability of access to credit is only 19 percent compared with 62 percent when demand is allowed to determine participation in borrowing. Thus, 81 percent and 38 percent are classified as credit rationed in the formal credit market under the first and second models, respectively.

Robinson (1995) provides two possible explanations for the mismatch between supply and demand for credit for MSEs. First, she believes that there are deeply-held misconceptions about local financial markets that the delivery cost of financial services at the local level is too high for financial institutions and that informal financial services satisfy local demand. Second, Robinson (1995) notes that lenders often do not recognize the demand for financial services by small households .

For many economists, the main reasons for the gap between demand for and supply of credit are imperfect information, lack or insufficiency of collateral, transaction costs (Hoff and Stiglitz, 1990) and institutional constraints.

3.5.1 Imperfect information

The problem of imperfect information arises mainly in formal credit markets. Formal lenders are usually located far from potential borrowers and often do not have perfect information regarding the characteristics of potential borrowers and the

projects for which credit is to be used. Informal lenders, especially family and friends, have good information regarding the characteristics of potential borrowers (Udry, 1990) and their projects. Udry (1995) points out that it would be incorrect to conclude that imperfect information problems are unimportant for the structure of the credit market when it is comprised mainly of loan transactions among family and friends. Rather, these problems tend to be most severe when formal credit transactions are involved.

An information gap may also arise from the side of the potential borrower. It is not uncommon for potential borrowers in developing countries not to have adequate information about formal lenders and their operations (Llanto, 1990). In such situations, formal lenders forfeit the opportunity to do business with people who may turn out to be good clients.

There are two sources of informational imperfection from the lender's side. Firstly, the lender may be unable to identify the probability distribution of returns associated with the borrower's/applicant's projects. The probability distribution of returns is known to the borrower (i.e., differences in the riskiness of projects are known to the borrower). In such situations the lender treats all borrowers as if they were homogeneous and resorts to contracts offering identical terms to borrowers (Barham et al.,1996). The second concerns the inability of the lender to monitor the behavior of the borrower and credit use after the loan has been granted.

Raising the rate of interest beyond a certain level as a mechanism for rationing credit in the presence of imperfect information leads to a risky pool of borrowers (adverse selection effects) or creates an incentive for borrowers to divert

credit to riskier uses (adverse incentive or moral hazard problems) (Stiglitz, and Weiss,1981; Stiglitz, 1987; Besley, 1994; Fry, 1995). Because of adverse selection and moral hazard problems arising from the use of the rate of interest as a rationing mechanism in situations of imperfect information, lenders will be inclined to employ nonprice means to ration credit. Thus, in markets with imperfect information, price is an inadequate tool for rationing credit.

As the lender increases the rate of interest on a loan (beyond the rate which maximizes the expected return a loan) in the presence of imperfect information, borrowers with a low probability of default drop out of the credit market because they are unwilling to pay a higher rate of interest. That is, they are most discouraged from borrowing because they are most likely to repay the loan. This leaves borrowers with risky projects and a high probability of default. Such borrowers are less concerned about the interest rate they have agreed to pay than those who undertake safe projects because they are most likely to default on their loans (Stiglitz, 1987). If the lender continues to offer credit at the rate of interest beyond that which maximizes the expected return, the expected return declines. This discourages lenders to use the rate of interest to allocate credit in situations of imperfect information. Lenders, thus, fix the rate of interest and credit rationing occurs.

Increasing the rate of interest when information is imperfect may create an incentive for borrowers to undertake risky projects (adverse incentive or moral hazard). This means that a borrower who has to choose between two projects, one with a high risk and the other with a low risk of failure, may undertake the risky

project because of the higher rate of interest charged on the loan. This may reduce the lender's expected return on the loan. So, the lender will fix the rate of interest and use tools other than the rate of interest to allocate credit.

Nonprice credit rationing arising from imperfect information may occur independent of wealth of the borrower. Figure 3.4 illustrates credit rationing for poor and rich borrowers under imperfect information conditions.

In Figure 3.4, OS_2S_3 and OS_4S_5 represent credit supply curves for poor and rich borrowers, respectively. S_3 and S_5 represent points beyond which increases in interest rate result in a decrease in expected return to the lender due to adverse selection and incentive problems. Therefore, the lender will not charge a rate of interest above r_2 to ration credit.

Points S_2 and S_4 represent the threshold on the credit supply curves where the borrower is overleveraged[6]. At S_2 and S_4, the value of the collateral provided by poor and wealthy borrowers is combined with the rate of interest to ensure that the expected return on the loan is equal to its opportunity cost. This means that the lender can provide loans at the contract rate of r_1 without risk.

Due to imperfect information regarding the characteristics of the borrowers, the lender is unable to tailor loan contracts to their risk profile. Therefore, poor and rich borrowers are charged the same rate of interest (r_2) and none of them is on their demand curve (i.e., there is excess demand for credit). Demand curves for

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[6] The amount of financial leverage in a firm's capital structure may be expressed as debt/equity ratio. An overleveraged firm is one that has a high debt/equity ratio implying that a relatively large amount of the firm's assets is financed through borrowing (Miller, 1977).

poor and rich borrowers are $D(K_P)$ and $D(K_R)$, respectively. Excess demand for credit for poor and rich borrowers is represented by $L^S_1L^D_1$ and $L^S_2L^D_2$, respectively.

3.5.2 Transaction costs

The role of transaction costs as a credit rationing mechanism is well documented in literature (Ahmed, 1982; Cuevas, 1984; Ladman, 1984; Inter-American Development Bank, 1983; Cuevas and Graham, 1984). Higher transaction costs associated with lending to small borrowers are an important explanation for the bias in lending towards large borrowers. Transaction costs of lending are higher for transactions involving rural borrowers are involved (Pohlmeier and Thillairajah, 1989).

Lending to small borrowers involves relatively higher information collection and administrative costs per currency unit. Such non-interest fees raise the cost of borrowing per currency unit for small borrowers. Thus, transaction costs are similar to interest costs of borrowing because both result in a higher price of credit to the borrower. Guia-Abiad (1993) finds that transaction costs as a percentage of loan amount received is regressive. Therefore, the small borrower is likely to be transaction-cost rationed.

In Figure 3.4, a poorer household could face a supply curve for credit such as S_0S_1 or even have its supply curve coinciding with the y-axis if transaction costs are too high. This is because, with transaction costs incorporating a fixed

component, the leverage ratio[7] is higher for poorer households. Higher transaction costs of lending, thus, result in the supply curve for credit to be positioned more to the left. This implies that, at a given rate of interest, the quantity of credit received is lower. In the presence of adverse selection and incentives, lenders are less able to use the interest rate as a rationing device for poorer borrowers and the supply curve is truncated at r_C rather than r_2.

3.5.3 Institutional constraints

Credit may be rationed as the result of legal restrictions requiring financial institutions to lend to firms meeting certain requirements. For example, Branch (1996) found that formal credit to informal firms in Peru was discouraged by legal restrictions requiring formal institutions to lend only to formal (registered) firms. In such a case the legal status of the firm determines credit access or rationing. Interest rate ceilings and credit allocation quotas may also result in credit rationing. The response of formal lenders may be to concentrate lending on a few large borrowers to minimize transaction costs and default risks (Heidhues, 1990). Gonzalez-Vega (1984) uses the phrase "the iron law of interest-rate restrictions" to describe this credit rationing behavior.

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[7] The effective leverage ratio for a borrower can be written as $L/(C-TC_t)$ where L = loan size, C = value of loan collateral, and TC_t = transaction costs. The denominator may be interpreted as the net collateral offered by the borrower (Barham et al., 1996)

3.5.4. Insufficient collateral

Formal lenders often require collateral for loans (when there is imperfect information) which they can seize in case of default on the loan. Insufficient collateral may produce credit rationing that would not otherwise exist. Numerous studies indicate that credit in agrarian settings is rationed according to the ability to offer collateral (von Pischke et al., 1983; Rudra, 1982; Binswanger et al., 1989). Insufficient collateral is also an important explanation for the existence of credit rationing in non-agrarian settings. Credit rationing caused by insufficient collateral is demonstrated in Figure 3.4 where the supply curve for credit for poorer borrowers is more to the left than the supply curve for credit for richer borrowers. This means that poorer borrowers are more credit rationed than richer borrowers.

3.5.5 Credit constraints and economic efficiency

The existence of credit constraints implies that the market fails to bring about an efficient allocation of credit. Quarcoo (1979) describes an efficient credit system as one in which (a) the cost of capital is uniform - investors pay the same price for capital and (b) the purchase price of financial services is equal to the marginal cost of providing the services. An inefficient credit market system which is characterized by credit rationing results in nonoptimal allocation of society's capital resources and under-consumption of financial services (Quarcoo, 1979). Misallocation of society's capital resources may also occur when credit is granted to people without any repayment ability. This can happen when people receiving credit do not have

investment opportunities which would generate enough income for them to repay the loans.

In an economy where there is no market failure, the interest rate (the price of credit) charged on a loan allocates credit. Such allocation is efficient (Pareto efficient) when it is not possible to make someone better off without making someone else worse off (i.e. no Pareto improvement is possible). Pareto efficiency is achieved when there is no incentive for the person who obtains a loan to on-lend to another person (Besley, 1994).

Pareto efficient outcomes are possible in markets which are perfectly competitive and without externalities. Credit markets in developing countries are, however, not perfectly competitive. These markets are characterized by imperfect information and problems related to repayment of loans. Besley (1994) suggests that the test of whether a credit allocation is efficient or not should be that a Pareto improvement is not possible but taking into account the problems of imperfect information and enforcement - constrained Pareto efficiency. Using constrained Pareto efficiency as the standard, it is possible for a credit allocation which is less than what the borrower requested (because of imperfect information problems) to be efficient.

CHAPTER FOUR

DATA SOURCES AND CHARACTERISTICS OF THE SAMPLE

This chapter provides information on the data used in the study and describes the characteristics of the sample.

4.1 Data sources

The data for this study were obtained from a survey on MSEs conducted in 1994 in the Northern Province. The survey was part of an investigation into the provision of rural financial services in South Africa. The investigation was carried out by a commission of inquiry. The commission's findings and recommendations are contained in a report titled Final Report of the Commission of Inquiry into the Provision of Rural Financial Services. A questionnaire designed by researchers from Ohio State University and University of Pretoria was used to collect the data (see Appendix a). In the Northern Province, the questionnaire was administered by researchers from the University of the North.

The main purpose of the survey was to determine the nature of financial transactions and behavior of MSEs in selected economic subsectors. The subsectors include tailoring and alterations, building and construction, metalworking, block and brick making, retailing and repair services. Data were collected from 270

MSEs located in 79 villages in the former homeland and former white areas of the Northern Province. The sample was designed to include a minimum number of MSEs engaged in each of the selected economic subsectors. The MSEs included in the sample ranged in size from very small to relatively large (employing up to fifteen persons). The reason for selecting MSEs differing in size was the expectation that the nature of financial transactions would be different depending on firm size and economic activity. The sample is not designed to be representative of the MSE sector in the Northern Province in a statistical sense.

The sample was taken from the former white magisterial districts of Pietersburg, Soutpansberg and former homelands of Lebowa and Venda. Magisterial districts in the former homeland of Lebowa include Bochum, Mokerong, Sekgosese, Seshego, and Thabamoopo. Thohoyandou is the only magisterial district included from the former homeland of Venda.

The magisterial districts are subdivided into fourteen regions. Table 4.1 shows the number and proportion of respondents per region.

The MSEs are engaged in diverse business activities. Because one of the purposes of this study is to determine whether the economic sector in which MSEs are engaged has any bearing on their credit status, the MSEs are categorized into four economic sectors, namely, manufacturing, construction, services and trade. Table 4.2 shows the number and proportion of MSEs according to economic sector and business activity.

Table 4.1: Number and proportion of respondents (MSEs) per region

Region	Respondents	Percentage
Bochum	16	6
Louis Trichardt	11	4
Mankweng	32	12
Mokerong	15	6
Mothapo	4	1
Phokoane	5	2
Pietersburg	11	4
Praktiseer	1	0
Sekgosese 1	3	1
Sekgosese 2	18	7
Seshego	10	4
Thabamoopo 1	48	18
Thabamoopo 2	24	9
Thohoyandou	50	18
Tzaneen	2	1
Zebediela	20	7
Total	**270**	**100**

Table 4.2: MSEs according to economic sector

Sector		MSEs	Percentage
Construction (Building & construction)		44	16
Manufacturing		89	33
Brickmaking	39 (44%)		
Carpentry	4 (5%)		
Metalworking	39 (44%)		
Shoemaking	4 (5%)		
Other	3 (3%)		
Service		86	32
Electronic repair	10 (12%)		
Vehicle repair	33 (37%)		
Tailoring	40 (47%)		
Other	3 (4%)		
Trade		48	18
Shopkeeping	44 (92%)		
Liquor trading	4 (8%)		
Other		3	1
Total		**270**	**100**

4.2 Characteristics of the sample

4.2.1 Households and MSE operators

The characteristics of households and MSE operators included in the sample are presented in Table 4.3. These characteristics may be summarized as follows:

- The average household size is relatively large.
- The majority (80%) of households are headed by men.
- Income from business activities comprises the largest part of household income.
- Wage employment is the second most important source of income.
- Old-age pensions and remittances are of only minor importance as sources of household income.
- The major of MSE operators are in the middle-age group as indicated by the average age of 44 years.
- The average level of education of MSE operators is relatively high (9 years of schooling).

Table 4.3: Household and MSE operator characteristics

		Average
Household size (persons)		5.5
Gender of household head (male=1, female=0)		0.82
Monthly income (R)		5918
Business	4653 (79%)	
Remittances	57 (1%)	
Pension	88 (1%)	
Wages	1120 (19%)	
Value of assets (R)		6663
Level of education (years)		8.6
Age of operator (years)		43.8

The gender composition of MSE operators included in the sample does not reflect the fact that most MSEs in Southern Africa are operated by females. It also does not reflect the gender composition of MSE operators in South Africa. Zeidler (1994) notes that, in South Africa, 62 percent of microenterprises are operated by females and 70 percent of small enterprises run by men. The fact that the proportion of females included in the sample is not representative of the true gender composition of MSE operators in South Africa could limit the usefulness of the results of the study for policy purposes.

Official statistics on rural household income sources in South Africa indicate that wages are the most important component of rural household income (see Central Statistical Services, 1996). These statistics also indicate that remittances and transfers (pensions) are important sources of income for rural households; income from MSEs and other sources is the fourth most important source of rural household income. Information on household income sources from the sample

seems to contradict official statistics. This could be attributed to the unrepresentativeness of the sample and poor measurement of the level of income from the various sources.

The relatively high level of education of MSE operators included in the study is supported by findings from other studies. For example, Zeidler (1994) finds that two-thirds of MSE entrepreneurs in South Africa are functionally literate.

4.2.2 MSEs

Table 4.4 contains characteristics of MSEs included in the sample. These characteristics may be summarized as follows:

- Three-quarters of all the MSEs in the sample are located in rural areas.
- The majority of MSE operators included in the sample are male. Only 18 percent of MSE operators are female.
- The majority (65 percent) of the MSEs in the sample are in manufacturing and service sectors.
- Of all the MSEs in the sample, only 33 percent are officially registered as businesses.
- The average business age of seven years indicates that most of the MSEs in the sample are young.
- On average the MSEs in the sample employ three persons per firm.

The geographical composition of MSEs included in the sample reflects the fact that most MSEs in South Africa are located in rural areas. However, the sectoral composition of the MSEs contradicts findings from other studies and official

statistics which indicate that the MSE sector in South Africa is dominated by the trade (retail) sector.

Table 4.4: Characteristics of MSEs

	Number (%)
Firms in	
Manufacturing	89 (33%)
Construction	44 (16%)
Service	86 (32%)
Trade	48 (18%)
Other	3 (1%)
Firms located in	
Rural area	202 (75%)
Peri-urban area	68 (25%)
Formally registered firms	89 (33%)
Male operators	222 (82%)
Female operators	48 (18%)
Average age of business (years)	7.4
Workers per firm	3.6

The small proportion (33%) of formally registered MSEs is a typical characteristic of the MSE sector in many developing countries. For example, McPherson and Liedholm (1996) note that only four and eight percent of rural firms are formally registered in Swaziland and Niger, respectively.

The average number of workers (3.6 persons) per firm for MSEs included in the sample indicates that on average the MSEs are small. The average number of workers is twice that estimated by Zeidler (1994) for rural MSEs in South Africa.

4.2.3 Households and MSEs according to location

The characteristics of households and MSEs included in the sample according to whether they are located in rural or peri-urban areas are presented in Table 4.5. These characteristics can be described as follows:

- In both peri-urban and rural areas, most MSEs in the sample are in manufacturing and service sectors.
- Wages from employment outside the firm is the most important non-business source of income for both peri-urban and rural households; but it is far smaller than income earned from the MSE.
- Rural households derive more income from remittances than peri-urban households.
- Rural MSEs have a higher average value of assets and savings than peri-urban MSEs.
- The proportion of formally registered MSEs is higher in rural areas than in peri-urban areas. This is surprising because other studies indicate that the proportion of registered firms is higher in urban areas than in rural areas (McPherson and Liedholm, 1996).

Table 4.5: Characteristics of households and MSEs according to location

	Peri-urban (N=67)	Rural (N=202)	t-value	2-tail significance
Economic sector (1 = yes; 0 = no)				
Construction	0.14	0.18	0.75	0.435
Manufacturing	0.42	0.30	-1.77	0.080*
Services	0.32	0.32	0.05	0.959
Trade	0.12	0.20	1.61	0.109
Average income (R)				
Business	3765 (80%)	4969 (79%)	0.22	0.825
Pension	83 (20%)	90 (1%)	0.20	0.839
Remittances	2 (0%)	76 (1%)	2.43	0.016+
Wages	852 (18%)	1190 (19%)	1.53	0.128
Business operator				
Age (years)	43	44	0.77	0.443

 # = significant at 1 percent *+ = significant at 5 percent* ** = significant at 10 percent*

- Rural MSEs in the sample have a higher average value of assets, annual savings in the bank, and business income than peri-urban MSEs. These averages are distorted by major outliers in the data on assets, savings and income in rural areas.

4.2.5 Households and MSEs according to economic sector

Table 4.6 presents the characteristics of households and MSEs in the sample according to economic sector. The main points from Table 4.6 are:

- MSEs in the manufacturing sector have the highest average monthly business income.
- MSEs in the construction sector have the highest proportion of monthly income derived from business.
- Wages are the second most important source of household income.
- Old-age pension and remittances are of only minor importance as sources of household income.
- Operators of MSEs in construction and manufacturing sectors are predominantly male.
- MSEs in the trade sector are the wealthiest as indicated by the value of assets and savings.
- The trade sector has the highest proportion of formally registered firms.
- The manufacturing sector has the highest proportion of firms located in peri-urban areas.

Table 4.6: Characteristics of households and MSEs according to economic sector

	Construction (N=44)	Manufacturing (N=89)	Service (N=85)	Trade (N=48)
Average income (R)	5381 (100%)	7655 (100%)	5625 (100%)	6023 (100%)
Business	4702 (87%)	5496 (72%)	4160 (74%)	4129 (69%)
Pension	25 (1%)	54 (1%)	117 (2%)	146 (2%)
Remittances	19 (0%)	25 (0%)	103 (2%)	77 (1%)
Wages	635 (12%)	2 080 (27%)	1245 (22%)	1671 (28%)
Business operator				
Age (years)	43	45	44	44
Education (years)	9	8	9	9
Gender (1=male; 0=female)	0.98	0.96	0.69	0.69
Household size (persons)	5.2	5.4	5.6	5.8
Size of labor force (persons)	3.5	4.4	3.2	2.7
Hired labor (persons)	2.2	2.9	1.7	0.9
Formal registration (1=formally registered; 0=not formally registered)	0.18	0.29	0.39	0.44
Location (1=peri-urban; 0=rural)	0.20	0.32	0.25	0.17
Business age (years)	10	7	7	6
Savings (R)	6213	3954	2570	10827
Value of assets (R)	3886	7046	5907	9932

4.2.6 Sources of capital for MSEs

4.2.6.1 Sources of capital for establishment of business

The most important source of capital for establishing a business as ranked by the respondents is own funds or savings (see Table 4.7). The following observations can be made:

- More than 70 percent of the respondents identified own funds/savings as the most important source of funds for starting or buying a business. This finding confirms the observation that most MSE operators tend to self-finance most of their working and fixed capital (Coetzee et al., 1994).
- The second most important source of capital is severance payment[8]. The proportion of operators who identified severance payment as the most important source of funding for establishing their businesses is 12 percent.
- Parastatals (development corporations) were identified by four percent of the respondents as the most important source of capital for establishing or buying a business.
- Family and friends and moneylenders were identified as the most important sources of capital for establishing or buying a business by a small proportion of the respondents.

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[8] Money paid to a person who loses his/her job when the employer is forced to reduce the number of employees for economic reasons.

Table 4.7: Ranking of the most important source of capital for establishing MSEs

	MSEs	Percentage	Rank
Own funds/savings	191	71	1
Severance payment	31	12	2
Parastatals	12	4	3
Family and friends	9	3	4
Pension	8	3	5
Remittances	5	2	6

4.2.6.2 Sources of capital for financing assets

The majority of MSE operators use their own funds to purchase assets such as tools and equipment. Only a few approach lenders for credit to purchase assets. Table 4.8 provides information on the number and proportion of MSE operators who participate in the credit market to obtain funds to purchase assets.

Table 4.8: Participation in the credit market to purchase assets

	Formal	Informal	Formal or Informal
Number did not request credit	182 (67%)	246 (91%)	98 (36%)
Number requested credit	88 (33%)	24 (9%)	83 (85%)
Number refused credit	81 (92%)	9 (37%)	15 (15%)
Number received credit	7 (8%)	15 (63%)	172 (64%)

Most MSE operators requesting credit to purchase assets approach formal lenders but only a few obtain formal credit. Thirty-three percent of all MSE

operators requested credit from formal lenders to purchase assets but only eight percent were successful. A smaller proportion of MSE operators (9%) applied for credit from informal lenders and sixty-three percent were successful. Overall, 36 percent of the MSE operators asked for credit to purchase an asset from formal or informal lenders, or both, but only 15 percent received credit.

4.2.6.3 Sources of capital for purchasing inputs/raw materials

The majority of MSE operators use their own funds to purchase inputs/raw materials. Only thirty-percent of MSE operators indicated that they asked to purchase inputs/raw materials from suppliers on credit. Table 4.9 presents information on participation of MSE operators in the supplier credit market.

Table 4.9: Participation in the supplier credit market to purchase inputs/raw materials

	Number (%)
Did not apply for supplier credit	163 (67%)
Applied for supplier credit	81 (33%)
Received supplier credit	62 (77%)
Did not receive supplier credit	19 (23%)

Note: Information missing on 26 MSEs

Reasons given for not asking for supplier credit are presented in Table 4.10. The majority of MSE operators indicated that they did not ask for supplier credit because the supplier did not provide credit facilities (sold on cash basis only).

Twenty percent of MSE operators did not ask for supplier credit because they do not like to be in debt.

Table 4.10: Reasons for not applying for supplier credit

Reason	Number	Percent
Felt request would be turned down	8	5
Do not like debt	33	20
Had sufficient savings	11	7
Credit costs too much	8	5
Insufficient collateral	3	2
Had access to another credit source	1	0
Supplier is cash and carry	99	61
Total	**163**	**100**

CHAPTER FIVE

REVIEW OF METHODS FOR IDENTIFYING CREDIT CONSTRAINED FIRMS

This chapter reviews literature on approaches for determining whether a firm/household is credit constrained. The difficulty of estimating demand for and supply of credit, separately, at the firm level is highlighted. Two approaches for categorizing firms/households as credit constrained or unconstrained are described. These approaches are categorized into two: (1) those in which information from respondents is used to completely sort them into credit constrained and unconstrained categories (full-sorting approaches); and (2) approaches that entail using information from respondents to partially sort them into credit constrained and unconstrained categories (partial-sorting approaches).

5.1 Introduction

Identifying a firm as credit constrained essentially requires that we show that the firm's effective demand for credit exceeds its supply of credit. This means that we need to estimate the firm's effective demand for credit (equation 1 in Chapter 3) and its supply of credit (equation 2 in Chapter 3) and compare them. A number of problems confront the analyst who is attempting to estimate the firm's/ household's demand for credit and its supply of credit separately.

A major problem encountered in estimating credit demand and supply functions separately (structural-form approaches) arises from the difficulty of finding sufficient variables that enter into the firm's demand model but do not simultaneously affect the firm's supply of credit. This is the difficulty of identifying demand and supply equations because many variables which determine demand for credit also determine supply of credit. If credit demand and supply equations are not identified, it means that when we attempt to estimate credit demand or supply functions we will not know whether we are estimating a demand or supply function.

Another problem relates to the difficulty of determining the firm's effective demand for credit. This is because we need to determine not only how much credit the firm would like to have but also its ability to repay the loan. Determining the ability of a potential borrower to repay a loan is very difficult, especially in the presence of imperfect information which characterizes credit markets in many developing countries. In particular, to determine the loan repayment ability of a potential borrower involves judgements about the future behavior of the borrower and the future profitability of the project for which the loan is sought. Different people may have widely divergent views as to how that future is likely to evolve. The difficulty of estimating effective demand for credit explains why most analyses of credit markets only consider notional demand for credit. This study also considers notional demand rather than effective demand for credit in determining whether a firm/household is credit constrained.

Thirdly, the dependent variable in the demand equation is difficult to measure because demand for credit is not directly observable. While we can

observe whether a firm or household receives credit or not, we cannot tell whether the firm/household is on its demand curve or not. That is, there is usually no information available to indicate whether the observed amount of credit corresponds to a point on the demand curve or supply curve (Carter and Olinto, 1996).

Because of the difficulty of estimating demand for and supply of credit at the firm-level, many analysts use an approach in which credit demand and supply variables are collapsed into one equation (reduced-form approach) with excess demand as the dependent variable (equals to 0 or 1 depending on whether demand is considered to exceed supply of credit). This is the approach adopted in this study.

Two approaches are widely used to assign the values of 0 or 1 to a particular firm/household. These approaches can be categorized into two: complete-sorting and partial sorting approaches (Carter and Olinto, 1996).

Complete-sorting approaches entail using ancillary information obtained from respondents regarding their credit market experiences to classify them as credit constrained or unconstrained. In complete-sorting approaches firms/households are fully sorted into credit constrained and unconstrained regimes. Two subcategories of complete-sorting approaches may be identified. The first subcategory involves requesting respondents to indicate whether they applied for credit or not. Those who applied for credit are considered to have demand for credit and, therefore, are either credit constrained or unconstrained. Nonapplication is considered to imply zero demand for credit and absence of credit constraints (e.g., Kochar, 1992). The second subcategory includes those approaches in which, in

addition to asking the respondent to indicate whether he/she applied for credit and the amount of credit received, the respondent is also requested to give reasons for not applying for credit (e.g. Feder et al., 1990; Barham et al., 1996; Zeller, 1994; Mushinski, 1995). Respondents are then classified as constrained or unconstrained depending on their reasons for not applying for credit.

Partial-sorting approaches involve the use of ancillary information to partially sort firms or households into credit constrained and unconstrained regimes (see Carter and Olinto, 1996; Conning, 1995). In these approaches, respondents are sorted into different categories depending on observed transactions in the credit market. For example, one such category might include those respondents who indicate that they did not receive credit from either formal or informal lenders. These nonborrowers can be either credit constrained or unconstrained. This means that they cannot be placed unambiguously into one of the two credit regimes (credit constrained or unconstrained). They are only partially sorted into the category of nonborrowers from formal and informal lenders. Categorization of respondents into credit constrained and unconstrained where only partial sorting is possible requires application of econometric methods (econometrics of unobserved switching) to estimate credit demand and supply parameters plus the probability of being credit constrained (i.e. the probability that demand for credit exceeds supply of credit).

5.2 Full-sorting approaches

Feder et al. (1990) use an approach that explores the latent demand for credit in China. The approach involves asking borrowers in the formal credit market

whether they received all the credit they wanted or if they wanted more credit than they received at the going interest rate. Nonborrowers are requested to explain why they did not borrow. Respondents are classified as credit constrained if they obtained part of the credit they wanted or could not obtain credit at all. Considering the whole sample, respondents are classified as fully constrained or unconstrained in the formal credit market.

Feder et al. (1990) find that 37 percent of the households included in their analysis are credit constrained. An important observation from the study is that not all rural households are credit constrained in their farming activities. The approach recognizes that credit constrained firms can be found among both credit applicants and nonapplicants. The approach has been adopted by several analysts (Barham et al., 1996; Zeller, 1994)

Barham et al. (1996) build on the method used by Feder and others to explore the latent demand for credit in Guatemala. In addition to asking nonborrowers why they did not borrow in the formal credit market, Barham et al. (1996) ask why their applications were rejected. Unlike Feder et al. (1990) who classify households as credit constrained or unconstrained, Barham et al. (1996) classify households as partially or fully credit constrained or unconstrained. The results of their study indicate that 34 percent of the households are fully credit constrained and none is partially credit constrained in their dealings with private banks. Of those that are credit constrained in their dealings with private banks, 55 percent were either partially or fully credit constrained in their dealings with credit unions. Barham et al. (1996) conclude that poorer households are more likely to be

tightly credit constrained in their dealings with private banks. The study also concludes that credit unions are important in relaxing credit constraints faced by low-wealth households but leave the poorest households still quantity rationed.

Zeller (1994) adopts an approach similar to that of Feder et al. (1990) to classify loan applicants in Madagascar rationed by their lenders as supply-constrained individuals. Unlike the studies reviewed above, Zeller's study analyzes credit rationing in both formal and informal credit markets. Respondents are classified as credit rationed either in the formal or informal credit market or both. However, formal credit lenders in Zeller's study refer to formal lending groups that obtain loans from formal lending institutions for on-lending to members of the groups. Respondents whose applications for membership in a formal lending group were rejected are classified as credit constrained even though they did not apply for credit directly. Zeller (1994) proceeds to use probit models to estimate the determinants of loan application (demand) and credit rationing. He finds that the proportions of constrained households in formal and informal credit markets are 24 and 16 percent, respectively.

One problem often encountered in classifying respondents as credit constrained or unconstrained is how to classify the group that did not apply for credit. In the studies reviewed above, the problem was dealt with by asking nonapplicants to provide reasons for not applying for credit. In a study of rationing constraints in the formal credit market (allowing for household participation in the informal credit market) in India, Kochar (1992) deals with the problem differently. The approach used by Kochar involves determining whether credit was applied for.

Application for credit is considered to be evidence of the existence of demand for credit. Nonapplication is considered to imply a lack of interest in obtaining credit or absence of a credit constraint. According to this approach, all nonapplicants are considered to be credit unconstrained. Applicants for credit are considered to be either constrained or unconstrained depending on whether demand for credit is greater or less than supply, respectively. The decision on whether demand for credit exceeds supply of credit is based on responses to questions asked of applicants for reasons for not obtaining the desired amount of credit.

Kochar (1992) estimates demand and access functions and uses a univariate probit model to estimate the probability of access to credit. She estimates the probability of access to formal credit to be 81 percent when demand for credit is considered to be high (i.e., when all households are considered to demand credit at the prevailing rate of interest) and, therefore, the lender determines whether one gets credit or not (i.e., only supply determines the amount of credit received and demand is irrelevant). In a bivariate probit model modified to incorporate both demand for and supply of credit as determinants of access to credit, the estimated proportion of credit constrained households drops to only 19 percent.

A fundamental problem with Kochar's approach is that it fails to distinguish between nonapplicants who have no demand for credit and those who do not apply for credit for reasons other than zero demand. Empirical analysis has often assumed that only those who apply for credit have demand for it. Acceptance of such an assumption is likely to result in erroneous conclusions about demand for credit. Nonapplication for credit does not necessarily imply zero demand for credit.

For example, many people do not apply for credit because either transaction costs are too high or they believe that their applications will be rejected for reasons of insufficient collateral (Baydas et al., 1994). Mushinski (1995) labels firms or individuals that feel they cannot obtain credit despite their willingness to borrow at prevailing interest rates as being "subjectively rationed." Zeller (1994) found that individuals that never applied for formal credit had their applications for formal group membership in a credit association rejected or did not apply for group membership because they perceived no chance of success. The individuals were categorized as being supply-constrained in the formal (credit) market although they did not apply for formal credit.

Mushinski (1995) expands Kochar's model in which both demand and supply are considered to estimate the probability of household access to formal credit and the effect of credit unions thereon in Guatemala. In Mushinski's approach, households are requested to indicate whether they have outstanding loans from formal and informal sources. Those who indicate that they have outstanding loans are classified as loan recipients. Households that do not have outstanding formal loans are asked to indicate whether they applied for loans and were rejected. If they did not apply for formal credit, they are requested to provide reasons for not having done so. The latter group are classified as "subjectively rationed" if their reasons for not applying were insufficient funds, high transaction costs or fear of risk (of losing collateral or wealth). Those who indicate that their reason for not applying for formal credit is lack of interest, uninformed or unconstrained are classified as not rationed. Households that obtained credit from moneylenders at interest rates

exceeding the average interest rate offered by formal credit sources are also considered to be rationed in the formal credit market.

Mushinski (1995) finds that credit unions can supply credit to a segment of the credit market not reached by private and public banks. Credit unions are found to raise credit supply and demand probabilities for their members. Carter et al. (1994) find that credit unions may possess informational and cost advantages which enable them to provide credit to households at lower cost. Credit unions may also access moral suasion for loan repayment and, thus, lower default risks (Barham et al., 1996). The lower cost of delivering credit and moral suasion enable credit unions to make loans readily available to households. These advantages of credit unions may also raise demand for credit in two ways. Firstly, the collective knowledge available to credit unions may reduce transaction costs of applying for a loan. Secondly, households may become more interested in applying for loans if they perceive their chances of obtaining credit from credit unions to be good (Mushinski, 1995).

5.3 Partial-sorting approaches

Conning (1995) uses a similar approach to Kochar's to partially sort respondents into credit constrained and unconstrained categories. The two approaches are similar because both base their classification on whether respondents participate in borrowing or not. Conning (1995) develops a model (bivariate probit model) to predict whether farmers are credit rationed based on participation decisions in borrowing (i.e. whether or not a borrower is observed in

a particular credit market) rather than examining the details on actual amounts transacted and interest rates. Although Kochar's and Conning's approaches are similar, there are some differences between the approaches. One of the main differences is that Kochar divides households between those borrowing either from the formal credit market or informal credit market while Conning's model allows households to borrow from the formal (commercial banks) and informal (including only traders and excluding other lenders in the informal credit market) credit markets, or neither source.

The procedure in Conning's model involves specification of demand and supply functions and estimation of the probabilities of households being in any of the three regimes (borrowing from traders only, both trader and formal lender, and none of the two). The estimated probabilities are then used to estimate the parameters of the demand and supply functions from a log likelihood function. Households participating in the credit market are then subdivided into credit rationed and nonrationed categories depending on the value of the predicted amount of credit received. One of the main conclusions of the study is that households that borrow from informal lenders (traders) only rather than the poorest or nonborrowing households are the most credit rationed.

Carter and Olinto (1996) employ an approach similar to Conning's to analyze the impact of land titling and other tenure security measures on agricultural performance in Paraguay. Households are categorized into those that borrow from informal credit market only, formal credit market only, formal and informal credit markets and those that do not borrow. Using information on the amount of credit

received from each source, credit demand and supply together with the probability of being credit rationed in a particular credit market or combination of credit markets are estimated.

CHAPTER 6

REGRESSION SPECIFICATION, CLASSIFICATION OF FIRMS AND ESTIMATION PROCEDURE

This chapter specifies the regression model used in this study to identify determinants of credit constraints on firms. The variables included in the model are described and the hypothesized relationship between being credit constrained and the explanatory variables is outlined. The approach used to classify firms included in the analysis as credit constrained or unconstrained is explained. A logit framework is used to estimate the odds of being credit constrained.

6.1 Regression model and specific hypotheses

The general form of the function depicting the relationship between the firm's credit status and its supply of and demand for credit in the credit market (without distinguishing between formal and informal credit markets) is specified as follows:

CONSTR = f[Supply=g(X); Demand=h(Y)] ..... (4)

where

CONSTR = qualitative variable taking the values 0 or 1 if the firm is unconstrained or constrained, respectively;

X = determinants of firm-specific supply of credit; and
Y = determinants of firm's demand for credit.

The general form of the function expressing credit status of the firm as a function of its demand for and supply of credit in formal and informal credit markets is the same as for the overall credit market except for the left-hand side variables. The left-hand side variables in formal and informal credit sectors are CONSTRf (equals 0 or 1, if unconstrained or constrained in the formal credit market, respectively) and CONSTRi (equals 0 or 1, if unconstrained or constrained in the informal credit market, respectively).

The regression model for determinants of credit constraints in the overall credit market is specified as follows:

$$CONSTR = B_0 + B_1\,AGE + B_2\,ASSETS1 + B_3\,AGE2 + B_4\,BUSAGE + B_5\,CONSTRUC1 + B_6\,MANUF1 + B_7\,SERVICE + B_8\,LOCATION + B_9\,EDUC + B_{10}\,LABOR + B_{11}\,SEX + B_{12}\,WHITE + B_{13}\,LABOR2 + B_{14}\,FORMREG + B_{15}\,REG1 + B_{16}\,REG2 + B_{17}\,REG3 + B_{18}\,REG4 + B_{19}\,REG5 + B_{20}\,REG6 + B_{21}\,REG7 + B_{22}\,REG8 \quad (5)$$

where

AGE = age of the business operator (years).
AGE2 = age of the business operator squared.
ASSETS1 = value of assets owned by the firm/household (Rands).
BUSAGE = age of business (years).
CONSTRUC1 = construction sector (equals 1 or 0 if business is in construction or not, respectively).
EDUC = educational level of business operator (years of schooling).

FORMREG	=	formal registration of business (equals 1 or 0 if formally registered or not, respectively);
LABOR	=	number of workers in the business, including family workers.
LABOR2	=	number of workers in the business squared.
LOCATION	=	location of business (equals 1 or 0 if business is located in peri-urban or rural area, respectively).
MANUF1	=	manufacturing sector (equals 1 or 0 if business is in manufacturing sector or not, respectively).
REG1	=	whether firm is in region 1 or not (1=region 1, 0=otherwise). Region 1 includes Pietersburg, Mothapo, Mankweng, and Seshego.
REG2	=	whether firm is in region 2 or not (1=region 2, 0=otherwise). Region 2 includes Thabamoopo1.
REG3	=	whether firm is in region 3 or not (1=region 3, 0=otherwise). Region 3 includes Thohoyandou.
REG4	=	whether firm is in region 4 or not (1=region 4, 0=otherwise). Region 4 includes Louis Trichardt.
REG5	=	whether firm is in region 5 or not (1=region 5, 0=otherwise). Region 5 includes Zebediela, Phokoane, and Praktiseer.
REG6	=	whether firm is in region 6 or not (1=region 6, 0=otherwise. Region 6 includes Tzaneen, Sekgosese1 and Sekgosese2.
REG7	=	whether firm is in region 7 or not (1=region 7, 0=otherwise). Region 7 includes Mokerong.
REG8	=	whether firm is in region 8 or not (1=region 8, 0=otherwise). Region 8 includes Bochum.
REG9	=	whether firm is in region 9 (1=region 9, 0=otherwise). Base variable and includes Thabamoopo2.
SERVICE	=	service sector (equals 1 or 0 if business is in the service sector or not, respectively).
SEX	=	gender of business operator (male = 1, female = 0);
WHITE	=	white area (1 or 0 if business is in a former white area or not, respectively).
B_0	=	constant.
B_i (i =1,2, ... ,22)	=	regression coefficients.

Regression models for credit constraints in formal and informal credit markets are the same as above with CONSTRf and CONSTRi as dependent variables, respectively.

The value of household and firm assets (ASSETS1) is used to capture the effect of wealth on the firm's credit status. The value of assets was computed as follows: (1) The original purchase price and expected lifespan of each asset were determined. (2) If the age of the asset exceeds its expected lifespan, a value of zero was assigned to the asset item. (3) If the age of the asset item is less than its expected lifespan, depreciation on the asset was calculated to determine its current value. To determine the total value of assets for a household or firm, the value of individual items owned by each firm or household were summed up. The assets included mainly tools and equipment (see question 7 in Appendix a). The value of assets in the regression model is divided by 10000 for scaling purposes.

Wealthier MSEs as measured by the value of household or firm assets are expected to experience less difficulty in obtaining credit because of their ability to offer collateral. Household or business wealth is identified in many studies as an important determinant of the credit status of a firm or household. Mushinski (1995) finds that business wealth is statistically significant in deciding who obtains credit from formal lenders. Conning (1995) concludes that the value of nonland assets (machinery and equipment) is positively related to the probability of access to credit. He also finds that the most constrained farmers are not necessarily the poorest but those operating small to medium-sized farms and borrowing from traders but not from private banks. This implies an inverted U-shape function expressing the

relationship between being credit constrained and wealth. Zeller (1994) concludes that total assets owned by the household are significant determinants of the formal lender's decision to lend. Barham et al. (1996) find that nonprice rationing is common in the formal credit market and likely to affect low-wealth households.

Location of the business is included as a proxy for transaction costs of borrowing and lending. The effect of location on the credit status of the firm is captured by two variables, namely, LOCATION and WHITE. MSEs located far from cities or towns (in rural areas) are likely to experience more difficulty in obtaining credit than those located near cities or towns (in peri-urban areas). This is because of high transaction costs associated with lending and borrowing in rural areas. Transaction costs have been shown to be important in determining the credit status of households.

Because the variables LOCATION and WHITE do not capture the effect of region- or area-specific factors on the credit status of the firm, it was decided to include dummies for regions (REG1, REG2, ..., REG9) (see question 1 in Appendix A). To minimize the loss in degrees of freedom, it was decided to reduce the number of regions to nine. This was also done to ensure that areas which are similar with regard to physical infrastructure are grouped together. Respondents from some of the regions were very few and it was decided to merge those with region(s) that are near to them. Anderson (1990) found that regional characteristics were important in determining who gets credit among small farmers in Brazil. It is possible for certain areas within a rural or peri-urban area to have better infrastructure than other areas and, therefore, have

lower transaction costs. Regions with poor physical infrastructure are expected to be more likely to be credit constrained.

More educated operators are expected to be less credit constrained. The level of education (in terms of the number of years of schooling) achieved by the business operator is expected to improve the chances of obtaining credit for the operator. The probability of being credit constrained is expected to be inversely related to the number of years of schooling of the MSE operator. Kochar (1992) observes that the extent of education of the household head influences the probability of borrowing from the formal sector through its positive effect on demand for credit. The extent of education of the household head was also found to be a significant determinant of access to credit. The level of education of the household was also found to be a statistically significant determinant of loan demand by Guia-Abiad (1993). Anderson (1990) finds that households with a higher proportion of adults who are literate are more likely to receive credit. The level of education achieved by the household head may be perceived by formal lenders to be an indicator of managerial capacity and, therefore, increases the probability of access to credit. Conning (1995) concludes that farmers are more likely to borrow and obtain credit as the number of years of formal education increases.

Older businesses are likely to experience less credit constraints than younger ones. Information required by the lender to decide whether to lend to MSEs is likely to be available from older businesses. The problem of information asymmetries is, thus, likely to be less severe in older businesses. The age of the business could also serve as an indicator for business experience. Liedholm (1992) notes that

access to lenders grows as firms age and evolve. Kilby et al. (1984) conclude that supplier credit for fixed capital becomes available when a microfirm becomes well established and develops a good repayment record. A firm that has been in business for many years is likely to have survived crises in the past and is, therefore, more successful. Older businesses are, thus, expected to be less likely to be credit constrained.

Economic sector is included in the model to capture the effect of expected return from investing in the activity to be financed and asset requirement of the firm on credit status. Four variables are included for construction (CONSTRUC1), manufacturing (MANUF1), service (SERVICE1) and trade (TRADE1) sectors. Expected return to investment in the activity to be financed is expected to be an important factor affecting lending and borrowing decisions. The lender is likely to be interested in lending money to a firm engaged in a business activity that promises a high return to investment because the probability of repayment is perceived to be high. Kochar (1992) notes that the profitability of lending varies (among households) with the probability of repayment. It is hypothesized that firms in certain economic sectors earn a higher return to investment and, therefore, are likely to be less credit constrained. Firms may also have different risk levels depending on the economic sector in which they operate. Prospective borrowers expecting to earn a higher return to investment from business activities are likely to be more interested to apply for credit. Expected return to investment in business activities affects the demand for credit (Kochar, 1992).

Asset requirement is expected to vary according to the economic sector in which the firm is engaged. Firms engaged in economic sectors with relatively high asset requirements to carry out their activities are likely to be credit constrained as they will demand more credit. Thus, the probability of being credit constrained can be expected to increase with the level of asset requirements. Asset requirement in manufacturing and service sectors are expected to be higher because of the need to purchase relatively expensive tools and equipment. Therefore, firms in these sectors are likely to be credit constrained. Zeidler (1994) observes that MSEs engaged in the service sector such as taxi operators are more credit constrained due to high investment requirements. Given that firms in manufacturing and service sectors are often avoided by MSE assistance organizations in favor of retail businesses (Tendler, 1996), their demand for credit is likely to grow more rapidly than their supply of credit. Techniques employed by MSEs in the construction sector (mainly building contractors) tend to be labor intensive and asset requirements are likely to be lower.

Gender of the business operator is expected to be an important determinant of whether the business is credit constrained. In South Africa, the poor as a group and women in particular have limited access to credit (Department of Trade and Industry, 1995). Women also tend to have limited collateral. Wickrama and Keith (1994) note that rural women have limited or no access to formal credit. Zeller (1994) concludes that women in Madagascar are neither discriminated against by nor encouraged to obtain credit from formal lenders. It is hypothesized that female-operated MSEs are more likely to experience difficulty in obtaining credit.

Age of the MSE operator is expected to be inversely related to the odds of being credit constrained. This means that as the age of the operator increases, the operator becomes less likely to be credit constrained. Asset accumulation occurs over time and, therefore, older operators are likely to have accumulated more assets than younger ones. Older operators are not likely to require credit because they can provide their own funding and, therefore, are expected to be less likely to be credit constrained. Also, as people become old, they are likely to be more concerned about retirement than obtaining credit to invest in business. However, Zeller (1994) concludes that the loan demands of older people are more frequently rationed in Madagascar.

Formal registration with government as a business is likely to be inversely related to the odds of being credit constrained. This means that officially registered firms are expected to be less likely to be credit constrained. Evidence from Peru indicates that firms that were officially registered had better chances of obtaining credit because formal lenders were required to lend to registered businesses only (Branch, 1995). It is also expected that official registration will alleviate the problem of imperfect information because information required by formal lenders would be available from official records. This would make formal lenders interested to lend to officially registered firms.

Larger businesses are expected to be less credit constrained than smaller ones. The transaction cost of lending and firm size tend to be inversely related. Formal lenders would, therefore, find it cost-effective to lend to larger businesses. Furthermore, imperfect information problems should be less important in larger

firms than in smaller ones. However, it is also possible that larger firms may experience more credit constraints than smaller firms because of the greater demand for credit associated with larger businesses. The number of workers employed by the firm (family and hired workers) is included in the model to capture the effect of firm size on credit status.

6.2 Method used in this study for classification of MSEs

The approach adopted in this study to classify MSEs as credit constrained or unconstrained is similar to that in Feder et al. (1990), Barham et al. (1996) and Zeller (1994). The approach is desirable because it enables us to use available data to sort credit nonapplicants into those with and those without demand for credit. As indicated in earlier sections, some of the methods used by researchers to classify firms/households as constrained or unconstrained assume that those who do not apply for credit have zero demand for credit. Nonapplication for credit does not necessarily imply zero demand for credit.

The approach used in this study to classify firms as credit constrained or unconstrained involves four steps. The first and second steps are concerned with identifying firms that have demand for credit to purchase assets. In these steps, we recognize that demand for credit does not exist only among firms that have applied for credit to purchase assets but can also occur among nonapplicants. Firms with demand for credit to purchase assets are identified by considering the overall credit market without distinguishing between formal and informal credit markets. The third step entails classifying firms that have applied for credit as credit constrained or

unconstrained. This is done for (a) the overall credit market (formal and informal credit markets together), and (b) formal and informal credit markets separately. The fourth step involves classifying credit nonapplicants as credit constrained or unconstrained. This is also done for the overall credit market and informal and formal credit markets separately.

6.2.1 Steps in classifying MSEs as credit constrained or unconstrained

Step 1: Identify firms that have tried to obtain a loan to purchase assets either from formal or informal lenders or both.

In the survey, respondents were requested to indicate whether they tried to secure a loan to purchase an asset during the past two years from the following sources: moneylender, family or friends, parastatal, savings club, commercial bank or other source (refer to question J in Appendix a). Attempting to obtain a loan is considered to be a signal for demand for credit. But we are unable to separate those with only notional demand from those with effective demand for credit. From step 1 we can identify firms that have demand for credit based on whether they attempted to obtain a loan to purchase assets. We can also determine whether the firm got all or none of the credit requested. Respondents were given two options to choose from: to indicate whether the application was successful (received all credit requested) or not (received no credit). However, among firms that did not attempt to obtain credit to purchase assets, we do not know which of these have demand for credit and which ones have zero demand for credit.

The issue which remains to be resolved is how to subdivide nonapplicants for credit to finance an asset into those with demand and those with zero demand for credit. To do this we make use of information obtained from the respondents regarding their participation in the input/raw material supplier (trader) credit market. We use this information because nonapplicants for input/raw material supplier credit were asked to give reasons for not applying for credit (refer to question L in Appendix A).

Step 2: Subdivide nonapplicants for credit (from input/raw material supplier or to finance assets) into those with and without demand for credit.

We determine whether nonapplicants for credit to finance assets did apply for input/raw material supplier credit. Ninety percent of firms that did not try to obtain credit to finance an asset also did not ask for input/raw material supplier credit. This means that we can establish for most nonapplicants for credit to finance an asset whether they have demand for input/raw material supplier credit based on the reasons provided for not asking for input/raw material supplier credit. A respondent was considered to have demand for input/raw material supplier credit if any of the following reasons was given for not asking for input/raw material supplier credit : (a) felt request would be rejected; (b) input/raw material supplier sells only on cash basis; (c) credit costs too much. The reason provided for not applying for input/raw material supplier credit is assumed to hold for not applying for credit to purchase an asset. Thus, we can establish for 90 percent of nonapplicants for credit to purchase assets whether they have demand for credit or not based on

the reason provided for not applying for input/raw material supplier credit. The remaining ten percent of nonapplicants for loans to purchase assets who have applied for input/raw material supplier credit are considered to have demand for credit.

Since nonapplicants for input/raw material supplier credit were asked to provide reasons for not asking for credit, we are able to subdivide them into those with demand and those without demand for input/raw material supplier credit based on reasons provided. Nonapplicants for input/raw material supplier credit were considered to have no demand for supplier credit if they gave as reasons for not asking for supplier credit any of the following: (a) do not like incurring debt; and (b) had sufficient savings.

Step 3: Determine for firms with demand for credit whether their demand for credit was satisfied or not, i.e. whether firms are credit constrained or unconstrained. From the above steps we know whether demand for credit exists but cannot tell whether it was satisfied. Therefore, this step is concerned with determining whether there is excess demand for credit.

First, we identify firms that have tried to obtain credit but were unsuccessful (unsuccessful firms include those that got none of what they requested). This is done for firms that tried to borrow to finance an asset and those that tried to obtain input/raw material supplier credit. Provision was made for firms to indicate whether their request for a loan to finance an asset was turned down (question J in Appendix a). Firms were also requested to indicate whether their request for input/raw material supplier credit was successful (question L147 in Appendix a). Step 3

enables us to determine whether demand for credit was satisfied for firms that tried to borrow. Firms that indicate that their request for a loan (from input/raw material supplier or for purchasing an asset) was turned down are considered to have their demand for credit not satisfied (credit constrained).

Second, we identify firms that applied for credit and were successful. These are firms that were successful in obtaining input/raw material supplier and credit to purchase assets. Such firms are considered to have their demand for credit satisfied (credit unconstrained).

Credit constrained and unconstrained firms are further subdivided into those that are constrained or unconstrained in the formal or informal credit market. Firms are classified as credit constrained in the formal credit market if their applications for credit to purchase assets were turned down by formal lenders. Only credit applicants are considered for classification in the formal credit market because we have no way of finding out whether those that did not apply for credit to purchase assets from formal lenders (banks and development corporations) have demand for such credit or not. In the informal credit market, firms are classified as credit constrained if (1) their request for input/raw material supplier credit or credit to purchase assets from informal lenders was rejected; or (2) they did not apply for input/raw material supplier credit but were identified as having demand for credit. Because of the small number of applicants for credit to purchase assets from informal lenders, the credit constrained category in the informal credit market is dominated by those that are classified as constrained in the input/raw material credit market.

Step 4: Classify credit nonapplicants as credit constrained or unconstrained.

All credit nonapplicants (for input/raw material supplier credit or for purchasing assets) who were identified as having demand for credit are classified as credit unconstrained. Credit nonapplicants without demand for credit are classified as credit unconstrained.

6.3 Estimation procedure

The purpose of this section is to estimate the specified regression model (equation 5). Estimation of the regression model will enable us to identify determinants of credit constraints on MSEs.

A two-stage procedure is followed to identify determinants of credit constraints. In the first stage, we ask whether the firm is credit constrained by considering the total firm-level credit supply and demand without distinguishing between formal and informal credit markets. We then proceed to find out what determines credit constraints in the credit market. In the second stage, we subdivide the credit market into formal and informal credit markets and identify determinants of credit constraints in each of the credit markets.

The formal credit market in South Africa is comprised of commercial banks and parastatals or development corporations (see Chapter 2 for more information). In the formal credit market, only credit transactions involving the purchase of assets are considered in the analysis of determinants of credit constraints. Our concern is to find an explanation for the existence of excess demand for credit to finance the purchase of assets. Our analysis is restricted to credit transactions involving assets

because these are the only transactions in our data set from which we are able to determine whether a firm is credit constrained or not in the formal credit market.

The informal credit market in South Africa is comprised of numerous types of lenders from which MSEs may obtain credit (see Chapter 2 for description). These include traders, moneylenders and family and friends. Our analysis of determinants of credit constraints in the informal credit market focuses on whether there is excess demand for credit from all three types of lenders combined. Our aim in the informal credit sector is to provide an explanation for the existence of excess demand for credit in the form of input/raw materials and cash from moneylenders and family and friends to purchase assets. However, credit transactions involving input/raw material suppliers dominate in the informal credit market.

The model to be estimated (equation 5) involves a binary dependent variable. Two of the most commonly used procedures for estimating the relationship between a binary dependent variable and explanatory variables are logit and probit. Logit is used in this study to estimate the relationship between the right-hand side variables and the credit status of the firm.

Logit and probit models give similar results and the choice between the two is one of convenience and availability of computer programs. Kennedy (1992) notes that the logistic function (logit) is easier to calculate than the cumulative normal distribution (probit). For this reason, logit is often preferred to probit (Gujarati, 1995). The estimates of the parameters of logit and probit models are not directly comparable. To compare these Amemiya (1981) suggests that logit estimates be

multiplied by 0.625 and this gives a good approximation of the relevant probit estimate.

The logit model for the overall credit market is estimated first. This is followed by the estimation of the logit models for formal and informal credit markets. The logit model for the overall credit market is specified as follows:

$$\log [\text{prob (CONSTR=1)/prob (CONSTR=0)}] = B_0 + B_1 \text{ AGE} + B_2 \text{ ASSETS1} + B_3 \text{ AGE2} + B_4 \text{ BUSAGE} + B_5 \text{ CONSTRUC1} + B_6 \text{ MANUF1} + B_7 \text{ SERVICE} + B_8 \text{ LOCATION} + B_9 \text{ EDUC} + B_{10} \text{ LABOR} + B_{11} \text{ SEX} + B_{12} \text{ WHITE} + B_{13} \text{ LABOR2} + B_{14} \text{ FORMREG} + B_{15} \text{ REG1} + B_{16} \text{ REG2} + B_{17} \text{ REG3} + B_{18} \text{ REG4} + B_{19} \text{ REG5} + B_{20} \text{ REG6} + B_{21} \text{ REG7} + B_{22} \text{ REG8} \quad \ldots\ldots (6)$$

where log [prob (CONSTR=1)/prob (CONSTR=0)] = logarithm of the odds of being credit constrained.

The specification of logit models for formal and informal credit markets is the same as for the overall credit market with CONSTRf and CONSTRi replacing CONSTR in the models for formal and informal credit markets, respectively.

Equation 6 can be written in terms of odds rather than log odds as follows:

$$\text{Prob (CONSTR=1)/Prob (CONSTR=0)} = e^{B_0} e^{B_1 \text{AGE}} \ldots e^{B_{22} \text{REG8}} \quad \ldots\ldots (7)$$

where e^B is the factor by which the odds of being credit constrained change when the *i*th explanatory variable increases by one unit.

A factor greater or less than one means that the odds of being credit constrained are increased or decreased, respectively, when the corresponding variable increases by one unit. If the factor is zero, this means that the odds remain unchanged (Norusis, 1993). a positive or negative sign attached to B_i indicates whether the odds of being credit constrained increase or decrease, respectively.

CHAPTER SEVEN

RESULTS OF THE STUDY

This chapter presents the results of the econometric analysis and is divided into two sections. In the first section, the results are presented mainly in a tabular form. The focus is on describing the characteristics of credit constrained and unconstrained MSEs and households with a view to isolating the main differences. The second section presents the findings of the study on the determinants of credit constraints on MSEs based on results from regression analysis.

7.1 Proportion of credit constrained MSEs

This section provides information regarding the proportion of credit-constrained MSEs in the credit market. This is done by (1) considering the overall credit market and (ii) subdividing the credit market into formal and informal credit markets.

7.1.1 Overall credit market

The results of this study indicate that 48 percent of MSEs included in the sample are credit constrained in the overall credit market (see Table 7.1). The majority (82 percent) of credit constrained MSEs are in the rural areas. Within the

rural areas, 52 percent of MSEs are credit constrained and the corresponding proportion for peri-urban areas is 34 percent. This finding supports the observation that constraints faced by MSEs in South Africa are more severe in rural areas. It also supports one of the hypotheses of the study that MSEs in rural areas are more likely to be credit constrained. However, the bias of the sample toward rural areas (75 percent of the respondents are from rural areas) could also contribute to the higher proportion of credit constrained MSEs in the rural areas.

Table 7.1: Proportion of MSEs according to credit status

	Constrained	Unconstrained	Total
Number of firms located in*			
Rural area	106 (52%)	96 (48%)	202 (100%)
Peri-urban area	23 (34%)	44 (66%)	67 (100%)
Number of firms in*			
Formal credit market	81 (30%)	188 (70%)	269 (100%)
Informal credit market	112 (42%)	157 (58%)	269 (100%)
Overall credit market	129 (48%)	140 (52%)	269 (100%)
Number of firms in*			
Manufacturing	53 (60%)	36 (40%)	89 (100%)
Construction	16 (36%)	28 (64%)	44 (100%)
Services	35 (41%)	50 (59%)	85 (100%)
Trade	23 (48%)	25 (52%)	48 (100%)
Number of formally registered firms	46 (52%)	43 (48%)	89 (100%)

** = missing information on credit status of firm(s)*

Table 7.1 also provides information on the proportion of credit constrained MSEs stratified by economic sector. The economic sector with the highest proportion of credit constrained MSEs is manufacturing. Forty-one percent of all credit constrained MSEs are in the manufacturing sector and 60 percent of all MSEs engaged in manufacturing activities are credit constrained. Corresponding estimates for the service sector are 27 and 41 percent. Credit constrained MSEs in the construction sector comprise only 12 percent of all credit constrained MSEs and 36 percent of MSEs in this sector are credit constrained. These findings lend support to the hypothesis that firms in manufacturing and service sectors are likely to be credit constrained because of the higher capital investment required in these sectors and the tendency for lending institutions to pay less attention to this sector.

7.1.2 Formal credit market

Table 7.1 indicates that 30 percent of all the MSEs are credit constrained in the formal credit market (includes commercial banks and former homeland development corporations). The estimated proportion of credit constrained MSEs in this study compares with estimates from other studies. For example, Barham et al. (1996) find that 34 percent of households are fully credit constrained in the formal credit sector in Guatemala. Zeller (1994) estimates the proportion of credit constrained households in the formal credit sector in Madagascar to be 24 percent. The proportion of credit constrained households in the formal credit sector estimated by Kochar (1992) for India is 19 percent.

The majority (52 percent) of MSEs that are credit constrained in the formal credit market are constrained in their dealings with former homeland development corporations. If it is taken into consideration that these corporations were established to provide financial and other services to black people, one would have expected the proportion of MSEs that are credit constrained in their dealings with these corporations to be lower than that for commercial banks. As indicated in previous chapters, commercial banks in South Africa have traditionally directed their lending to big businesses and are not well adapted to the needs of MSEs which are operated mainly blacks. A possible reason for this higher proportion could be that most people who apply for loans to development corporations do not meet the requirements for loans and, therefore, their applications are rejected.

7.1.3 Informal credit market

The results presented in Table 7.1 show that the proportion of MSEs that are credit constrained in the informal credit market is 42 percent and all of them are credit constrained in their dealings with input/raw material suppliers. Only three percent of all MSEs are credit constrained in their dealings with other informal lenders (family and friends, moneylenders and savings clubs). Most of the MSEs that are credit constrained in their dealings with input/raw material suppliers did not apply for input/raw material supplier credit even though they indicated that they would have liked to do so. The most important reason for not applying for supplier credit is that the supplier sells only on cash basis. The small proportion of MSEs that are credit constrained in their dealings with other informal lenders may be

interpreted to mean that MSEs experience few credit constraints in their dealings with informal lenders other than input/raw material suppliers. But because of the bias towards supplier credit transactions in the sample, the conclusion may not be correct.

The proportion of MSEs estimated to be credit constrained in the informal credit market is higher than the estimated proportion for the formal credit sector. This result is unexpected because the literature on credit markets suggests that firms are more tightly constrained in the formal credit market due to nonprice credit rationing which is not a characteristic of informal credit markets. The result could arise from the fact that credit transactions involving input/raw material suppliers dominate in the informal credit sector. As Fafchamps (1997) notes for Zimbabwe, black entrepreneurs experience difficulties obtaining trade credit from traders who are predominantly white. MSE enterpreneurs in South Africa are likely to be facing similar problems. This could mean that MSEs are tightly credit constrained in their dealings with suppliers. The exclusion of credit transactions involving other lenders who may be more willing to lend to MSEs than input/raw material suppliers contributed to the higher proportion of credit constrained MSEs in the informal credit market. Although there are not many studies in South Africa from which results could be obtained and compared with the estimated proportion of credit constrained MSEs in the informal credit market, it would seem that the estimated proportion in this study is higher. For example, Zeller (1994) finds that the proportion of credit constrained households in South Africa is 16 percent.

7.2 Proportion of credit unconstrained MSEs

Table 7.2 provides information on the proportion of MSEs classified as credit unconstrained according to the reason for being unconstrained (i.e., whether demand is zero or not). The proportions are presented according to credit market, location of the firm, economic sector and formal registration as a business.

Credit unconstrained MSEs are almost equally divided between those with zero demand and those with demand greater than zero. However, the proportions of credit unconstrained MSEs with and without demand for credit differ within and between credit markets, economic sectors and location. There is also a difference between the proportion of credit unconstrained MSEs with and without demand between formally registered and unregistered MSEs.

Considering the overall credit market there is little difference between the proportions of credit unconstrained MSEs with and without demand for credit. But within the formal credit market, the proportion of credit unconstrained MSEs whose demand was satisfied is very small. This could point to difficulties in obtaining formal credit. There is little difference between the proportions of credit unconstrained MSEs with and without demand for credit in the informal credit market.

Subdividing unconstrained MSEs according to whether they are located in peri-urban or rural areas indicates that most MSEs in rural areas are unconstrained because their demand for credit is zero. In urban areas, the majority of credit unconstrained MSEs are not constrained because they received the amount of

credit requested. Therefore, it may be concluded that the proportion of MSEs whose demand for credit is satisfied is higher in peri-urban than in rural areas.

Stratifying credit unconstrained MSEs according to the economic sector they operate in indicates that the manufacturing sector has the smallest proportion of MSEs that are unconstrained because their demand for credit was satisfied. This provides some indication that MSEs in the manufacturing sector may be more credit constrained than MSEs in other sectors. The construction sector has the highest proportion of MSEs that are credit unconstrained because their demand for credit was satisfied. Thus, MSEs in the construction sector face few credit constraints. Considering all the sectors, it may be concluded that, with the exception of the manufacturing, MSEs are unconstrained because their demand for credit was satisfied.

Subdividing credit unconstrained MSEs into those with and without demand for credit according to whether they are formally registered with government as businesses shows that the majority of MSEs are unconstrained because their demand was satisfied. This suggests few credit constraints for formally registered firms.

Table 7.2: Proportion of credit unconstrained MSEs

	Unconstrained with zero demand	Unconstrained with positive demand	Total
Number of firms located in			
Rural area	50 (52%)	46 (48%)	96 (100%)
Peri-urban area	17 (39%)	27 (61%)	44 (100%)
Number of firms in			
Formal credit market	181 (96%)	7 (4%)	188 (100%)
Informal credit market	86 (55%)	71(45%)	157 (100%)
Overall credit market	67 (48%)	73 (52%)	140 (100%)
Number of firms in			
Manufacturing	19 (53%)	17 (47%)	36 (100%)
Construction	3 (11%)	25 (89%)	28 (100%)
Services	13 (26%)	37 (74%)	50 (100%)
Trade	7 (28%)	18 (72%)	25 (100%)
Number of formally registered firms	17 (40%)	26 (60%)	43 (100%)

7.3 Characteristics of households, MSEs and MSE operators according to credit status

This section is concerned with describing the characteristics of credit constrained and unconstrained households, MSEs and MSE operators to find out if there are any significant differences. We first describe the characteristics and then consider whether the MSEs differ in their characterstics according to location, economic sector and sources of capital. Characteristics of households, MSEs and MSE operators are presented in Tables 7.3.

The main difference between credit constrained and unconstrained MSEs is in the value of household/firm assets. The difference between the value of assets of credit constrained and unconstrained households/firms is statistically significant at the five percent significance level with credit unconstrained household/MSEs having a higher value of assets. This supports the hypothesis that poorer households are most likely to be credit constrained. Unconstrained households also have more annual savings than constrained households, but the difference is not statistically significant.

7.3.1 Peri-urban areas

Characteristics of MSEs according to credit status in peri-urban areas are presented in Table 7.4. Except for household size, the difference between credit constrained and unconstrained MSEs and households is not statistically significant. The average household size for unconstrained MSEs is larger than that for constrained ones. MSEs in peri-urban areas are, thus, fairly homogeneous.

Table 7.3: Characteristics of MSEs and households according to credit status

	All households	Constrained households	Unconstrained households	t value	2-tail significance
Household size (persons)	5.5	5.3	5.6	1.06	0.288
Gender of household head(male=1, female=0)	0.8	0.8	0.8	-0.30	0.767
Average number of workers per firm (persons)					
Average age of business (years)	3.6	3.5	3.7	0.53	0.596
Level of education of operator (years)					
Age of operator (years)	7.4	7.6	7.2	-0.48	0.631
Number of male operators	8.6	8.3	8.9	1.17	0.244
Number of female operators	43.8	44.4	43.3	-0.72	0.473
Average income from business per month (R)	222	107	115	-	-
Average non-business income per month (R)	48	22	26	-	-
Remittances	4653	4889	4441	-0.51	0.613
Pension					
Wages					
Average value of assets (R)					
Household savings (R)	57	95	23	-1.52	0.131
	88	103	74	-1.08	0.282
	1120	1204	1043	-0.70	0.486
	6663	4579	8523	2.08	0.039+
	5164	3360	6814	1.24	0.216

 # = significant at 1 percent *+ = significant at 5 percent* ** = significant at 10 percent*

Table 7.4: Characteristics of MSEs and households in peri-urban areas according to credit status

	Constrained (N = 23)	Unconstrained (N = 44)	Average for all	t value	2-tail significance
Business operator					
Age (years)	43	43	43	-0.08	0.933
Education (years)	8	8	8	-0.51	0.612
Gender (0=female, 1=male)	0.91	0.84	87	-0.81	0.419
Average monthly income (R)					
Business	4106	3587	3846	-0.64	0.522
Pension	68	92	80	-0.47	0.637
Remittances	7	0	3	1.00	0.328
Wages	1242	648	945	1.38	0.179
Savings (R)	5991	4087	5031	0.81	0.422
Value of assets (R)	4356	2971	3663	0.97	0.335
Household size (persons)	4.5	5.6	5.0	-2.02	0.048+
Size of labor force (persons)	3.5	3.1	3.3	0.80	0.424
Hired labor (persons)	1.9	1.7	1.8	0.39	0.698
Business age (persons)	7	8	7.5	-1.02	0.309
Formal registration (1=formally registered; 0=not formally registered)	0.26	0.14	0.2	1.16	0.253
Economic sector (0=not in sector, 1=in sector)					
Construction	0.09	0.19	0.14	-0.85	0.400
Manufacturing	0.43	0.42	0.42	0.12	0.901
Service	0.30	0.33	0.31	-0.17	0.863
Trade	0.17	0.09	0.13	0.95	0.345

 # = significant at 1 percent *+ = significant at 5 percent* ** = significant at 10 percent*

7.3.2 Rural areas

Table 7.5 presents characteristics of MSEs according to credit status in rural areas. There are significant differences between credit constrained and unconstrained MSEs and households in rural areas. The main differences occur in the level of education of the MSE operator, value of household assets, and proportion of MSEs in manufacturing and service sectors.

Operators of credit unconstrained MSEs are more educated than those of credit constrained ones. This supports the hypothesis that MSEs operated by more educated persons are less likely to be credit constrained.

The value of assets for unconstrained households/firms is more than twice that for constrained ones. This means that unconstrained MSEs in the rural areas are richer as measured by the value of household/firm assets. This supports the hypothesis that poorer households are more likely to be credit constrained and is in agreement with findings by other researchers regarding the relationship between credit constraints and wealth.

There are statistically significant differences between the proportion of credit constrained and unconstrained MSEs in the service and manufacturing sectors. In the manufacturing sector, the proportion of credit constrained MSEs exceeds that of credit unconstrained ones. The proportion of credit unconstrained MSEs in the service sector exceeds that of credit constrained MSEs. This means that MSEs in the manufacturing sector are more likely to be credit constrained while those in the service sector are less likely to be credit constrained. The need to make large investments in equipment and tools in firms operating in the manufacturing sector is likely to be an important explanation for the likelihood of being credit constrained

in that sector.

7.3.3 Construction sector

Characteristics of credit constrained and unconstrained MSEs and households in the construction sector are shown in Table 7.6. There is virtually no significant difference between credit constrained and unconstrained MSEs/households in the construction sector. The only difference between these MSEs/households is with regards to the amount of income derived from old-age pension. Credit unconstrained households derive no income from old-age pension while income from old-age pension for constrained households is R70 per month. Because of the low quality of information collected from the survey on income derived from the variuos sources, it is difficult to say whether this difference is indeed significant.

Table 7.5: Characteristics of MSEs in rural areas according to credit status

	Constrained (N = 106)	Unconstrained (N = 96)	Average	t value	2-tail significance
Business operator					
Age (years)	45	43	44	0.77	0.442
Education (years)	8	9	8	-1.80	0.074*
Gender (0=female, 1=male)	0.81	0.80	0.80	0.17	0.869
Average monthly income (R)					
Business	5064	4866	4965	0.17	0.865
Pension	110	67	88	1.41	0.161
Remittances	114	34	74	1.38	0.171
Wages	1196	1182	1189	0.05	0.962
Value of assets (R)	4629	10815	7772	-2.40	0.021+
Savings (R)	2789	8124	5456	-1.39	0.166
Business age (years)	8	7	7	1.00	0.318
Household size (persons)	5.5	5.6	5.5	-0.38	0.701
Size of labor force (persons)	3.5	3.9	3.7	-0.78	0.434
Hired labor (persons)	2.1	2.2	2.1	-0.28	0.782
Formal registration (1=formally registered; 0=not formally registered)	0.18	0.38	0.28	0.03	0.973
Economic sector (0=not in sector, 1=in sector)					
Construction	0.13	0.22	0.17	-1.59	0.114
Manufacturing	0.41	0.18	0.29	3.75	0.000#

 # = significant at 1 percent *+ = significant at 5 percent* ** = significant at 10 percent*

Table 7.6: Characteristics of MSEs and households in the construction sector according to credit status

	Constrained (N = 16)	Unconstrained (N = 29)	Average	t value	2-tail significance
Business operator					
Age (years)	45	42	43	0.78	0.439
Education (years)	9	90	49	-0.26	0.795
Gender (0=female, 1=male)	1	0.96	0.98	0.75	0.456
Average monthly income (R)					
Business	3809	5212	4510	-0.70	0.489
Pension	70	0	35	1.86	0.083*
Remittances	16	21	18	-0.19	0.851
Wages	856	509	682	0.97	0.337
Household size (persons)	5.5	5	5.2	1.17	0.248
Value of assets (R)	4172	3723	4217	0.12	0.904
Size of labor force (R)	4.1	3.2	3.6	1.23	0.236
Hired labor (persons)	2.4	2	2.3	0.54	0.596
Business age (years)	11	10	10	0.30	0.763
Savings (R)	5575	6789	6182	-0.62	0.536
Formal registration (1=formally registered; 0=not formally registered)	0.25	0.14	0.19	0.87	0.387
Location (1=peri-urban; 0=rural)	0.13	0.25	0.19	-1.05	0.301

 # = significant at 1 percent *+ = significant at 5 percent* ** =significant at 10 percent*

Table 7.7: Characteristics of MSEs and households in the manufacturing sector according to credit status

	Constrained (N = 53)	Unconstrained (N = 36)	Average	t value	2-tail significance
Business operator					
Age (years)	44	46	45	-0.83	0.411
Education (years)	8	8	8	-0.60	0.547
Gender (0=female, 1=male)	0.94	0.97	0.95	-0.64	0.525
Average income (R)					
Business	5456	5552	5504	-0.06	0.953
Pension	30	90	60	-1.68	0.100*
Remittances	18	1250	27	-0.80	0.425
Wages	716		983	-1.19	0.237
Household size (persons)	5	5.9	5.45	-2.03	0.046+
Value of assets (R)	4396	10908	7652	-1.70	0.098*
Size of labor force (persons)	4.2	4.9	4.5	-0.89	0.378
Hired labor (persons)	2.7	3.3	3.0	0.54	0.596
Business age (years)	7	7	7	-0.11	0.916
Savings (R)	3011	5342	4176	-1.09	0.281
Formal registration (1=formally registered; 0=not formally registered)	0.30	0.28	0.29	0.24	0.809
Location (1=peri-urban; 0=rural)	0.19	0.51	0.35	-3.21	0.002#

 # = significant at 1 percent *+ = significant at 5 percent* ** = significant at 10 percent*

7.3.4 Manufacturing sector

Table 7.7 describes characteristics of credit constrained and unconstrained MSEs and households in the manufacturing sector. The main differences between these MSEs and households are with regards to household size, value of assets, and location of business. The household size for credit unconstrained households is larger than for constrained households. Unconstrained households are also wealthier than constrained ones. This is indicated by the value of assets which is larger for unconstrained than for constrained households. The proportion of MSEs that are rural-based is higher for credit constrained than for unconstrained households.

7.3.5 Service sector

Credit constrained and unconstrained MSEs and households in the service sector differ significantly with regards to the number of workers employed per business as shown in Table 7.8. Credit constrained households have a larger labor force than unconstrained households.

7.3.6 Trade sector

Characteristics of credit constrained and unconstrained MSEs and households in the trade sector are contained in Table 7.9. These MSEs and households differ significantly only with regards to income derived from wages. Income from wages for credit constrained households is more than twice that for unconstrained households. This could mean that households that are not able to

meet their requirements for capital from borrowing are compelled to rely on wage employment outside their businesses.

7.3.7 Ranking of sources of capital for MSEs

Sources of capital for establishing a business for credit constrained and unconstrained MSEs according to importance are shown in Table 7.10. There is little difference in terms of the importance of sources of capital for establishing a business between credit constrained and unconstrained MSEs. Both types of MSEs ranked own funds/savings and severance (retrenchment) pay as the first and second most important sources of capital for establishing a business. These results highlight the importance of own savings as a source of capital for MSEs. Results from other surveys also indicate that own savings is the most important source of capital for MSEs. The results also indicate that although family and friends are an important source of capital, they are not very important role players in providing capital for establishing businesses. However, credit unconstrained MSEs ranked family and friends higher than parastatals (development corporation) while parastatals were ranked higher than family and friends by credit constrained MSEs. The results in Table 7.10 also indicate that savings clubs and moneylenders are of only minor importance as sources of capital for establishing a business for both credit constrained and unconstrained MSEs.

Table 7.8: Characteristics of MSEs and households in the service according to credit status

	Constrained (N = 35)	Unconstrained (N = 50)	Average	t value	2-tail significance
Business operator					
Age (years)	45	43	49	0.95	0.344
Education (years)	8	9	8.5	-0.82	0.416
Gender (0=female, 1=male)	0.69	0.7	0.7	-0.14	0.890
Average income (R)					
Business	5241	3389	4315	1.04	0.301
Pension	165	84	124	1.23	0.224
Remittances	243	4	123	1.47	0.150
Wages	1353	1170	1261	0.46	0.646
Household size (persons)	5.3	5.8	5.5	-0.88	0.381
Value of assets (R)	4065	7197	5631	-1.18	0.241
Size of labor force (persons)	2.5	2.0	2.2	-1.89	0.063*
Hired labor (persons)	1.2	3.7	2.4	-1.59	0.115
Business age (years)	7	7	7	0.44	0.663
Savings (R)	1541	3289	2415	-1.47	0.146
Formal registration (1=formally registered; 0=not formally registered)	0.40	0.38	0.39	0.18	0.854
Location (0=rural, 1=peri-urban)	0.20	0.28	0.24	-0.85	0.397

 # = significant at 1 percent *+ = significant at 5 percent* ** = significant at 10 percent*

Table 7.9: Characteristics of MSEs and households in the trade sector according to credit status

	Constrained (N = 23)	Unconstrained (N = 25)	Average	t value	2-tail significance
Business operator					
Age (years)	45	43	44	0.35	0.728
Education (years)	10	9	9.5	0.46	0.649
Gender (0=female, 1=male)	0.65	0.72	0.68	-0.50	0.621
Average income (R)					
Business	4004	4244	4124	-0.14	0.892
Pension	173	122	148	0.74	0.464
Remittances	109	48	78	0.81	0.424
Wages	2363	1004	1683	2.17	0.035+
Household size (persons)	6.1	5.6	5.8	0.76	0.451
Value of assets (R)	6602	8523	7562	-0.86	0.396
Size of labor force (persons)	2.8	2.6	2.7	0.56	0.576
Hired labor (persons)	1.0	0.8	0.9	0.71	0.482
Business age (years)	6	5	5.5	1.14	0.260
Savings (R)	5684	1558	3621	-0.65	0.517
Formal registration (1=formally registered; 0=not formally registered)	0.52	0.36	0.44	1.12	0.269
Location (1=peri-urban; 0=rural)	0.17	0.16	0.16	0.13	0.900
	2722	4471	3596	0.05	0.964

 # = significant at 1 percent *+ = significant at 5 percent* ** = significant at 10 percent*

Table 7.10: Ranking of sources of funds for establishing MSEs

Source	All MSEs			Constrained MSEs			Unconstrained MSEs		
	No.	%	Rank	No.	%	Rank	No.	%	Rank
Own funds/savings	191	71	1	91	70	1	100	71	1
Severance pay	31	12	2	16	12	2	15	11	2
Parastatals	9	4	3	7	5	3	5	4	4
Family and friends	8	3	4	2	2	4	7	5	3
Pension	5	3	4	3	2	4	5	4	4
Remittances	5	2	5	2	2	4	3	2	5
Other business	4	2	5	3	2	4	2	1	6
Commercial bank	2	2	5	2	2	4	2	1	6
Other	1	1	6	1	1	5	1	1	7
Savings Club	1	0	7	1	1	5	0	0	8
Moneylender		0	7	1	1	5	0	0	8

7.4 Determinants of credit constraints

The purpose of this section is to describe the determinants of credit constraints on MSEs based on regression results. This is done in two steps. In the first step, we identify the determinants of credit constraints in the overall credit market. The second step is concerned with identifying the determinants of credit constraints in formal and informal credit markets.

7.4.1 Overall credit market

The regression results concerning the determinants of credit constraints in the overall credit market are presented in Tables 7.11 and 7.12. In Table 7.11, the regression results are presented without dummy variables for regions. The regression results with dummy variables for regions included are presented in Table 7.12.

The results in Table 7.11 indicate that the main determinants of credit constraints in the overall credit market are location of the firm (i.e. whether located in peri-urban, rural, or white area), value of household/firm assets, and economic sector in which the MSE operates (i.e., whether the firm is in the manufacturing sector or not). The coefficients of the variables 'location of the firm', and 'value of assets of the household/firm' are negative and statistically significant at the five percent significance level. The coefficient of the variable 'whether the firm is located in a former white area' is negative and statistically significant at the ten percent significance level. The variable 'whether the firm is in the manufacturing sector or not' has a coefficient with a positive sign and is statistically significant at the five percent significance level.

The negative signs of the coefficients indicate that the there is an inverse relationship between the odds of being credit constrained and the variables concerned. For example, the negative sign attached to the coefficient of 'value of assets of the household/firm' indicates that as the value of assets increases, the odds of being credit constrained for the firm decrease. That is, as the firm gets richer the likelihood of being credit constrained declines. The sign of the coefficient of 'whether the firm is in the manufacturing sector or not' is positive and statistically significant. This means that firms in the manufacturing sector are more likely to be credit constrained.

Wealthier firms as measured by the value of assets owned by the household/firm are less likely to be credit constrained. This supports hypothesis 1: MSEs from poorer households are more likely to experience credit constraints. The

result confirms the observation in many studies that wealthier households are able to supply collateral for credit and, therefore, are likely to receive the amount of credit requested. The result could also be interpreted to mean that wealthier households are in a position to provide their own finance and, therefore, do not require credit.

Firms located in peri-urban areas are less likely to be credit constrained. This result supports hypothesis 2: MSEs in rural areas are more likely to be credit constrained than those in peri-urban areas. A possible explanation for this are lower transaction costs due to better physical infrastructure, shorter distance to towns and cities where formal lending institutions are located. Peri-urban areas are found near towns and areas designated as townships in former homeland areas where only black people were permitted to live. Former white areas are located near towns and cities and only white people were permitted to live there. The quality of physical infrastructure in peri-urban areas, especially former white areas, is better than in rural areas. Thus, transaction costs are lower in peri-urban areas. The better-quality of physical infrastructure which contributes to lower transaction costs also makes peri-urban areas more attractive to invest in. The attractiveness of peri-urban areas to investors could also explain the likelihood of firms located in these areas to be less likely to be constrained.

The nature of land ownership rights in rural and peri-urban areas could also explain the difference in credit status of firms. Formal credit institutions do not recognize land in rural areas as collateral for loans because land is communally owned. On the other hand, land in peri-urban areas is acceptable to formal credit institutions as collateral. This means that firms in rural areas are disadvantaged by

the nature of property rights in land when it comes to borrowing from formal lending institutions.

The economic sector in which the firm operates is a statistically significant determinant of the firm's credit status. Manufacturing firms are more likely to experience credit constraints. This partially supports hypothesis 5: MSEs in manufacturing and service sectors are more likely to be credit constrained. MSEs in the manufacturing sector require a relatively large investment in equipment and tools. Therefore, manufacturing MSEs will require more capital relative to firms in other sectors. Because the demand for credit is derived from the demand for investment, manufacturing MSEs are more likely to demand more credit relative to MSEs in other sectors. The sign of the coefficient of 'whether the firm is in the service sector or not' has the expected sign (negative) but the coefficient is not statistically significant. The negative sign indicates a decreasing probability of being credit constrained for a firm which is in the service sector.

The bottom part of Table 7.11 provides information that can be used to assess the performance of the logit model. There are two ways of assessing the performance of the model. We can look at the value of -2log likelihood or the percentage of cases in each credit regime correctly or incorrectly predicted by the model. A model that fits the data perfectly has -2log likelihood value of zero or the percentage of cases correctly predicted by the model will be 100 percent. The overall percentage of cases correctly predicted by our model and the value of -2log likelihood are 62.95 percent and 314.66, respectively. So, our model does not perfectly fit the data. Because the statistical significance level for the model's chi-

square is 0.0033, we can reject the null hypothesis that the coefficients of all variables included in the model are zero.

Table 7.12 shows the results of the regression analysis with dummy variables for regions included. None of the coefficients of the dummy variables for regions is statistically significant. However, four of the dummies have negative coefficients while coefficients of the other four dummy variables are positive. This implies that, holding other variables in the model constant, MSEs located in some of the regions are more likely to be credit constrained (positive-signed coefficients) while those located in regions with negative coefficients are more likely to be credit unconstrained.

With the addition of dummy variables for regions to the model, the coefficients of the variables 'age of the business operator' and 'age of business operator squared' become statistically significant at the 10 percent significance level. This implies that MSEs operated by older people are more likely to be credit unconstrained. However, the odds of being credit constrained are high for MSEs operated by very old persons as indicated by the positive coefficient of 'age of the business operator squared'. This supports the finding by Zeller (1994) that older people were more likely to be credit rationed in Madagascar.

Table 7.11: Determinants of credit constraints in the credit market

Explanatory Variable	Coefficient (B)	Standard error	Significance	Partial correlation	e^B
Age of business	0.0068	0.0256	0.7918	0.0000	1.0068
Age of business operator	-0.1328	0.0861	0.1232	-0.0329	0.8757
Age of business operator squared	0.0014	0.0009	0.1151	0.0373	1.0014
Education of operator	-0.0344	0.0377	0.3614	0.0000	0.9662
Firm in construction or not	-0.3825	0.5257	0.4668	0.0000	0.6821
Firm in manufacturing or not	0.9012	0.4529	0.0466+	0.0751	2.4626
Firm in service or not	-0.0633	0.3989	0.8739	0.0000	0.9387
Firm in white area or not	-0.8453	0.4558	0.0636*	-0.0644	0.4294
Firm formally registered or not	0.4273	0.3484	0.2200	0.0000	1.5330
Gender of operator	-0.1536	0.3973	0.6991	0.0000	0.8576
Location of firm	-0.7742	0.3538	0.0287+	-0.0896	0.4611
Number of workers	0.1198	0.1552	0.4401	0.0000	1.1273
Number of workers squared	-0.0084	0.0095	0.3768	0.0000	0.9917
Value of assets	-0.2798	0.1310	0.0351+	-0.0838	1.0000
Constant	3.0209	2.0630	0.1431	-	-

Number of observations	: 251
-2 Log Likelihood	: 314.66
Goodness of fit	: 249.07
Model chi-square	: 2.63
Model chi-square significance	: 0.0033
Unconstrained correctly predicted	: 71.97%
Constrained correctly predicted	: 52.94%
Overall correctly predicted	: 62.95%

 # = Significant at 1 percent *+ = Significant at 5 percent* ** = Significant at 10 percent*

Table 7.12: Determinants of credit constraints in the credit market, including region variables

Explanatory Variable	Coefficient (B)	Standard error	Significance	Partial correlation	e^B
Age of business	-0.0063	0.0273	0.8177	0.0000	0.9937
Age of business operator	-0.1453	0.0887	0.1014*	0.0267+	0.8757
Age of business operator squared	0.0016	0.0009	0.0816*	0.0545	1.0016
Education of operator	-0.0282	0.0400	0.4803	0.0000	0.9722
Firm in construction or not	-0.4447	0.5604	0.4275	0.0000	0.6410
Firm in manufacturing or not	0.6893	0.5046	0.1719	0.0000	1.9924
Firm in service or not	-0.0894	0.4317	0.8359	0.0000	1.0935
Firm in white area or not	-0.6766	0.5222	0.1951	0.0000	0.5084
Firm formally registered or not	0.4914	0.3810	0.1972	0.0000	1.6346
Gender of operator	-0.2236	0.4271	0.6006	0.0000	0.7996
Location of firm	-1.6440	0.9222	0.0746*	-0.0582	0.1932
Number of workers	0.1241	0.1606	0.4396	0.0000	1.1321
Number of workers squared	-0.0073	0.0096	0.4480	0.0000	0.9928
Value of assets	-0.2782	0.1355	0.0401+	-0.0799	1.0000
Region 1	0.8619	1.0068	0.4191	0.0000	2.3676
Region 2	-.0.8795	0.6373	0.1676	0.0000	0.4150
Region 3	-0.2888	0.6793	0.6708	0.0000	0.7492
Region 4	0.0748	1.2883	0.9537	0.0000	1.0777
Region 5	-0.0918	0.6882	0.8939	0.0000	0.9123
Region 6	-0.2735	0.6932	0.6932	0.0000	0.7607
Region 7	0.7203	0.8301	0.3885	0.0000	2.0550
Region 8	1.5047	1.1806	0.2025	0.0000	4.5028
Constant	3.4244	2.2527	0.1285	-	-

Number of observations	: 251	Model chi-square significance	: 0.0029
-2 Log Likelihood	: 302.55	Unconstrained correctly predicted	: 75.00%
Goodness of fit	: 254.29	Constrained correctly predicted	: 54.62%
Model chi-square	: 44.73	Overall correctly predicted	: 65.34%

*# = Significant at 1 percent + = Significant at 5 percent * = Significant at 10 percent*

Another change in the regression results due to the addition of dummy variables for regions is that the coefficient of 'whether the firm is located in a former white area or not' becomes statistically not significant, but the sign of the coefficient remains the same (negative). This means that although being located in a white area or not is no longer an important determinant of credit status of the firms, the negative sign indicates that firms located in former white areas are more likely to be credit unconstrained compared to those located in other areas.

Since none of the coefficients of the regional dummy variables is significant, we may conclude that regional characteristics are not important in determining the credit status of the firms in the overall credit market. What is important in determining the credit status of the firms is whether the firm is located in a peri-urban or rural area.

7.4.2 Formal credit market

The determinants of credit constraints in the formal credit market are shown in Table 7.13. Table 7.13 also provides information about the performance of the fitted model. The model does not do well in predicting the proportion of constrained MSEs. However, the overall prediction is 70 percent correct and the model is statistically significant as shown by the chi-square significance level of 0.0022.

Statistically significant determinants of credit constraints in the formal credit market are education level of the operator (years of schooling), sex of the operator and whether the firm is in the manufacturing sector or not. The coefficient of education level of the operator is negative and statistically significant. Sex of the MSE operator and whether the firm is in manufacturing or not have positive coefficients.

Education reduces the odds of being constrained in the formal credit market as indicated by the negative sign and statistical significance of the relevant coefficient. The more educated the MSE operator is, the less likely he/she will be credit constrained in the formal credit market. Formal credit institutions seem to regard years of schooling of the operator as an indicator of repayment ability.

Household wealth does not affect the odds of being credit constrained in the formal credit as shown by the value of 1 for e^B. This is contrary to expectation as formal lenders usually require collateral for loans. The result could reflect the tendency for some former homeland development corporations to waive the requirement for loan collateral and to base their decision to lend on potential of the borrower to repay a loan. The result could also indicate that formal lenders experience difficulty in determining the value of household/firm assets, especially in rural areas due to imperfect information.

MSEs in the manufacturing sector are likely to be credit constrained in the formal credit market. This is indicated by the positive sign and statistical significance of the coefficient of 'whether the firm is in manufacturing sector or not'. The value of 3.1159 for e^B indicates that the odds of being credit constrained for MSEs in the manufacturing sector are increased. The explanation for this relationship is the same as that provided in the previous sections: asset requirements and problems related to supply of credit.

Male operators are more likely to be credit constrained than female operators in the formal credit market. This is contrary to the expectation that women are more credit constrained than men. A satisfactory explanation for this unusual relationship is not available from the model.

Variables such as location of the firm, value of household/firm assets, and number of workers in the business are not statistically significant determinants of credit status of the firm in the formal credit market but are statistically significant when the whole credit market is considered.

The regression results for the formal credit market with dummy variables for regions included are shown in Table 7.14. The inclusion of dummy variables for regions has the following effects:

- The sign of the coefficient of 'age of business' changes to negative (expected sign), but the coefficient is not statistically significant. The negative sign indicates that older businesses are less likely to be credit constrained.
- The coefficient of 'age of business operator squared' becomes statistically significant at the 10 percent significance level. This means that older people are less likely to be credit constrained and supports our hypothesis 7: MSEs operated by younger people are more likely to be credit constrained.
- The coefficient of 'gender of operator' is no longer statistically significant. That is, male operators are no longer more likely to be credit constrained in the formal credit market as was the case without dummy variables for regions.
- 'Region 7' has a positive and statistically significant coefficient at the 5 percent significance level. This suggests that firms located in region 7, which is one of the regions with poor infrastructure, are more likely to be credit constrained.

7.4.3 Informal credit market

Table 7.15 presents determinants of credit constraints in the informal credit market and information regarding the performance of the fitted model. The model is overall statistically significant as shown by the chi-square significance level of 0.0007. The overall prediction of the model is 65 percent correct.

Statistically significant determinants of credit constraints in the informal credit market are value of household/firm assets, location of the business and whether the firm is formally registered.

The value of household/firm assets has a negative and statistically significant coefficient. This means that wealth is an important determinant of the firm's credit status in the informal credit market. Wealthier firms are less likely to be credit constrained in the informal credit market.

Table 7.13: Determinants of credit constraints in the formal credit market

Explanatory variable	Coefficient (B)	Standard error	Significance	Partial correlation	e^B
Age of business	0.0151	0.0282	0.5930	0.0000	1.0152
Age of business operator	0.1509	0.0970	0.1196	0.0368	1.1629
Age of business operator squared	-0.0018	0.0010	0.2966	-0.0582	0.9982
Education of operator	-0.0807	0.0412	0.0500+	-0.0768	0.9225
Firm in construction or not	0.0627	0.6174	0.9191	0.0000	1.0647
Firm in manufacturing or not	1.1365	0.5165	0.0278+	0.0000	3.1159
Firm in service or not	0.3295	0.4968	0.5072	0.0000	1.3903
Firm in white area or not	-0.1048	0.4633	0.8211	0.0000	0.9005
Firm formally registered or not	0.2738	0.3797	0.4708	0.0000	1.3150
Gender of operator	0.9936	0.5155	0.0539*	0.0742	2.7009
Location of firm	0.0883	0.3693	0.8110	0.0000	1.0923
Number of workers	1.1956	0.1850	0.2903	0.0000	1.2160
Number of workers squared	-0.0134	0.0128	0.2966	0.0000	0.9867
Value of assets	0.3700	0.9961	0.7060	0.0000	1.0000
Constant	-5.1329	2.3648	0.0300	-	-

Number of observations	: 251
-2 Log Likelihood	: 277.30
Goodness of fit	: 252.23
Model chi-square	: 33.79
Model chi-square significance	: 0.0022
Unconstrained correctly predicted	: 89.02%
Constrained correctly predicted	: 29.49%
Overall correctly predicted	: 70.52%

 # = Significant at 1 percent *+ = Significant at 5 percent* ** = Significant at 10 percent*

Table 7.14: Determinants of credit constraints in the formal credit market, including region variables

Explanatory variable	Coefficient (B)	Standard error	Significance	Partial correlation	e^B
Age of business	-0.0015	0.0305	0.9612	0.0000	0.9985
Age of business operator	0.1554	0.1006	0.1225	0.0000	1.1681
Age of business operator squared	-0.0019	0.0011	0.0736*	0.0352	0.9981
Education of operator	-0.1189	0.0469	0.0113#	-0.1191	0.8879
Firm in construction or not	0.2952	0.6577	0.6535	0.0000	1.3435
Firm in manufacturing or not	1.0417	0.5671	0.0662*	0.0665	2.8340
Firm in service or not	0.2303	0.5205	0.6581	0.0000	1.2590
Firm in white area or not	0.2284	0.5469	0.6762	0.0000	1.2566
Firm formally registered or not	0.3905	0.4119	0.3431	0.0000	1.4778
Gender of operator	0.6596	0.5378	0.2200	0.0000	1.9340
Location of firm	0.4120	0.8750	0.6377	0.0000	1.5099
Number of workers	0.2540	0.1914	0.1844	0.0000	1.2892
Number of workers squared	-0.0167	0.0135	0.2155	0.0000	0.9835
Value of assets	0.0863	0.1146	0.4515	0.0000	1.0000
Region 1	0.1433	1.0267	0.8890	0.0000	1.1541
Region 2	0.9644	0.6862	0.1599	0.0000	2.6233
Region 3	-0.5975	0.8004	0.4554	0.0000	0.5502
Region 4	-0.5065	1.2646	0.6888	0.0000	0.6026
Region 5	0.0116	0.8415	0.9890	0.0000	1.0117
Region 6	0.2486	0.7221	0.7307	0.0000	1.2822
Region 7	1.8146	0.8299	0.0288+	0.0946	6.1385
Region 8	0.9618	0.8325	0.2479	0.0000	2.6164
Constant	-4.9867	2.5892	0.0541+	-	-

Number of observations	:251	Model chi-square significance	:0.0011
-2 Log Likelihood	:263.08	Unconstrained correctly predicted	:87.28%
Goodness of fit	:248.08	Constrained correctly predicted	:35.90%
Model chi-square	:47.89	Overall correctly predicted	:71.31%

*# = Significant at 1 percent + = Significant at 5 percent * = Significant at 10 percent*

Location of the firm is also an important determinant of the firm's credit status in the informal credit market. The coefficient for location is negative and statistically significant. Firms located in peri-urban areas (especially those in former white areas) are less likely to be credit constrained.

Significant determinants of credit constraints in the informal credit market are almost the same as for the overall credit market. The differences are that (a) whether the firm is in manufacturing sector or not is not an important determinant of credit constraints in the informal credit market ; and (b) formal registration of the firm is a statistically significant determinant of credit status of the firm in the informal credit market.

Education and sex of the operator are not important determinants of the firm's credit status in the informal credit market although they are important in the formal credit market.

Table 7.16 shows the regression results for the informal credit market with dummy variables for regions included in the model. The inclusion of dummy variables in the regression model for the informal credit market has a marginal effect. None of the coefficients of the dummy variables is statistically significant. The only notable changes are: (a) the coefficient of 'age of business' changes from positive to negative (expected sign); and (b) the overall prediction of the model improves.

Table 7.15: Determinants of credit constraints in the informal credit market

Explanatory variable	Coefficient (B)	Standard error	Significance	Partial correlation	e^B
Age of business	0.0003	0.0265	0.9008	0.0000	1.0033
Age of business operator	-0.0808	0.0862	0.3487	0.0000	0.9224
Age of business operator squared	0.0009	0.0009	0.3053	0.0000	1.0009
Education of operator	-0.0432	0.0386	0.2628	0.0000	0.9577
Firm in construction or not	-0.4281	0.5440	0.4313	0.0000	0.6517
Firm in manufacturing or not	0.6867	0.4598	0.1353	0.0260	1.9871
Firm in service or not	-0.0460	0.4095	0.9106	0.0000	0.9551
Firm in white area or not	-1.1003	0.4985	0.0273+	-0.0918	1.2211
Firm formally registered or not	0.5910	0.3515	0.0926*	0.0493	1.8059
Gender of operator	0.1997	0.4139	0.6294	0.0000	1.2211
Location of firm	-0.7651	0.3678	0.0375+	-0.0827	0.4563
Number of workers	0.2230	0.1633	0.1720	0.0000	1.2499
Number of workers squared	-0.0131	0.0104	0.2075	0.0000	0.9870
Value of assets	-0.3512	0.1480	0.0171+	-0.1040	1.0000
Constant	1.1370	2.0777	0.5842	-	-

Number of observations	: 251
-2 Log Likelihood	: 303.52
Goodness of fit	: 248.04
Model chi-square	: 37.03
Model chi-square significance	: 0.0007
Unconstrained correctly predicted	: 78.91%
Constrained correctly predicted	: 45.19%
Overall correctly predicted	: 64.94%

*# = Significant at 1 percent + = Significant at 5 percent * = Significant at 10 percent*

Table 7.16: Determinants of credit constraints in the informal credit market, including region variables

Explanatory variable	Coefficient (B)	Standard error	Significance	Partial correlation	e^B
Age of business	-0.0019	0.0283	0.9469	0.0000	0.9981
Age of business operator	-0.0915	0.0892	0.3050	0.0000	0.9126
Age of business operator squared	0.0011	0.0009	0.2462	0.0000	1.0011
Education of operator	-0.0303	0.0408	0.4579	0.0000	0.9701
Firm in construction or not	-0.5377	0.5897	0.3618	0.0000	0.5841
Firm in manufacturing or not	0.4595	0.5215	0.3783	0.0000	1.5832
Firm in service or not	-0.0160	0.4463	0.9714	0.0000	0.9841
Firm in white area or not	-1.0901	0.5930	0.0660*	-0.0636	0.3362
Firm formally registered or not	0.6244	0.3834	0.1034*	0.0438	1.8672
Gender of operator	0.0593	0.4479	0.8946	0.0000	1.0611
Location of firm	-1.5632	0.9355	0.0947*	-0.0482	0.2095
Number of workers	0.2083	0.1697	0.2197	0.0000	1.2316
Number of workers squared	-0.0113	0.0105	0.2821	0.0000	0.9888
Value of assets	-0.3696	0.1549	0.0170+	-0.1041	1.0000
Region 1	0.4738	1.0836	0.6619	0.0000	1.6061
Region 2	-1.0230	0.6534	0.1174	-0.0364	0.3595
Region 3	-0.3976	0.6955	0.5676	0.0000	0.6719
Region 4	0.3939	1.3261	0.7664	0.0000	1.4828
Region 5	-0.9075	0.7416	0.2211	0.0000	0.4035
Region 6	-0.9509	0.7216	0.1876	0.0000	0.3864
Region 7	0.7085	0.8421	0.4002	0.0000	2.0309
Region 8	0.6857	0.9589	0.4745	0.0000	1.9852
Constant	1.8719	2.2858	0.4128	-	-

Number of observations	: 251	Model chi-square significance	: 0.0006
-2 Log Likelihood	: 290.62	Unconstrained correctly predicted	: 86.39%
Goodness of fit	: 248.14	Constrained correctly predicted	: 49.04%
Model chi-square	: 49.94	Overall correctly predicted	: 70.92%

*# = Significant at 1 percent + = Significant at 5 percent * = Significant at 10 percent*

CHAPTER EIGHT

SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS

8.1 Summary of the study

8.1.1 Background

South Africa faces a major challenge of solving the problems of high unemployment, poverty and skewed income distribution. The rate of unemployment is high and the labor absorption capacity of the urban formal sector has declined significantly over last three decades. About fifty percent of South Africa's population can be classified as living below the poverty datum line and poverty is pervasive, especially in the rural areas. South Africa's income distribution is the most skewed in the world. A number of strategies are being considered by the South African government to solve these problems. One of these strategies involves the promotion of micro and small enterprises (MSEs).

While it is generally accepted that MSEs can play a major role in addressing the problems outlined above, their role is limited by constraints they face. These constraints are numerous. One of the constraints that has been singled out as significant is insufficient capital. MSEs can generate capital from various sources which may be categorized as noncredit (e.g., wages, remittances, pension, etc.) and credit (from informal and formal lenders). Capital constraints can be alleviated by improving access to these sources for MSEs. However, improving access to credit

for MSEs as a way of alleviating capital constraints has received more attention over the years.

Many analysts and policy makers in South Africa believe that MSEs are facing credit constraints. Although this belief is widespread, there is limited knowledge about the existence and significance of such constraints in terms of the proportion of MSEs that are credit constrained. Furthermore, there is paucity of information on which types of MSEs are experiencing great difficulty in obtaining the desired amount of credit. There is also little information on what determines whether MSEs are credit constrained.

8.1.2 Purpose of the study

This study is concerned with determining the proportion of credit constrained MSEs and identifying determinants of credit constraints on MSEs in the Northern Province of South Africa. The study also investigates whether certain MSEs are more likely to experience credit constraints than others. The hypotheses tested in the study are that MSEs more likely to be credit constrained are (1) from poor households; (2) located in rural areas; (3) operated by less educated entrepreneurs; (4) younger ; (5) in the manufacturing sector; (6) female-operated; (7) operated by younger persons; and (8) officially not registered MSEs.

8.1.3 Data sources and methodology

Data used in this study for testing these hypotheses were obtained from a sample of 270 MSEs taken in 1994 from 79 peri-urban and rural villages in two former homelands and three former white areas in the Northern Province. The data

were collected as part of an investigation into the provision of rural financial services by the Commission of Inquiry into the Provision of Rural Financial Services.

Information obtained from respondents was used to categorize MSEs into credit constrained and unconstrained regimes. The MSEs were first divided into credit constrained and unconstrained regimes in the overall credit market (i.e., formal and informal credit markets combined). The next step involved sorting MSEs into credit constrained and unconstrained categories in the formal and informal credit markets, separately. A logit framework was used to identify determinants of credit constraints in the overall credit market and formal and informal credit markets.

8.1.4 Significance of credit constraints

The study finds that many but not most of the MSEs included in the analysis can be described as credit constrained. Considering the overall credit market, the results of the study indicate that 48 percent of MSEs are credit constrained. The proportions of credit constrained MSEs in the formal and informal credit markets are 30 and 42 percent, respectively. The estimated proportion of credit constrained MSEs in the formal credit market compares with estimates from studies in other countries. However, the estimated proportion of credit constrained MSEs in the informal credit market is higher than estimates in other studies. This may be attributed to the dominance of credit transactions involving supplier credit in the informal credit market. This is despite the dominant role of credit from family and friends in South Africa as demonstrated in several studies. The majority of MSEs that are credit constrained are located in rural areas. Credit constrained MSEs based in rural areas comprise 86 percent of all credit constrained MSEs. Although this result may reflect the bias in the sample toward rural areas, the proportion of

MSEs that are credit constrained in rural areas is higher than for MSEs in peri-urban areas.

The results of the study also indicate that MSEs in the manufacturing sector are more likely to be credit constrained than MSEs in other sectors. Sixty percent of all manufacturing MSEs are classified as credit constrained.

8.1.5 Determinants of credit constraints

The results of the study indicate that the most important determinants of credit constraints on MSEs in the overall credit market are household/firm wealth (measured by the value of household/firm assets), location of the business (whether the business is located in a rural or peri-urban area), and economic sector (whether the firm is in manufacturing or not).

This study finds that MSEs from poor households (as measured by value of household/firm assets) are more likely to experience credit constraints. A possible reason for this is that poor households do not have sufficient collateral for loans and, therefore, their applications for loans are often turned down. Poor households are also unlikely to obtain the amount of credit they request because they do not have viable investment opportunities which lenders find worthwhile to provide credit for. The results of the study throw new light on the observation by Conning (1995) that the poorest households are not necessarily the ones that are most credit constrained. The poorest MSEs (measured by value of assets and income) in this study are in the construction sector, but they are not the most constrained. Instead, MSEs in the manufacturing sector (which are more wealthy) are the most credit constrained. Yet when economic sector is taken into account as a separate

determinant in multi-variable analysis, the poorest households are the most likely to be credit constrained.

MSEs located in rural areas are likely to experience more credit constraints than those in peri-urban areas. A possible explanation for this is relatively high transaction costs associated with credit transactions involving rural borrowers. Low returns to investment in rural areas may also discourage lenders from providing credit for projects in these areas and, thus, make it difficult for people in rural areas to obtain the amount of credit they request.

The results of the study also indicate that MSEs in the manufacturing sector are more likely to experience credit constraints compared to those in other sectors. A possible reason for this is the relatively high financing requirement for manufacturing MSEs and their inability to obtain sufficient credit. Furthermore, because of the importance of economies of scale in manufacturing, there may be fewer projects that are worth financing in this sector. This could result in many credit applications for manufacturing projects being turned down by lenders.

Determinants of credit constraints on MSEs found to be statistically significant in the formal credit market include education of the MSE operator, gender of the MSE operator, and whether the firm is in the manufacturing sector or not. MSEs with more educated operators are more likely to obtain the amount of credit they request from formal lenders. Contrary to expectations, male-operated MSEs are more likely to experience formal credit constraints. This is probably because men are more likely to apply - unsuccessfully - for credit, while women are less likely to seek loans from formal credit institutions. Firms in the manufacturing sector have higher odds of being credit constrained in the formal credit market than those in other sectors.

The most important determinants of credit constraints on MSEs in the informal credit market are household wealth, whether the firm is formally registered or not, and whether the firm is located in a rural or peri-urban area. MSEs from wealthier households are more likely to obtain the amount of credit they request from informal lenders, particularly input/raw material suppliers. This finding contradicts the observation in many studies that informal lenders do not place much emphasis on collateral but use collateral substitutes. MSEs that are formally registered with government as business concerns are found to be more likely to experience credit constraints in the informal credit market. This finding also contradicts findings from other studies indicating a positive relationship between formal registration and access to credit. Again this may reflect the fact that registered enterprises are more likely - unsuccessfully - to seek credit from their input suppliers, the main component of informal credit in our data set.

8.2 Implications for policy

The findings of the study have several policy implications. Although the study focuses on the Northern Province, policy implications of the findings may also be applicable to other provinces in South Africa.

8.2.1 Credit in the context of other sources of capital and credit constraints in the context of other constraints

An important implication of the findings of this study is that, to design appropriate policies for raising the contribution of MSEs to employment and income generation by removing credit constraints, it is necessary to first determine whether MSEs are credit constrained. Despite credit constraints being singled out as the

most significant constraint by MSE operators interviewed in many surveys, not every MSE operator who identifies lack of credit as the most important constraint is credit constrained. There is a need to separate those who are credit constrained from those who just desire to have credit regardless of whether they can use the credit productively and generate a good return to investment which will enable the borrowers to repay their loans. An approach which attempts to improve access to credit for every small business in South Africa is not likely to be successful.

Improving access to credit can alleviate capital constraints on MSEs but this is by no means the only way to lift capital constraints on MSEs. Credit should be viewed in the context of other sources of capital for MSEs. In some cases, it may be more effective to focus on raising the amount of capital generated from noncredit sources rather than improving access to credit. For example, survey results in several countries indicate that the main source of financing for MSEs is own savings within the household or the enterprise. The provision of secure places to save money may contribute more to the accumulation of assets than improving access to credit. Improving access to capital from noncredit sources may actually eliminate the need for government to improve access to credit for MSEs because of the complementary relationship which exists between capital from noncredit sources and access to credit. Furthermore, removal of credit constraints will not necessarily lead to an increase in the contribution of MSEs to employment and income generation. The removal of other constraints is also important and, in some instances, may be more important than removing credit constraints. Thus, in addition to identifying MSEs that are credit constrained, efforts should be made to identify other constraints which if not removed might render efforts to alleviate credit constraints useless.

8.2.2 Peri-urban versus rural MSEs

One of the findings of the study is that MSEs located in rural areas are more likely to be credit constrained than those in peri-urban areas. Based on this finding, it is tempting to recommend that government and nongovernment efforts to remove credit constraints should focus on rural areas. However, making such a recommendation without an insight into the reasons for rural-based MSEs to experience more difficulty in obtaining credit is unwise because it is the reason(s) that will point to the most appropriate action to be taken.

Possible explanations for MSEs in rural areas to face greater difficulty in obtaining the amount of credit they requested include (1) high transaction costs of lending and borrowing; (2) lower returns to investment in rural areas; and (3) lack of recognition of land in rural areas as collateral for loans by formal lenders.

Transaction costs of lending and borrowing may be high due to poor physical infrastructure and imperfect information in rural areas. Therefore, reducing transaction costs would require improving the quality of physical infrastructure and increasing the amount of information available to both potential borrowers and lenders who seek to engage in credit transactions. One way to alleviate imperfect information problems is for formal lenders to lend to groups rather than to individuals. Lending through groups has proved successful in lowering transaction costs in other countries. The most cited example of an institution that has been successful in lending through groups is the Grameen Bank. Another way to lower transaction costs is by establishing formal lending institution branches in rural areas. This may not necessarily reduce the lender's transaction cost but would lower transaction costs of borrowing significantly.

If low returns to investment in rural areas is the reason for MSEs in these areas to face more credit constraints than MSEs in peri-urban areas, then it is good resource allocation for lenders to focus their lending efforts in peri-urban areas. Removing credit constraints caused by low returns to investment in rural areas would require increased policy efforts to make rural areas more attractive for investment. Reducing transaction costs and improving physical infrastructure as suggested above are ways to increase returns to investment in rural areas.

The problem of lack or insufficiency of collateral caused by lack of recognition of assets (e.g., land) of rural households as collateral by formal lenders can be alleviated by paying attention to property rights in land in the rural areas. Land is by far the most widely-held asset among poor people in rural areas. Formal lenders would recognize land as collateral if they could sell the land to recover their money in case of default on loans. This means that ways should be sought to make it possible for land in rural areas to be sold. However, there is a concern that if this were to happen, many rural people would be displaced from their land. Some have suggested that the government should rather stand in as a guarantor for loans made to rural people by formal lenders.

Given that credit constraints on MSEs exist in rural areas, their removal could result in a significant rise in the contribution of MSEs to employment and income generation in these areas. Since rural development is known to have spillover effects on urban development, an increase in the contribution of MSEs to employment and income generation would also contribute to development in urban areas. Investing in rural areas is likely to have the greatest impact on the economy.

8.2.3 Differentiated approaches for different credit markets

The study finds that statistically significant determinants of credit constraints in the formal and informal credit markets are not the same. In the formal credit market, significant determinants are education and gender of the MSE operator, and whether the firm is in manufacturing or not. Significant determinants of credit constraints in the informal credit market are household/firm wealth, whether the firm is formally registered or not and whether the firm is located in a rural or peri-urban area. These findings imply a differentiated policy approach to alleviating credit constraints in the formal and informal credit markets.

In the formal credit market, policy efforts to alleviate credit constraints should focus on manufacturing MSEs and improving the education level of MSE operators. Although the results of the study would suggest that male-operated MSEs should receive more attention than female-operated MSEs, it is doubtful whether such an approach would have the desired effect on poverty and unemployment because women are usually affected by poverty and unemployment more than men.

A possible reason for MSEs in manufacturing to experience credit constraints in the formal sector was that these MSEs have a greater need for financing than other MSEs and their supply of credit grows less rapidly than their demand for credit. The little emphasis on assisting manufacturing MSEs by formal lending institutions and MSE assistance agencies is an important factor contributing to the slow growth in credit supply. Since manufacturing activities in rural areas tend to be labor intensive, alleviation of credit constraints faced by MSEs in manufacturing has the potential to contribute significantly to employment and income. Therefore, more attention should be focused on improving access to credit for MSEs in manufacturing sectors.

The importance of education of the business operator as a determinant of credit constraints in the formal credit market implies that access to formal credit could be enhanced by improving the level of education achieved by the business operator. Thus, adult education programmes could indirectly contribute to alleviation of credit constraints in the formal credit market. Since household wealth is not a statistically significant determinant of credit constraints in the formal credit market, it could be concluded that formal lenders regard education of the operator as a good indicator of repayment ability and, thus, a substitute for household/firm wealth.

The finding that wealth (measured by value of household/firm assets) is not an important determinant of credit constraints in the formal credit was also explained in terms of the difficulty of formal credit institutions to determine the value of MSE/household assets. Therefore, measures to alleviate credit constraints in the formal credit market should focus on inter alia improving the ability of formal credit institutions to determine the market value of MSE/household assets. Since business/household wealth is found to be an important determinant of credit constraints in the informal credit market, it could be concluded that informal lenders employ better methods to determine the value of MSE/household assets. Collaboration between formal and informal lenders could thus improve the ability of the former to determine the market value of household/MSE assets.

Another finding of the study is that, male operators are more likely to be credit constrained than female operators in the formal credit market. The implication of this is that efforts to alleviate credit constraints in the formal credit market should focus on male-operated MSEs. However, acceptance of such a

recommendation might be unwise. The lack of representativeness in the sample in terms of gender composition may have resulted in this conclusion.

The results of the study indicate that economic sector in which the firm operates is not an important determinant of credit constraints in the informal credit market. This implies that there is no need to put emphasis on any particular economic sector to alleviate credit constraints in the informal credit market. Instead, the focus should be on poor households, rural-based MSEs and MSEs that are formally registered as business concerns.

8.3 Shortcomings of the study and implications for future research

8.3.1 Lack of representativeness of the sample

Perhaps the greatest shortcoming of the study is the lack of representativeness in terms of gender, diversity of the MSE sector, geographical area covered and composition of the informal credit market.

The proportion of female-operated MSEs in the sample is much smaller than the proportion of MSEs operated by women in the small business sector in South Africa. Female-operated MSEs in South Africa comprise a significant proportion of the MSE sector and actually dominate the microenterprise sector. Thus, female-operated MSEs are under-represented in the sample.

The selection of subsectors included in the sample was not based on their importance or size. The main criterion was whether inclusion of a subsector would result in some variation in the nature of financial transactions. This means that some subsectors may be over-represented while others are under-represented.

Almost half the number of MSEs included in the study were sampled from one region. Thus, MSEs from other regions were either left out or under-represented resulting in some bias.

Family and friends are known to dominate the informal credit market for MSEs in South Africa. Yet, in the sample, transactions involving family and friends were of only minor importance. Input/raw material suppliers were accorded more importance in the sample than is the case in the real situation.

Therefore, there is a need for studies using data from more representative samples to gain a better understanding of what determines credit constraints in the Northern Province. Such studies should be representative of the MSE sector in terms of the size of the various subsectors, geographical and gender composition, and should more effectively cover other components of the informal credit market.

8.3.2 Lack of information on leverage (debt information)

The amount of outstanding debt is an important consideration in deciding whether to grant a loan or not among both formal and informal lenders. However, there was no information from the data to enable us to include a variable reflecting the level debt of each MSE. This is a major shortcoming and, therefore, the study does not give a complete picture of determinants of credit constraints on MSEs.

8.3.3 Little emphasis on explanations for determinants of credit constraints

This study focuses on what determines credit constraints on MSEs but shed only limited light on why those constraints occur. As pointed out in earlier sections, it is important to know the reasons for the existence of credit constraints to determine what action to take to remove the constraints. Therefore, future research

should focus more on finding explanations for the existence of credit constraints on MSEs in South Africa.

8.3.4 Notional versus effective demand

Like other studies, a major shortcoming of this study is the focus on notional rather than effective demand for credit. Future research should seek ways to resolve this difficult issue of measuring effective demand for credit.

8.3.5 Further breakdown of economic sector

The classification of MSEs according to economic sector is probably too broad. A further breakdown of the categories would be useful because it would show the types of businesses within the broad categories that are particularly more credit constrained. This implies a need for a larger sample.

8.3.6 Effects of credit constraints

The study sheds light on what determines credit constraints but does not go further to examine the effects of credit constraints. Further research is needed to determine the effects of credit constraints on the activities of MSEs and on their ability to generate employment and income.

APPENDIX A

APPENDIX A

September 16, 1997 Questionnaire for Micro and Small Enterprises

Micro-Entrepreneur Identification Number: _____ (for office use only)

Ask to speak to the owner/operator of the business. Explain that the information provided will be treated as confidential, and will be used by researchers to assist the government in designing programmes aimed at improving the economic climate for micro and small businesses. The respondent should be the entrepreneur/owner of the business. If the respondent does not know the answer to a question code as DK, if the respondent prefers not to answer a question, code as -1. If the question does not apply, code the response as not applicable (NA).

1. Name of interviewer: 1. _____
2. Date of interview: 2. _____
3. Region/Province: 3. _____
4. District: 4. _____
5. Village/Area: 5. _____

A. Demographic Information

6. What is your first name and your surname? 6. _____
7. What is your local name? 7. _____
8. What is your marital status?
   1. Single; 2. Married; 3. Widowed 4. Divorced 8. _____

   If the respondent is a married woman or widow:

   9. In what year were you married? 9. _____19_____
   10. Do/did you have a formal marriage contract (Y/N) 10._____
   11. Can/could you sign contracts without getting permission from your husband? (Y/N) 11. _____
12. When did you start living in this area? 12. _____19_____
13. Do you have electricity in your home? (Y/N) 13. _____
14. If so, is it:
   1. Grid; 2. Generator 14. _____
15. Do you have electricity in your business? (Y/N) 15. _____
16. If so, is it:
   1. Grid; 2. Generator 16. _____
17. Does your family own the house it lives in? (Y/N) 17. _____
18. How many rooms are there in your house? 18. _____
19. What is your main source of drinking water?
   1. Unprotected source (such as an open spring or river); 2. Protected source 3. Public standpipe or 4. Pipe into house 19. _____

B. Household Composition

Household member	Number of household member	Relationship to head[A]	Sex (M or F)	Year born	Age in years	Occupation[B]	School standard passed[C]
	20	21	22	23	24	25	26
1. Male head	1						
2. Female head	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						

27. Which of the above is the respondent? (1-12) 27. _____

A 1. Head; 2. Spouse of head; 3. Child of head; 4. Brother or sister of head; 5. Parent of head; 6. Grandchild of head; 7. Other relative; 8. Non-relative; 9. lodger/tenant

B Codes for occupation: SE (self-employed, for example as a contractor, block-maker, etc.); WE (wage-employed); H (Homemaker, that is, a woman who works in her own family's home without a wage); D (Domestic worker, someone who works in the home of another family for a cash wage); SS (Senior school scholar or student); JS (Junior school scholar or student); D (Disabled, that is, paid a disability grant); P (Pensioner, that is, paid a pension); U (Unemployed but seeking employment); UN (Unemployed but not seeking work); NS (non-school going child); or (Infant or too young to attend school).

C For sub A and B code as A or B respectively, standards 1-10 code as 1-10. For post matric qualification code as 11.

C. Household Sources of Income over the Past 12 Months

Household member	Number of household member	Wages (per month) (R)	Remittances (per month) (R)	Pensions & Disability (per month) (R)	Agriculture (per month) (R)	Business A (average month) (R)	Business B (average month) (R)	Business C (average month) (R)
	28	29	30	31	32	33	34	35
1. Male head	1							
2. Female head	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							

Use codes from question 40 (on next page):

36. What is Business A: 36. _____
37. What is Business B: 37. _____
38. What is Business C: 38. _____

D. Business Activity

39. What is your most important business activity? 39. _____
    1. Sewing/alterations; 2. Building/construction; 3. Contracting and haulage; 4. Vehicle repairs and/or panel beating; 5. Block/brick making; 6. Shopkeeper (Shop, spaza/tuck shop) 7. Hawking; 8. Shoe making/repair; 9. Mat making/basketwork; 10. Pottery; 11. Metalworking; 12. Tanning leather and leather work; 13. Thatching; 4. Electronic/TV/radio repair; 15. Carpenter; 16. Water-haulage; 17. Sculpture/curios; 18. Bottle store; 19. Shebeen; 20. Tavern; 21. Hairdresser; 22. Child minder; 23. Agriculture (cane, timber, livestock, vegetables); 24. Other (please specify in answer space)
    _____

40. How many other businesses do you own and operate? 40. _____
41. What is the activity of your most important other business? 41. _____
    (Use above codes)
42. Nature of the specific business to be discussed: 1. Sewing/ alterations; 2. Building/construction; 3. Contracting and haulage; 4. Vehicle repairs and/or panel beating; 5. Block making; 6. Retailing/shopkeeping (shop, spaza/tuck shop) 42. _____
43. In which year did you start this business activity 43. 19_____
44. On average, how many months do you do this activity per year? 44. _____
45. How is the business organized? 45. _____
    1. Sole proprietor; 2. Partnership; 3. Close corporation (CC); 4. Family business; 5. Working group
46. Is the business formally registered? (Y/N) 46. _____
47. Where is your place of business?
    1. In the family's home; 2. Adjacent to the family's home; 3. In a location outside the family's home; 4. On the site of service delivery 47. _____
48. If the place of business is in a location outside the family's home, is it 1. Owned/held by the respondent; 2. Rented 3. Used through communal arrangement; 4. Other (please specify) 48. _____
49. Did you inherit the business (Y/N) 49. _____
50. Did you buy the business? (Y/N) 50. _____
51. How much money did you use to start or buy the business? (Rands) 51. _____
52. Did you use assets/money from another business to start this business? (Y/N) 52. _____
53. How many people (including yourself) worked in the business when it first started or when you took it over? 53. _____
54. How many of these people (including yourself) were family members? 54. _____

E. From what **sources** did you get the money to **start/buy/build up your business**? (Please rank the sources in the order of **importance** according to the respondent.)

Source	Source code	Used this source? (Y/N)	Order of Importance[A]
	55	56	57
Own funds/own savings	1		
Remittances received	2		
Retrenchment package	3		
Pension	4		
Local moneylender	5		
Loan from family/friends	6		
Loan from KFC/SBDC/ VDC/STOK/LDC	7		
Savings club/stokvel	8		
Loan from commercial bank	9		
Income from another business (include agricultural enterprises)	10		
Other (please specify)	11		

A Rank from 1 upwards

F. Employment in the business

Who **works in your business**, what are they paid, and how often do they work? (Include the respondent).

Employee	Sex (M/F)	Year began work here	Wage in Rands[A]	How often is worker paid[B]	Family member (Y/N)	Status[C]	Hours per day	Days per hour	Weeks per year
58	59	60	61	62	63	64	65	66	67
1 (respon.)									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									

A Calculate Rand value of in kind payments.
B 1. Daily; 2. Weekly; 3. Fortnightly; 4. Monthly; 5. On task basis
C 1. Full-time; 2. Part-time; 3. Seasonal; 4. Occasional; 5. Apprentice

G. Assets of the business

How many of the following **assets** does your business **currently own** and how did you **finance** them?

Question	Q#	Asset 1	Asset 2	Asset 3	Asset 4	Asset 5	Asset 6	Asset 7	Asset 8	Asset 9	Asset 10
Asset Code[A]	68										
Year purchased	69										
Original purchase price (Rands)	70										
What could you buy it for today? (Rands)	71										
Did you apply for a loan, cash or credit? (Y/N)	72										
Source of loan refused[B]	73										
Source of loan granted[B]	74										
Did you pay in installments? (Y/N)	75										

A 1. Motor cars and bakkies; 2. Motorbike; 3. Truck (ie. over 1 ton); 4. Tractor; 5. Trailer; 6. Harrower; 7. Weeder; 8. Plough; 9. Ridger; 10. Crane; 11. Block making machine (manual); 12. Block making machine (electric/ mechanical); 13. Cement mixer; 14. Scaffolding; 15. Spray gun; 16. Block & tackle; 17. Welder; 18. Tools/ equipment; 19. Generator; 20. Sewing machine; 21. Unsold products; 22. Unused raw materials; 23. Other (specify)

B 1. Local moneylender; 2. Family/friends; 3. KFC/SBDC/VDC/STOK/LDC; 4. Milling company; 5. Savings club/stokvel; 6. Commercial bank; 7. Hire purchase from supplier; 8. Other (please specify)

H. Cash loans to finance assets for the business

If a cash loan was used to finance any **assets** listed in table E, please respond to the following questions concerning the most recent asset financed by a cash loan.

Question	Q#	Asset
76. Asset code from the asset code table (see page 24)	76	
77. How many Rands did you request for the loan?	77	
78. How many Rands did you receive?	78	
79. How many kilometres away from you is the lender?	79	
80. How long do you have to travel to get to the lender? (hours)	80	
81. What means of transportation do you use to get to the lender?	81	
82. How many times did you have to visit the lender to get the loan?	82	
83. Did you sign a written application? (Y/N)	83	
84. Was the application written in your language? (Y/N)	84	
85. How many days passed between the application and receipt of the money?	85	
86. What guarantee/security was required?	86	
87.What was the interest rate in percent per year?	87	
88. How many Rands on average was each installment/repayment?	88	
89. How many days passed between receiving the money and the final repayment?	89	
90. How many repayments/installments were required?	90	
91. Does the lender come to your home to receive the payments? (Y/N)	91	
92. Does the lender send regular, on-time statements? (Y/N)	92	
93. How many Rands do you still owe?	93	
94. Had you borrowed from this lender before? (Y/N)	94	
95. Is it possible to delay repayments if there is a shortage of cash? (Y/N)	95	
96. Have you ever reduced or stopped making loan repayments? (Y/N)	96	
97. Will the guarantee/security be enforced if you do not repay? (Y/N)	97	
98. Does any household member work for the lender? (Y/N)	98	
99. Does the lender buy any of your products/services? (Y/N)	99	
100. Does the business buy inputs/raw materials from the lender? (Y/N)	100	

A 1. Taxi; 2. Bus; 3. Walk; 4. Train; 5. Own vehicle; 6. Other (please specify)

B 1. None; 2. Livestock; 3. Asset purchased; 4. Share of output; 5. Other asset; 6. Other (please specify)

C Code-2 if the number of days was not specified when the loan was made

D If mailed by post = Y

I. Credit (hire-purchase) used to finance assets for the business.
If an **asset** was purchased through a **credit (hire-purchase) arrangement,** please respond to the following questions concerning the most recent asset purchased.

Question	Q#	Asset
101. Asset code from the asset code table (see page 24)	101	
102. How many kilometres away from you is the lender?	102	
103. How long do you have to travel for to get to the lender? (hours)	103	
104. What means of transportation do you use to get to the lender?[A]	104	
105. How many times did you have to visit the lender to get the loan?	105	
106. Did you sign a written application? (Y/N)	106	
107. Was the application written in your language? (Y/N)	107	
108. How many days passed between the application and delivery of the asset?	108	
109. What guarantee/security was required?	109	
110. How many Rands would the item cost if you had paid for it in cash?	110	
111. How was the final purchase price determined?	111	
112. How many Rands did you have to pay as deposit before the item was delivered?	112	
113. How many Rands was each repayment after delivery?	113	
114. How many repayments/installments did you make after delivery?	114	
115. How many days passed between the delivery and the final repayment?	115	
116. What was the interest rate you paid in percent per year?	116	
117. Does the lender come to your home to receive the payments? (Y/N)	117	
118. Does the lender send regular, on-time statements? (Y/N)	118	
119. How many Rands do you still owe?	119	
120. Had you borrowed from this lender before?	120	
121. Is it possible to delay repayments if there is a shortage of cash? (Y/N)	121	
122. Have you ever reduced or stopped making loan repayments? (Y/N)	122	
123. Will the guarantee/security be enforced if you do not repay? (Y/N)	123	
124. Does any household member work for the lender? (Y/N)	124	
125. Does the lender buy any of your product/services? (Y/N)	125	
126. Does the business buy inputs/raw materials from the lender? (Y/N)	126	

A 1. Taxi; 2. Bus; 3. Walk; 4. Train; 5. Own vehicle; 6. Other
B 1. None; 2. Livestock; 3. Asset purchased; 4. Other asset; 5. Other (please specify)
C 1 Matched to market price; 2. Set by seller; 3. Set by buyer; 4. Negotiated
D Code-2 if the number of days was not specified when the loan was made
E If mailed by post = Y

J. Sources of credit refused.
Have you **tried** to take a loan from any of the following sources to **finance an asset** during the **past 2 years**? Indicate whether you were successful or not.

Source	Source Code	Asked this source for loan? (Y/N)	Refused by this source? (Y/N)
	127	128	129
Local moneylender	1		
Family or friends	2		
KFC/BDC/VDC/STOK/LDC	3		
Milling company	4		
Savings club/stokvel	5		
Commercial bank	6		
Other (please specify)	7		

K. Inputs and raw materials and their suppliers.
Indicate the **principal raw materials and inputs** you have used in the **past 12 months** and their **suppliers:**

Question	Q#	Input/Raw Material 1	Input/Raw Material 2	Input/Raw Material 3	Input/Raw Material 4
130. Raw material/input code from table (see page 24	130				
131. Principal supplier[A]	131				
132. Kilometres to point of purchase	132				
133. Do you regularly purchase from this supplier? (Y/N)	133				
134. For how many months have you done business with this supplier?	134				
135. What is the nature of your relationship with this supplier?[B]	135				
136. How many purchases have you made for this input in the last year?	136				
137. What quantity do you typically purchase per transaction?	137				
138. What was the typical price per unit in Rands?	138				
139. What was the typical cost of this input/supply for each transaction?	139				
140. How did you pay for the purchases?[C]	140				
141. How did you transport the purchased input/raw material?[D]	141				
142. How many Rands did you typically spend on transportation of purchases?	142				
143. Was the purchase of this input typically the most important reason for your trip? (Y/N)	143				

A 1. Small local producer/service provider 2. Wholesaler 3. Cooperative 4. Retailer/supermarket 5. Local service organizations 6. Delivery agent 7. Other (please specify)
B. 1. Business 2. Family or in-laws 3. Friends 4. Spouse 5. Other (please specify)
C 1. Cash from own funds 2. Cash from a loan 3. Credit from the supplier 4. Advance payment
D 1. Carried on foot 2. Hired truck 3. Bus or taxi 4. Own vehicle 5. Paid supplier for delivery 6. Other (please specify)

L. Access to credit from suppliers of inputs/raw materials:

Question	Q#	Supplier 1	Supplier 2	Supplier 3	Supplier 4
144. Raw material code from input/raw material table. (See page 24).	144				
145. Have you asked your supplier if you could make purchases on credit? (Y/N)	145				
146. If you have not asked, why haven't you asked?^	146				
147. If you did ask, was the response of the supplier positive? (Y/N)	147				

A 1. Had sufficient savings; 2. Do not like incurring debt; 3. Felt the request would be rejected; 4. Credit costs too much; 5. Did not have appropriate/sufficient security; 6.Had access to another preferred source of credit; 7. Supplier is Cash & Carry; 8. Other (please specify).

M. Cash loans to finance inputs or raw materials.
If **cash loans** were used to finance any **inputs or raw materials** over the last year, please provide the following details:

Question	Q#	Input/Raw Material 1	Input/Raw Material 2	Input/Raw Material 3	Input/Raw Material 4
148. Raw material code from input/raw material table (see page 24)	148				
149. Lender[A]	149				
150. How many Rands did you request for the loan?	150				
151. How many Rands did you receive?	151				
152. How many kilometres away from you is the leander?	152				
153. How long do you have to travel for to get to the lender? (hours)	153				
154. What means of transportation do you use to get to the lender?[B]	154				
155. How many times did you have to visit the lender to get the loan?	155				
156. Did you sign a written application? (Y/N)	156				
157. Was the application written in your language? (Y/N)	157				
158. How many days passed between the application and receipt of the money?	158				
159. What guarantee/security was required?[C]	159				
160. What was the interest rate in percent per year?	160				
161. How many Rands on average was each installment/repayment?	161				
162. How many days passed between the receipt of the money and the final repayment?[D]	162				
163. How many repayments/installments were required?	163				

164. Does the lender come to your home to receive the payments?[E] (Y/N)	164				
165. Does the lender send regular, on-time statements? (Y/N)	165				
166. How many Rands do you still owe?	166				
167. Had you borrowed from this lender before?	167				
168. Is it possible to delay repayments if there is a shortage of cash? (Y/N)	168				
169. Have you ever reduced or stopped making loan repayments/installments? (Y/N)	169				
170. Will the guarantee/security be enforced if you do not repay? (Y/N)	170				
171. Does any household member work for the lender? (Y/N)	171				
172. Does the lender buy any of your products/services? (Y/N)	172				

A 1. Local moneylender; 2. Family/friends; 3. KFC/SBDC/VDC/STOK/LDC; 4. Milling company; 5. Savings club/stokvet; 6. Commercial bank; 7. Other (please specify)
B 1. Taxi; 2. Bus; 3. Walk; 4. Train; 5. Own vehicle; 6. Other (specify)
C 1. None; 2. Livestock; 3. Asset; 4. Share of output; 5. Other (specify)
D Code-2 if the number of days was not specified when the two parties agreed on the loan
E If mailed by post - Y

N. Credit used to finance inputs/raw materials for the business.

If inputs/raw materials were purchased on **credit from suppliers in the past year,** please provide the following details:

Question	Q#	Input/Raw Material 1	Input/Raw Material 2	Input/Raw Material 3	Input/Raw Material 4
173. Input/raw material code from table (see page 24)	173				
174. How many kilometres away from you is the lender?	174				
175. How long do you have to travel to get to the lender? (hours)	175				
176. What means of transportation do you use to get to the lender?[A]	176				
177. How many credit transactions did you have in the last year for this input/raw material?	177				
178. What quantity of inputs/raw materials do you typically buy with each credit transaction? (State unit where applicable)	178				
179. What was the typical value of the purchases on credit per transaction in the last year?	179				
180. What is the price per unit for a credit transaction? (State units)	180				
181. What is the price per unit for a cash transaction? (State units)	181				
182. Do you get a quantity or cash bonus if you pay cash? (Y/N)	182				
183. What is the typical cash value of this bonus?	183				
184. How was the final purchase price determined?[B]	184				
185. How many Rands did you typically have to pay as deposit before the items were delivered?	185				
186. How many Rands on average was each repayment after delivery?	186				
187. How many repayments/installments did you make after delivery?	187				
188. How many days passed between the delivery and the final repayment?[C]	188				
189. What was the interest rate you paid in percent per year?	189				
190. How many months have you done business with this supplier?	190				
191. What security/guarantee was required?[D]	191				

A 1. Taxi; 2. Bus; 3. Walk; 4. Train; 5. Own vehicle; 6. Other

B 1. Matched to market price; 2. Set by seller; 3. Set by buyer; 4. Negotiated

C Code-2 if the number of days was not specified when the two parties agreed on the loan

D 1. None; 2. Livestock; 3. Inputs purchased; 4. Share of output; 5. Other (please specify)

O. Products and Services

Please describe your transactions during the **past 12 months:**

Question	Q#	Product/ service 1	Product/ service 2	Product/ service 3	Product/ service 4	Product/ service 5
192. What product or service did you provide? (See table of products/services on page 24)	192					
193. How many transactions do you have for these products/services per year?	193					
194. Kilometres from residence to point of sale or service? (Use average if necessary. Indicate as 0 km if business is conducted from home or shop)	194					
195. What is the most common form of payment for these products/ services?[A]	195					
196. What quantity do you typically sell per transaction? (Use product/service units)	196					
197. What is the total value of your sales or services per transaction? (In Rands)	197					

A 1. Cash; 2. Credit; 3. Payment in advance; 4. Cessions; 5. Other (specify)

P. Sales on Credit. Not to be answered by general dealers/shopkeepers)
Please specify the **products or services** which you have **sold on credit** during the **past 12 months:**

Question	Q#	Product/ services 1	Product/ services 2	Product/ services 3	Product/ services 4	Product/ services 5
198. What product or service did you provide? (See table of products/services on page 24)	198					
199. How many transactions do you conduct per year on credit?	199					
200. Kilometres from residence to point of sale or service? (Use average if necessary. Indicate as O km If business is conducted from home).	200					
201. What quantity of sales or services do you typically provide per credit transaction? (Use product/service units)	201					
202. What was the Rand value of sales or services that you provided for each credit transaction?	202					
203. Do you typically give a quantity or cash bonus for cash payment? (Y/N)	203					
204. What is the average Rand value of this bonus?	204					
205. What would be the price of the product/service if paid for in cash?	205					
206. How is the purchase price of the sale or service typically set?[A]	206					
207. How many Rands do the clients typically pay as deposit?	207					
208. How many days typically pass between delivery and the final repayment?	208					
209. How many repayments do the clients typically make after delivery?	209					
210. How many Rands on average is each repayment after delivery?	210					
211. What interest rate is charged in percent per year?	211					
212. What guarantee/security did you require?[B]	212					

A 1. Matched to the market price; 2. Set by supplier; 3. Set by buyer; 4. Negotiated

B 1. None; 2. Livestock; 3. Item purchased; 4. Share of output; 5. Sales through supplier's outlets; 6. Asset; 7. Other (please specify)

Q. Sales with payment in advance. (Not to be answered by general dealers/shopkeepers)
Please specify the **principal products or services** which you have **sold with payment in advance** during the **past 12 months.**

Question	Q#	Products/ services 1	Products/ services 2	Products/ services 3	Products/ services 4	Products/ services 5
213. Product or service (see table on page 24)	213					
214. How many sales or services with payment in advance were made in the past year? (Specify number of transactions)	214					
215. How many kilometres to the point of sale or service? (Use average if necessary. Indicate as 0 km if business is conducted from home)	215					
216. What quantity of sales or services on average do you provide per advance payment? (Use product/service units)	216					
217. What is the typical Rand value per transaction of sales and services with payment in advance?	217					
218. What would be the average price if the clients were to pay in cash?	218					
219. How is the purchase price of the sale or service set?[A]	219					
220. How many Rands do your clients typically pay in advance per transaction?	220					
221. How many Rands do the clients typically pay on completion of the job?	221					

A 1. Matched to the market price; 2. Set by supplier; 3. Set by buyer; 4. Negotiated

R. Sales on credit by shopkeepers

Question	Response	Response	Response	Response
222. Do you sell goods on credit? (Y/N)				
223. To whom do you sell on credit?[A] (Use space below to provide details)				
224. What percentage of your clients buy on credit?				
225. What type of credit arrangement is used?[B]				
226. Do you charge interest? (Y/N)				
227. If yes, at what interest rate?				
228. If not, do you have a higher price for goods sold on credit? (Y/N)				
229. If so, what is your percentage mark up for credit customers?				

A 1. Friends, family; 2. Local people / trust; 3. Pensioners; 4. People who receive regular remittances; 5. Wage earners; 6. Other businesses; 7. Other (specify)

B 1. 30 days; 2. End of month; 3. End of week; 4. Flexible; 5. Other (specify)

Question 223

S. Mechanisms for surviving misfortunes.

230. Has your business suffered any misfortunes during the past **Five** years? (Y/N) 230. _____

231. If yes, in what year did the worst misfortune occur? 231. _____

232. If yes, what was the misfortune that occurred? 232. _____

1. Stolen equipment and/or goods; 2. Vandalised equipment or workshop; 3. Loss of client base; 4. Loss of key personnel; 5. Breakdown of equipment; 6. Violence in the area; 7. Natural disaster; 8. Family related misfortune; 9. Other (please specify)

233. Did you have insurance covering this misfortune? (Y/N) 233. _____

How did you deal with this misfortune? (Mark the strategies, then ask the respondent to rank them in order of importance).

Action	Action Code	Y/N	Order of importance
	234	235	236
Took a loan from KFC/SBDC/DC/STOK/LDC or NGO	1		
Took a loan from commercial bank	2		
Took a loan from family/friends	3		
Took a loan from stokvel/savings club	4		
Sold personal belongings	5		
Sold assets	6		
Scaled back business operations	7		
Got a grant from government or an NGO	8		
Self or family member took extra work locally for wages	9		
Self or family member migrated to seek extra work for wages	10		
Radically reduced the family's food consumption	11		
Radically reduced the family's consumption of other goods	12		
Delayed paying debts	13		
Drew on personal savings	14		
Other (specify)	15		

T. Savings and Investment Behaviour.
If you had **money to save,** what did you **do with it?** (Please **rank the responses in order of importance.)**

Action	Action Code	Y/N	Order of importance
	237	**238**	**239**
Made a deposit in a bank	1		
Made a deposit to a stokvel or a savings club	2		
Bought livestock	3		
Sent it to a relative or family member who needed it	4		
Bought assets that maintained their value	5		
Made loans	6		
Entrusted the money to someone for safekeeping	7		
Kept the cash in a safe place at home	8		
Expanded the business	9		
Settled outstanding debts	10		
Bought a vehicle or bakkie	11		
Other (please specify)	12		

U. Deposit accounts.
If you have money in a bank account(s) please provide the following information:

Question	Q#	Account 1	Account 2
At what bank is the account?[A]	240		
How many Rands are currently in the account?	241		
Is the account a: 1. fixed deposit 2. savings or 3. current account?	242		
What is the interest rate in percent per year?	243		
How many kilometres away is the bank?	244		
How long does it take to get there?	245		
What means of transportation do you use to get to the lender?[B]	246		

A 1. Volkskas; 2. United; 3. Trust Bank; 4. Standard Bank; 5. First National Bank; 6. NBS; 7. Perm; 8. Itala; 9. African Bank; 10. Allied; 11. Nedbank; 12. Post office; 13. Other (please specify)

B 1. Taxi; 2. Bus; 3. Walk; 4. Train; 5. Own vehicle; 6. Other

V. Current Accounts.
If you have a current account please provide the following information:

Question	Q#	Response
Do you have a current (or cheque) account at a bank? (Y/N)	247	
Do you have an overdraft facility at a commercial bank? (Y/N)	248	
What guarantee/security did you offer to secure the overdraft?[A]	249	
Do you use the overdraft to purchase inputs/supplies for the business? (Y/N)	250	

A 1. Insurance policy; 2. Fixed property; 3. Asset; 4. Other

W. Credit Cards.
If you have an ATM or credit card account(s) please provide the following information:

Question	Q#	Response
Do you use an electronic bank card (Y/N)	251	
Is it: 1. credit card 2. ATM card 3. both?	252	
Do you use your ATM/credit card to finance your business operations? (Y/N)	253	
If you have a credit card, what is the credit limit?	254	

X. Financial intermediation through participation in informal savings groups.
Have you contributed to a stokvel, savings club, rotating club, or other type of savings group during the past year?

Question	Q#	Club 1	Club 2	Club 3
255. What type of group was it?	255			
256. How many people belong to the group?	256			
257. How many of the members of the group are women?	257			
258. How many Rands was the last contribution to the group?	258			
259. Does the group function during all times of the year? (Y/N)	259			
260. How often are contributions made?	260			
261. How many contributions are made in one year?	261			
262. In what form do group members receive their savings when it is returned?	262			
263. Can you request cash at any time you need it? (Y/N)	263			
264. How many times per year does a group member receive cash from the group?	264			
265. How does the group decide who will receive the money collected?	265			
266. How many Rands are paid to the organizer?	266			
267. Kilometres to the place where contributions are collected?	267			
268. What common bond links the group members?	268			
269. Is a social gathering usually associated with collecting contributions? (Y/N)	269			
270. Are there problems with collecting contributions? (Y/N)	270			
271. How many people left the institution during the past year?	271			

A 1. Stokvel; 2. Rotating stokvel; 3. Savings club; 4. Burial society; 5. Other (please specify)
B 1. Weekly; 2. Twice monthly; 3. Monthly
C 1. Cash, 2. Goods
D 1. No set rule; 2. Rotation by age 3. Rotation by seniority in the savings group; 4.Rotation by seniority in social status; 5. By lottery; 6. By negotiate among group members; 7. The organizer decides; 8. Whoever needs it the most; 9. Other (please specify)
E 1. No common bond exists; 2. Members of the same neighborhood; 3. Same economic activity; 4. Same sex; 5. Same family; 6. Same age 7. Colleagues; 8. Same area; 9. Other (please specify)

Y. Burial Societies.

Question	Q#	Society 1	Society 2
1. Are you a member of a Burial Society? (Y/N)	272		
1. If yes, how much have you contributed to date?	273		
2. How often are contributions made[A]?	274		
3. What is the regular amount you have to pay?	275		

A 1. Weekly; 2. Twice monthly; 3. Monthly

276. What is the address of the business? 276. _____
277. What is the name of the neighbour you know best? 277. _____

Thank you.

Asset Code Table:

Asset Name	Asset Code	Asset Name	Asset Code
Motor cars and bakkies	1	Block making machine (electric/mechanical)	12
Motorbike	2	Cement mixer	13
Truck (ie. over 1 ton)	3	Scaffolding	14
Tractor	4	Spray gun	15
Trailer	5	Block & tackle	16
Harrower	6	Welder	17
Weeder	7	Tools/equipment	18
Plough	8	Generator	19
Ridger	9	Sewing machine	20
Crane	10	Unsold products	21
Block making machine (manual)	11	Unused raw materials	22
		Other (specify)	23

Raw materials/Inputs Table:

Raw material/Input	Number	Raw material/Input	Number
Fuel (petrol/diesel)	1	Timber/timber products	7
Vehicle & equipment maintenance & services	2	Cloth/sewing materials	8
Cement	3	Paint/solvent	9
Sand/ash	4	Vehicle parts	10
Bricks/blocks	5	Stock for shop	11
Hardware/fittings	6		

Products/services Table:

Products and services	#	Products and services	#
Sewing	1	Vehicle repairs	9
Garment alterations	2	Vehicle servicing	10
House building	3	Panel beating and spray painting	11
House alterations/repairs	4	Block making	12
Other building jobs (eg. Shops, clinics, classrooms, churches, halls etc)	5	Brick making	13
Haulage	6	Retail trading	14
Ploughing	7		
Cane cutting	8		

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