CREDIT RATIONING AND SME DEVELOPMENT IN BOTSWANA: IMPLICATIONS FOR ECONOMIC DIVERSIFICATION

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ABSTRACT

Economic diversification is a key policy goal for the Government of Botswana. SMEs offer a feasible option towards the actualisation of this goal. The expansion of SMEs in Botswana however is constrained by lack of access to bank credit. This constrained access to credit is argued in the literature to be due to the credit rationing behaviour of banks emanating from asymmetric information in credit markets. Constrained access to credit stifles the growth potential of this vibrant sector which is increasingly generating employment opportunities especially for women (CSO, 2007). This study therefore investigated the factors that influence the credit rationing behaviour of banks towards SMEs using 2007 Informal Sector Survey data collected by Central Statistics Office and supplemented by our own survey of SMEs from the major cities/towns in Botswana on the demand side, and key informant discussions with the banks on the supply side. Heckman Probit Model with sample selection was used to estimate the determinants of the probability of SMEs being credit rationed by banks. The study findings suggest that the experience of SMEs reduces their probability of being credit rationed by banks. From the bank perspective the experience of SMEs is determined from their ability to keep proper financial statements, the performance of their bank accounts with the banks, and their ability to make profits. This calls for capacity building of SMEs in areas of business management (including financial record keeping) if they are to be rated as credit worthy borrowers by the banks. From the SMEs perspective, there is need for banks to improve their efficiency in terms of reduction of loan processing time and cost of borrowing (i.e. interest rate). This will improve access to bank credit by the SMEs and promote their growth thereby stimulating economic diversification, employment creation opportunities, increase household incomes, and contributing to poverty reduction in line with Botswana's Vision 2016.

1. Introduction

Economic diversification is a key policy drive for the Government of Botswana. One key area of policy concern is the enhancement of the performance of small and micro- enterprises (SMEs).In Botswana small enterprises are defined as those entities employing less than 25 employees and an annual turnover of between P60,000 and P1,500,000; while micro-enterprises have less than six workers including the owner and an annual turnover of less than P60,000 (Government of Botswana, 1999). SMEs play an important role in the Botswana economy in terms of employment creation. According to the 2005/06 Labour Force Survey (LFS), the total number of informal sector workers was 156,515, which accounted for about 20% of the labour force. In 1995/96 LFS, employment in the informal sector was 57,950, which was about 11% of the labour force (CSO, 2007). Most of the informal enterprises are owned by women and even employees in the informal businesses are mainly female (CSO, 2008).

However evidence by CSO (2008) suggests that SMEs are constrained in their access to formal credit. This is clearly illustrated by one of their main reported constraint being lack of capital/equipment and the most required form of assistance required being better access to loans (CSO, 2008). Given the fact that Botswana's major policy drive is diversification of the economy so as to create employment opportunities (MFDP, 2003), the issue of addressing the financing constraints of SMEs is of important policy concern. Financing constraints to SMEs have the negative effect of stifling the growth of potential firms, thereby dampening the economic diversification and employment creation drive. This study therefore seeks to investigate the factors that influence the bank's credit rationing behaviour towards SMEs in Botswana.

The rest of the paper is organized as follows: section 2 presents the detailed research problem, while the objectives of the study are discussed in section 3.The hypotheses to be tested by the study and the relevance of the study are presented in sections 4 and 5 respectively. Section 6 discusses the theoretical framework for credit rationing, while section 7 presents the empirical literature on the determinants of lenders' credit rationing behaviour. Section 8 discusses the detailed methodological approach of the study in terms of data sources and model specification.

2. Research Problem

Access to formal credit markets is important for the growth and development of the firms (Lapar and Graham, 1988). Botswana's credit market consists of formal and informal[7] credit markets. The formal credit markets in Botswana include commercial banks, merchant/investment banks, insurance companies, the National Development Bank, Botswana Savings Bank, Botswana Building Society, and the stock exchange (Bank of Botswana [BoB] Annual Report, 2001). Historically, the formal credit market in Botswana has been dominated by commercial banks, which are the major suppliers of credit to households and private businesses. To enhance the efficiency of accessibility to funds and to improve access to a wider variety of services in the formal credit markets, Botswana government implemented a number of financial sector reforms which included licensing of additional commercial banks and other financial institutions, review of the Banking Act to widen the definition of banking beyond the commercial banks and leasing companies to include merchant banks and discount houses, removal of restrictive licensing policies and reducing the role of government in the financial sector (MFDP, 1991)[8].

Botswana's liberalized financial sector was expected to result in efficient financial intermediation and make access to loanable funds easier for potential borrowers, thereby bringing about increased investments, higher productivity among all economic units in the economy, and creation of employment opportunities (MFDP, 2003). Botswana government has also utilized part of the diamond wealth to create a variety of development credit programmes which include Citizen Entrepreneurial Development Agency (CEDA) and Botswana Development Corporation (BDC) [MFDP, 1991]. Citizen Entrepreneurial Development Agency (CEDA), Government's most recent development finance institution, provides subsidised credit, along with monitoring, mentoring, business advisory services and training, to selected citizen entrepreneurs (it also has a venture capital fund window for citizen and joint ventures). The Botswana Development Corporation (BDC) is the Government's major development finance institution for loans, equity participation and loan guarantees to business ventures. A number of donors over the years also tried promoting credit schemes targeted at small and micro-enterprises (SMEs), including a USAID-sponsored credit guarantee scheme. Some external funding agencies also provide credit to local entities, often via Government (e.g. donor support for Women's Finance House, or African Development

[7] Informal credit markets dominated by money lenders and pawn shops that give small short-term credit at very high interest rates ranging between 15 – 20% per month (Okurut and Botlhole, 2006)

[8] Ministry of Finance and Development Planning (MFDP)

Bank [ADB] loans to National Development Bank [NDB]). These government credit programmes can be classified as part of the formal financial sector which provide enterprise finance. By implication, there is increased supply of formal sector credit (from banks and government credit schemes) which should relax the credit constraints to firms and enhance their growth.

Despite all these developments, there is evidence of constrained access to bank credit by SMEs despite the major role that they play in the fight against poverty in Botswana through creation of employment opportunities. In 2005/06 informal sector workers were estimated to be 156,515, which accounted for about 20% of the labour force. In 1995/96, employment in the informal sector was 57,950, which was about 11% of the labour force (CSO, 2007). It can be seen that employment in the informal sector has more than doubled over the survey periods.

However evidence by CSO (2003; 2008) suggests that the credit needs of SMEs are not adequately met. In the 1999 Informal Sector Survey, the major constraint reported by informal enterprises was lack of credit [26.3%] (CSO, 2003). In the 2007 Informal Sector Survey, one of the major constraints reported by informal enterprises was lack of capital [15.6%] and the major assistance required was better access to loans [52.8%] (CSO, 2008). This implies that banks do not lend to everybody who can afford the price of credit, but apply some degree of credit rationing using non-price mechanisms (Okurut and Botlhole, 2005). Given the fact that the financial sector in Botswana is liberalized, the existence of imperfect information in the credit market may explain the credit rationing behaviour of banks to maximize their profits. Credit rationing occurs when loan demand exceeds supply, and some borrowers receive no loans or less than the amount applied for at the prevailing market interest rates (Hoff and Stiglitz, 1990).

The constrained access to bank credit has the negative implication of stifling growth in SME sector, with serious implications for poverty and unemployment (Morewagae et al, 1995**)**. Informal sector credit is generally characterized by small loan amounts, short maturity periods and high interest rates which is not conducive for long-term enterprise development (Okurut et al, 2006). Most of the studies in this area have used descriptive statistics and the major contribution of this proposed study will be the econometric estimations of the determinants of financing constraints of SMEs in Botswana. The research question to be investigated by the study is “What factors influence banks’ behaviour to ration SMEs in Botswana?”

3. Objectives of the study

The aim of the study is to investigate the factors affecting SMEs access to bank credit in Botswana. The specific objectives of the study are to:

The specific objectives of the study are to:

(i) analyse the characteristics of SME which makes banks to credit-ration them in Botswana.

(ii) investigate the factors that influence the credit rationing behavior of banks towards SMEs in Botswana.

(iii) derive policy implications to enhance access to bank credit by SMEs.

4. Hypotheses of the Study

The study will test the hypothesis that credit rationing behaviour of banks is negatively and significantly influenced by the collateral offered for the loan, business earnings and business experience.

5. Relevance of the Study

The SME sector plays an important role in developing economies in the fight against poverty and unemployment. Botswana's unemployment[9] rate was estimated to be 17.5% in 2005/06 as compared to 21.5% in 1995/96 and mainly concentrated among females and youth (CSO, 2007). This explains why the majority of informal businesses are owned by women (63.7%) and the majority of informal sector employees (56.2 %) are females (CSO, 2008). So addressing the credit constraints of SMEs will go a long way in promoting gender empowerment, creation of employment opportunities, improvement of household incomes and poverty alleviation. The findings from this study will feed into the policy arena in terms improving access to formal credit markets and realization of the goals for Vision 2016. In proclaiming Vision 2016, government had specifically committed itself to provide a lead by assuming the facilitator role, in partnership with the private sector, to create an environment where business and entrepreneurial activities are encouraged and supported.

[9] Unemployment rate based on those unemployed but actively seeking for work (employment)

6. Literature Review

6.1 Theoretical Issues on Bank Credit Rationing Behaviour

The theoretical model of equilibrium with credit rationing follows from the pioneering work of Stiglitz and Weiss (1981). The model is based on imperfect credit markets characterized by information asymmetry, which makes it too costly for banks to obtain accurate information on the borrowers and to monitor the actions of the borrowers. The model assumes the existence of many banks that seek to maximize their profits through their choice of interest and collateral (thereby reducing the probability of default on their loans) and many potential borrowers who seek to maximize their profits through the choice of projects. The probability of success of the projects is unknown to the bank but known to the firms due to information asymmetry. In addition the borrowers may choose to shift from safe projects that yield normal returns to high risk projects that promise high returns but with a low probability of success, and the bank has no control over such actions of the borrowers. All projects yield the same value if they fail. Banks therefore compete by choosing interest rate and also use interest rates as a screening device for distinguishing bad risks from good risks. The borrowers are assumed to demand loans of fixed sizes to finance projects that have the same expected returns. Under this scenario, high risk borrowers are willing to pay a higher interest rate for a loan. But an increase in interest charged by the bank may actually lead to a decline in the expected profit of the bank due the adverse selection effect (which results from a deterioration in the quality of the pool of loan applicants) and the incentive effect (which results from a change in the behaviour of borrowers to shift from safe to high risk projects). Equilibrium with credit rationing therefore occurs at the interest rate at which the bank maximizes the expected profit (Banerjee, 2008). Under conditions of imperfect credit markets characterized by information asymmetry, interest rates fail to play the market clearing role of equating demand and supply. But rather the banks adopt the strategy of credit rationing using the non-price mechanisms so as to maximize their expected profits.

The bank's credit rationing behaviour may theoretically be influenced by a number of factors which include the borrower's observable characteristics (age, gender, wealth, experience, credit history), firm characteristics (business experience, risk profile, earnings), and loan characteristics (amount demanded, loan maturity, collateral offered, interest rate). Lapar and Graham (1988) argued that the bank's credit rationing behaviour against the firm's loan demand can be categorized into three stages: the screening stage, the evaluation stage, and the quantity rationing stage. At the screening stage, the bank manager interviews the potential

borrower to determine their eligibility for credit (in terms of their creditworthiness, loan requirements and the terms desired). The manager then decides whether the applicant is sufficiently qualified to apply for a loan or not. At the evaluation stage, the loan officer undertakes a detailed analysis of the viability of proposed investment project[10] (including detailed investigations of the credit history, the type and value of proposed collateral, management of the firm, probability of repayment). Based on this information, the loan officer (and/or the loan committee) makes a decision as to whether it will be profitable for the bank to grant a loan or not. The borrowers deemed to be not creditworthy will be denied loans completely (credit rationed). At the quantity-rationing stage, the bank determines the optimal loan size for a borrower at a given interest rate. The optimal loan size will be determined by the bank taking into account the bank's evaluation of the probability of repayment, the marginal cost of granting the loan, and the value of collateral offered. Quantity rationing here refers to a scenario where some borrowers are granted loan amounts that are less than what they had applied for. It is at quantity- rationing stage that the bank fine tunes the loan contract to reflect the bank's subjective evaluation of the riskiness of the loan and of the borrower and the impact of these risks on expected profit (Lapar and Graham ,1988).

The degree of risk of a firm also has an influence on the willingness of banks to offer bank loans (Hoff and Stiglitz, 1990). Firms for which the repayment of the loan is more uncertain are more risky for the bank, and hence are more likely to be credit rationed. The risk for the bank implies the default risk, being the risk that the firm can't fulfill its obligations to the bank. The degree of risk of the firm may be inferred from the credit history of the borrower, the expected returns of the project, business experience of the firm. Guido (2008) also argued that credit rationing may also originate from a lender's inability to classify loan applicants in proper risk categories, which effect is particularly strong when novel technologies are involved.

The value of the collateral offered by a firm also influences the credit rationing behaviour of the bank (Ghosh et al, 1999). Collateral serves as the last resort for recovery of the loan in case of default, where the bank can sell the collateral obtained to recover the balance (or part) of the loan. Collateral reduces the information asymmetry between the SME and the financial institution (Chan and Kanatas, 1985). When a borrower has a project with a high probability of a high return, the collateral offered can signal the real value of a project. This signaling role is certainly important when the financial institution has limited information on the firm and

[10] Analysis of the cash flow of the project with specific focus on issues like debt-equity ratio, net present value and internal rate of return

the value of the project is estimated lower (Rothschild and Stiglitz, 1971). Thus collateral could have a *signaling value* for the bank when considering the creditworthiness of the firm (Bester 1985, 1987). Also ex post, after obtaining the loan and offering the collateral, credit applicants wish to fulfil their obligations and repay on a timely basis in order to avoid losing the collateral. Thus, giving collateral can also solve the 'moral hazard' problem by reducing the motives to switch to a higher risk project or do less effort to realize the proposed project (Boot et al., 1991). This implies that firms with a lot of intangible assets, which are difficult to monitor, might incur difficulties in obtaining bank finance (Longhofer and Santos, 2000).

Stiglitz and Weiss (1981) also considered if a higher value of collateral could reduce the risk and increase the return for the bank. In their model, they came to the conclusion that there is a positive 'moral hazard' effect, causing collateral to increase the return for the bank. On the other hand, there is also a negative 'adverse selection' effect working when an increasing demand for high value collateral by banks makes the average and marginal borrower to become more risky. Stiglitz and Weiss show that the negative adverse selection effect more than compensates the positive moral hazard effect. So contrary to the signaling theory, Stiglitz and Weiss (1981) conclude that increasing the demand for collateral will decrease the expected return for the bank, so that offering more collateral will not increase the supply of bank debt to firms. Theoretically, there is no consensus on the influence of collateral on credit rationing. Empirical studies (Atanasova and Wilson, 2004; Ogawa and Suzuki, 2000; Alphonse et al., 2004) mainly confirm the signaling theory.

The magnitude of the firm's internal financing sources also affects the banks credit rationing behaviour. According to the 'pecking order theory', firms follow a certain order when choosing their financing resources (Myers, 1984). Firms prefer internal[11] financial sources but if these sources appear to be insufficient, they will appeal to external finance, e.g. bank finance. However as a firm grows, the financial needs and options may change (Berger and Udell, 1998). Growing firms need more financial resources to fund the growth (Cressy and Olofsson, 1997) and will, according to the 'pecking order' theory have to descend in the financing hierarchy and appeal to bank finance. On the other hand, the possession of sufficient internal finance (due to a high profitability), could also increase the demand for external bank debt. The firm knows that the probability of acquiring additional debt is increased at that moment and will demand for more bank debt to insure itself against the need for more bank debt when the firm experiences a period of lower profitability. This reasoning

[11] Internal financial sources can be proxied by business earnings

is in accordance with the 'static trade off theory', based on the idea that every firm has an optimal debt ratio determined by a trade-off of the costs and benefits of debt finance (Modigliani and Miller, 1963; Jensen and Meckling, 1976; Harris and Raviv, 1990). Firms with more internal financial sources (proxied by business earnings) can therefore be expected to be less likely to be credit rationed as the banks will rate them as prime clients.

The length of the loan maturity period required by the borrower may also influence the bank's credit rationing behaviour (Lapar and Graham, 1988). The longer the loan maturity period, the greater the risk of loan recovery due to the riskier nature of long term investments, hence the higher will be the likelihood that the borrower will be credit rationed. The observable socio-economic characteristics of the borrower (education level, wealth, household income, asset values) are argued in the theoretical literature to reduce the borrower's probability of being credit rationed (Nuryartono et al, 2005; Okurut et al, 2005). The rationale is that these factors tend to raise the borrower's credit rating, hence reducing the probability of loan default to the lender.

The next question is "What is the empirical evidence of SME and entrepreneur characteristics that influence the credit rationing behaviour of lenders (formal and informal)? The answer to this question is the subject of empirical literature handled in the next section.

6.2 Empirical Literature on Bank Credit Rationing Behaviour

In the empirical literature, probability models and Ordinary Least Squares [OLS] or Maximum Likelihood Estimation [MLE] models have been applied in the investigation of the banks' credit rationing behaviour. For the Probit/Logit models, the dependent variable was the probability of being credit rationed *[=1 if credit rationed, otherwise zero]*, with explanatory variables being household socio-economic characteristics; enterprise characteristics and loan characteristics depending on the specification of each model. For the Ordinary Least Squares (OLS) models, the loan amount supplied by the bank is the dependent variable.

Lapar and Graham (1988) using secondary data for a sample of 344 bank clients and survey data of 65 bank[12] respondents in the Philipines, estimated separated models of the intensity[13] of bank credit rationing and the probability of credit rationing. For rural banks the intensity of credit rationing was significantly reduced by land area and family size, but significantly

[12] Banks were classified as private development banks which served mainly urban clients in the trade/ business sector, and rural banks which served mainly agricultural households

[13] For the model on intensity of credit rationing, the dependent variable was the ratio of the amount of loan granted by the bank to the amount of the loan applied for. An increase in this ratio implies less credit rationing

increased by loan maturity period. The intuition of results is that borrowers with large land holdings were deemed to have a higher capacity to produce which reduces the risk on the loan. The large family size increases the production potential of the borrower and reduces costs/ risks because the household does not hire outside labour. The long loan maturity period was closely associated with greater risk of the loan due to the riskier nature of long term investments. For the private development banks, the intensity of credit rationing was significantly reduced by the value of the collateral offered for the loan, and significantly increased by the loan maturity period. In terms of the logit model results, the probability of being credit rationed by rural banks was positively and significantly influenced by loan maturity period, but negatively and significantly influenced by interest rate, land area and size of family. The effect of collateral value in reducing intensity of credit rationing by private development banks may be explained by Ghosh et al (1999)'s argument that a bigger collateral increases the incentive for the borrower to put in more effort. This is because the opportunity cost of failure will be too high for the borrower in terms of collateral seized by the bank in case of default.

Bebczuk (2004) investigated the determinants of access to bank credit by SMEs in Argentina. The study made use of data from a sample of 140 Argentine firms. The main findings were that the size of the firm did not have any significant influence on the firm's probability of getting a loan; however, there was a positive relationship between the firm's profitability and its probability of obtaining a loan; a higher level of liquidity lowered the probability of obtaining a loan, the study attributed this finding to the fact that there is a likelihood for firm owners to misuse funds when faced with a financial distress. The study also found that a higher debt ratio increased the probability of getting a loan; the reason being that prior access to loans gives potential lenders a positive impression of the borrower. However, this may be negated by high levels of debt. Bebczuk (2004) also found that the use of overdraft credit increased the probability of obtaining credit and finally expectations of higher investment or exports appeared not to influence the probability of firms getting a loan.

Nuryartono *et al* (2005) in their study of borrowing by households in Indonesia, observed that human capital (education level and age of household head) and wealth reduces the probability of households being credit rationed by banks. Voordeckers and Steijuers (undated) in their study of borrowing by businesses in Belgium[14] observed that the amount of bank debt supplied to SMEs is positively and significantly influenced by the age of the firm, assets and

[14] The study used a panel data set for 2,698 SMEs for the period 1993 – 2001

the cash flow. By implication, credit rationed SMEs are characterized as young, small SMEs with little internal financial resources and a lack of assets to guarantee the repayment of bank loans.

Sacerdoti (2005) examined issues of access to bank credit by the private sector in Sub Saharan African countries. This study focused mainly on reviewing the challenges faced by SMEs and the agricultural sector in obtaining bank credit, as well as to identify the ways in which these challenges can be addressed. This paper also sought to examine the potential contribution of the growth of Micro Finance Institutions (MFIs), as well as the improvement of links between these institutions and the traditional banking system to meeting the credit need of SMEs and the agricultural sector. Lastly, the study reviewed the bank interest rate spreads and profit margins, and then drew comparisons with spreads prevailing in other parts of the world. The study found that modest credit growth was mainly as a result of inadequate information on borrowers; the existence of weak accounting and auditing standards; limitations in credit information sharing as well as in the registration of collateral and real estate and finally a weak regulatory framework governing the enforceability of claims and property rights (Sacerdoti, 2005). The study highlights that these challenges could be addressed through the establishment of credit bureaus; the reinforcement of accounting standards; the updating and strengthening of company registries and the improvement of regulatory frameworks.

Freel (2007) investigated the relationship between innovativeness and loan application success. This study used data for a sample of 256 small firms which was part of a wider survey carried out in Britain on firms which had been identified as having applied for bank credit in the period 1998 to 2001. The main findings were that small innovative firms appeared to have a lower loan application success than their less and non-innovative counterparts. This is because of the greater risk of loan default associated with these small innovators. Therefore, due to the presence of information asymmetries and limited security in the market, it is only rational that banks will engage in adverse selection in order to minimize the risks (Freel, 2007).

Beck *et al* (2008) used data from a survey of 91 banks in 45 countries to investigate the bank financing situation to SMEs from the supply side. In particular, the paper aimed to determine the perceptions of banks towards the SME sector; to analyze the role of government programs and other regulations in promoting or deterring SME financing and finally to identify the factors which influenced SME financing, and here the study considered both the challenges and opportunities. Beck *et al* (2008) also sought to determine the business models adopted by banks to serve SMEs, for instance whether the banks had departments specifically for serving

SMEs. The study also investigated the criteria used by banks in evaluating loans to SMEs. According to Beck *et al* (2008) banks considered the SME sector to be very profitable, and their perceptions of government programs supporting SMEs were positive. This study also found that the main obstacles to SME financing were macroeconomic instability in developing countries whilst in developed countries it was competition. In addition to this, in order to better serve SMEs, banks had decentralized departments that assist SMEs; however some functions such as loan approval, risk management and loan recovery remained centralized.

From the empirical literature, it can be concluded that the key variables that influence the banks' credit rationing behaviour include the socio-economic characteristics of the borrower (age, wealth, income, asset values), enterprise characteristics (age, internal financial resources), and loan characteristics (loan maturity period, value of collateral).

6.3 Empirical Literature on SMEs in Botswana

Mukras (2003) discussed the prospect of strengthening SMEs as a poverty reduction measure in Botswana. This paper drew from the experience of Kenya and provided some policy recommendations based on the constraints faced by SMEs in Botswana. Mukras (2003) recommended that in order to strengthen SMEs as a poverty reduction measure, SMEs should be provided with capital at a low and affordable rate of interest and appropriate technology should be applied by SMEs in order to assist in achieving their desired objectives. In addition entrepreneurs and the work force should be given the right type of training and deliberate effort should be made in encouraging the advancement of women in SMEs so as to correct the imbalance in the opportunities awarded as well as to facilitate greater involvement of women in SMEs.

Temtime and Pansiri (2004) investigated the factors which contribute to the perceived success or failure of SMEs in Botswana. They surveyed 203 SMEs in three cities in Botswana. Their findings were that Perceived Critical Success/Failure Factors (PCSFs) such as human resource developments, managerial background and organizational development had an influence on the performance of SMEs. The study also found relationships between the PCSFs and some firm specific demographic variables such as ownership status, experience and operating period (Temtime and Pansiri, 2004).

Hinton *et al* (2006) sought to describe and estimate the potential market for SMEs and under-banked SME employees in Botswana. In addition to this, they sought to determine the exact nature of the banking needs of these businesses as well as those of their employees, and in

particular whether their banking needs were adequately met by the banking sector. This study interviewed 180 SMEs in Gaborone, Francistown, Molepolole, Maun and Selibe Phikwe. Their findings were that 15% of the SMEs in Botswana were unbanked with the highest proportion being very small enterprises. In addition to this, a vast majority of employees of very small and small enterprises were found to be unbanked whilst all the employees of medium enterprises were banked. This study concluded that increasing SMEs' access to finance could improve the growth of SMEs in Botswana. Furthermore, involving small business in the formal banking system by providing appropriate products and services could significantly contribute to the number of people with bank accounts in the economy.

Jorosi (2006) carried out an investigation of the information needs and information seeking behaviours of SME managers in the manufacturing sector in Botswana. This study made use of a self-administered questionnaire. The findings were that, SME managers valued customer and competition information; managers devoted a significant amount of time to actively seek information on customers and competition; their information sources are largely determined by availability and ease of use, and the managers used both personal and impersonal sources of information.

Kapunda *et al* (2007) examined the relationship between SME financing, development and trade with special gender considerations in Botswana. In particular, this study aimed at identifying the problems faced by female owned/ managed enterprises; how these problems affect the employment, profitability and participation in trade by SMEs and finally how these challenges can be addressed. The study used data based on two own surveys of 100 SMEs in Gaborone and surrounding areas. The main findings were that generally women had difficulties in raising the necessary finance, as well as in competing and accessing markets when compared with their male counterparts. Kapunda *et al* (2007) also found that due to government instituted mechanisms such as CEDA, relatively larger SMEs did not consider limited access to finance as a major problem, this however was not the case for smaller SMEs. The main challenges to SMEs identified by the study were non-payment of outstanding accounts by clients; stiff competition and a lack of market for their goods or services.

The common weakness of most of these studies is that they used descriptive method of analysis and most of the conclusions are based on the subjective judgement of the authors. This study utilized econometric technique which allows a quantitative measure of the effects of the explanatory variables on the dependent variable. This becomes more important given the desire of stakeholders to have firsthand information on the specific factors that have inhibited the growth of this sector in the past decades.

7. Methodology of the Study

7.1 Data Sources

The study used the 2007 Informal Sector Survey data collected by the Central Statistics Office (CSO). This was supplemented by data from our own survey on 250 sampled SMEs from the main cities/towns in Botswana: Gaborone, Francistown, Serowe, Maun, and Lobatse on the demand side. The SMEs were sampled from different sub-sectors: food and beverages, textile and garments, wood product and furniture, metallic products equipment and machinery, Leather products and industrial support services. A semi-structured questionnaire was used to collect information from the sampled SMEs on the challenges that they face in accessing bank credit and policy recommendations to improve banking/credit services in Botswana to meet the financial needs of SMEs.

On the supply side, we conducted key informant interviews with all the main financial institutions in Botswana to solicit information on the main credit products that they have for SMEs; the eligibility criteria for SMEs to qualify for bank financing; the factors that banks take into account when determining the loan amount to be granted to SMEs, the challenges that banks face in extending loans to SMEs; and bank policy recommendations to improve the credibility of the SME sector in Botswana.

7.2 Techniques for Data Analysis

This study utilized a combination of descriptive and econometric techniques. The descriptive method essentially involved the use of frequency distribution tables, while the econometric methods were used to measure empirically the relationship between the dependent variable and the identified explanatory variables. The econometric procedure was executed using STATA 10 software.

7.3 Heckman Probit Model with Sample Selection for Credit Rationing

The study will adopt the Heckman Probit model with sample selection for empirical analysis (Heckman, 1976). The credit rationing process follows two logical stages. In the first stage, the owner of the SME decides whether to apply for credit or not, the particular bank to apply to, and the amount of loan to apply for. In the second stage, the bank makes a decision whether to grant the full loan amount applied for by the SME or grant only part of the loan

amount demanded by the SME or rejects the loan application completely. This decision is based on the analysis of the SME's characteristics, plus any other available information on the borrower's behaviour. It should be noted that the last two scenarios (that is granting only part of the loan amount originally applied for or rejecting the application completely) represent a state of being credit rationed (Okurut et al, 2005; Hoff and Stiglitz, 1990). The Heckman probit model with sample selection will be used to analyse the factors that influence the banks' credit rationing behaviour. The Heckman probit model with sample selection involves the specification of the model of interest and the selection model. For the model of interest, the dependent variable will be the probability of being credit rationed in credit market, ***Z****(=1 if credit rationed by bank's, otherwise zero)* which will be regressed over the independent variables (X_i). The dependent variable for the selection model will be the probability of demand for credit, ***D*** (*=1 if applied for credit from bank, otherwise zero*). The rationale for this specification is to avoid modelling those who had not applied for any bank credit, as such persons were not credit rationed by credit markets but were self-credit rationed which may give biased estimates (Heckman, 1976). The use of the Heckman probit model with sample selection is motivated by the fact that the dependent variable for the model of interest is not observable for cases where the amount of credit demanded (applied for) is zero. The dependent variable for the ith observation is only observable if $(\alpha K_i + \mu_i) > 0$, where $\varepsilon_i \sim N(0,1)$, $\mu_i \sim N(0,1), corr(\varepsilon_i, \mu_i) = p$ and $p \neq 0$. By implication, only observations whose dependent variables are observable (i.e. people who did apply for credit) will be selected into the model of interest.

Equation 1 gives the specification of the Heckman probit model with sample selection for estimation of the probability of being credit rationed. The negative coefficients of the explanatory variables for the model of interest will be interpreted as reducing the probability of being credit rationed, while the positive coefficients will imply increasing the probability of credit rationing.

$\Pr ob(Z) = \beta_0 + \sum \lambda_i X_i + \varepsilon$, select $(D = \Omega_0 + \sum a_i K_i + \mu)$ ……*(1)*

Where:

$\Pr ob(Z) = \beta_0 + \sum \lambda_i X_i + \varepsilon$ isthe model of interest

$\Pr ob(D) = \Omega_0 + \sum a_i K_i + \mu)$ is the selection model

Z = the probability of being credit rationed by banks ($Z = 1$ *if borrower was credit rationed by bank, otherwise zero*)

D = the probability of applying for a loan from a bank($D = 1$ *if borrower applied for a loan from a bank, otherwise zero)*

β_0, Ω_0 = constant terms

α_i, λ_i = vector of coefficients

X_i = Vector of firm characteristics, proprietor socio-economic characteristics, and loan characteristics

K_i = Sub-set of borrower socio-economic, firm and loan characteristics, X_i

ε, μ = error terms

The definitions of all the explanatory variables included vector X_i for the probability of credit rationing models are listed in Table 1.

Table 1: Definition of Explanatory Variables for the Study

Explanatory Variable name	*Definition and how measured*
age	Age of the main proprietor of the SME, measured in completed years
gender	Dummy for gender of the main proprietor of the SME (*1=female, 0=male*)
educ	Education level of the main proprietor of the SME, measured in completed years of schooling
loanperiod	Loan period, in months
monthly	Dummy for repayment frequency of loan being monthly *(=1 if loan paid back in monthly installments, otherwise zero)*
quarterly	Dummy for repayment frequency of loan being quarterly *(=1 if loan paid back in quarterly installments, otherwise zero)*
bi-annually	Dummy for repayment frequency of loan being bi-annually *(=1 if loan paid back in bi-annual installments, otherwise zero)*
annually	Dummy for repayment frequency of loan being annually *(=1 if loan paid back in annual installments, otherwise zero)* – Reference category
construction	Dummy for main activity of enterprise being construction *(=1 if main activity is construction, otherwise zero)*
hotels	Dummy for main activity of enterprise being hotel *(=1 if main activity is hotel, otherwise zero)*
transport	Dummy for main activity of enterprise being transport *(=1 if main activity is transport, otherwise zero)*
financialservices	Dummy for main activity of enterprise being financial services *(=1 if main activity is financial services, otherwise zero)*
realestate	Dummy for main activity of enterprise being real estate *(=1 if main activity is real estate, otherwise zero)*
healthservices	Dummy for main activity of enterprise being health services *(=1 if main activity is health services, otherwise zero)*
agriculture	Dummy for main activity of enterprise being agriculture *(=1 if main activity is agriculture, otherwise zero)*
manufacturing	Dummy for main activity of enterprise being manufacturing *(=1 if main activity is manufacturing, otherwise zero)*
retailtrade	Dummy for main activity of enterprise being retail trade *(=1 if main activity is retail trade, otherwise zero)*
otherent	Dummy for main activity of enterprise being other *(=1 if main activity is other, otherwise zero)* – Reference category
Experience_1	Dummy for Business experience of the SME being less than 1 year. This was used as the reference category.

Experience_2	Dummy for Business experience of the SME being 1 but < 3 years.
Experience_3	Dummy for Business experience of the SME being 3 but < 5 years.
Experience_4	Dummy for Business experience of the SME being 5 but < 10 years.
Experience_5	Dummy for Business experience of the SME being 10 or more years.
house	Dummy for house being used as collateral for loan *(=1 if house used as collateral for loan, otherwise zero)*
car	Dummy for car being used as collateral for loan *(=1 if car used as collateral for loan, otherwise zero)*
businessassets	Dummy for business assets being used as collateral for loan *(=1 if* business assets *used as collateral for loan, otherwise zero)*
othercolla	Dummy for other security being used as collateral for loan *(=1 if other security used as collateral for loan, otherwise zero)* – Reference category
bussearnings	SME monthly earnings, in Pula
valueassets	Value of SME business assets, in Pula
ownership1	Dummy for ownership of SME being individual proprietor *(=1 if owned by individual proprietor, otherwise zero)*
ownership2	Dummy for ownership of SME being family members *(=1 if owned by family members, otherwise zero)*
ownership3	Dummy for ownership of SME being partnership *(=1 if owned by partners , otherwise zero)*
ownership4	Dummy for ownership of microenterprise being co-operative *(=1 if owned by co-operative, otherwise zero)* - Reference category
proincome	Other monthly income of proprietor of SME apart from business earnings, in Pula per month
unpaidlabour	Dummy for employment status of manager of enterprise being unpaid family labour *(=1 if main employment status is unpaid family labour, otherwise zero)*

8. EMPIRICAL RESULTS OF THE STUDY

8.1 Descriptive Statistics

The descriptive statistics presented discuss the characteristics of SMEs that were credit rationed. Credit rationing in this paper is defined as a scenario where the lender grants the borrower an amount of loan that was less than the amount applied for or completely rejects the loan application. The study used the weighted 2007 Informal Sector Survey data. The sampling weights were generated by Central Statistics Office and the analysis focused only on the main business of the microenterprises. The percentage distribution of the SMEs characteristics in terms of their participation in credit markets is summarized in table 2.

8.1.1 Application for Credit

Out of 40,495 microenterprises at the national level, only 1,408 (3.5%) had applied for a loan/credit during the past 12 months prior to the survey. This may imply either a low demand for credit or a high rate of self credit rationing where the potential borrowers are discouraged from applying for credit when they perceive that they are not likely to get the loans given the eligibility requirements imposed by the lenders. We contend that the latter case is the one that is prevalent in the Botswana credit markets which significantly explains the high non-application for loans/credit.

8.1.2 Purpose of Loan Applied for

The SMEs applied for loans mainly for business expansion (40.3percent) and starting businesses (32.5 percent). This implies that the loans were mainly targeted to income generation activities. However it is also surprising to note that 9.9 percent of the SMEs applied for loans so as to service other loans. The use of loans to pay off previous loans has the potential of entrenching SMEs into a vicious circle of debt.

8.1.3 Where SMEs Applied for Credit

Most of the SMEs applied for loans from commercial banks (55.8percent), followed by government credit agencies (16.8percent) and money lenders (11.9percent). The intuition here is that commercial banks and government credit agencies give loans with longer repayment periods (up to three years) which make them more relevant for start-up and/or expansion of business. The money lenders on the other hand give very short term loans (in most cases one month loans such that both principal and interest must be paid within one month).

8.1.4 Outcome of Loan Applications

Of the total 1,408 loan applications, 82.7 percent were approved, 12.1 percent were rejected, and 4.6 percent were still being processed. The implication is that the loan approval rate is quite high. For those SMEs whose loan applications were rejected, the main reasons advanced were lack of adequate security.

8.1.5 Were SMEs Credit Rationed

Being credit rationed is defined as a state in which the loan amount approved by the lender was less than the loan amount originally applied for by the borrower, which includes those whose loan applications were rejected. Only 16.2 percent of those that had applied for loans were actually credit rationed. A decomposition of SMEs by main sector of business suggests that those that were in the real estate sector were more likely to be credit rationed (37.7percent), followed by those in the wholesale and retail sector (21.1percent), and those in the construction sector (15.8percent).

Table 2: Percentage Distribution of SMEs Characteristics	
Ever Applied for Credit (N=40,495)	
Yes	3.5
No	96.5
Purpose of Loan Applied for (n=1,408)	
Start business	32.5
Business expansion	40.3
Service other loans	9.9
Other	0.4
Not stated	16.8
Where SMEs Applied for Credit (n = 1,408)	
Commercial bank	55.8
Relatives/friends	5
Credit societies	4.9
Money lenders/motshelo	11.9
One /more co-investor	0.2
Government Credit Agency	16.8
Employer	2.5
Other	2.9
Status of Loan Application (n = 1,408)	
Approved	82.7
Rejected	12.1
Still under process	4.6
Not stated	0.6
Was SME Credit Rationed (n = 1,408)	
Yes	16.2
No	83.8
Main Sector of Credit Rationed SMEs (n = 228)	
Manufacturing	7
Construction	15.8
Wholesale & retail	21.1
Hotels & restaurant	4.4
Transport & communication	10.5
Real estate	37.7
Other community service	3.5

8.2 Econometric Results

The diagnostic tests of the model suggest that the model is congruent given that the estimated parameters are jointly significantly different from zero as indicated by the Wald chi-square of 61.24 with 13 degrees of freedom, and $\Pr ob > chi^2 = 0.000.$ The results (see Table 3) suggest that business experience[15] of 1 to 3 years negatively and significantly reduces the probability of being credit rationed (coefficient = -0.508, z = -3.71, P>z = 0.000) which is consistent with empirical literature. The coefficients of business experience of 3 - 5 years and 5 - 10 years though negative were not statistically significant at least at the 10 percent significance level. The rationale why SMEs that have experience in business are less likely to be credit rationed is that they have learned the art of how to make profits through combinations of having a client base for their products/services; cost effective sources for their inputs/goods for sale; and control of costs. This makes the experienced SMEs to be more likely to be able to repay the loans given to them and hence less likely to be credit rationed. Discussions with the banks also confirmed the important aspects that the banks look at in considering to extend credit to the SMEs include previous experience; credit rating of the borrower; period of dealings with the bank; turnover of their bank accounts (in terms of deposits and withdrawals); preparation of timely financial statements (such as Profit & Loss Accounts, balance sheets, and cash flow statements). What this points out is that it is only SMEs with experience that are more likely to keep proper financial statements and have better dealings with banks, hence being rated as credit worthy borrowers and less likely to be credit rationed. The banks were emphatic in their policy recommendations to improve the performance of the SME sector in Botswana which included capacity building in areas of business management, keeping of proper and up to date financial records and financial statements.

The coefficient of the business earnings of the SME was positive and significant (at the 10 percent significance level) which was unexpected. From theory the expectation was that business earnings are a measure of the credit worthiness of an SME implying that they would be negatively correlated with the probability of being credit rationed. By implication the higher the business earnings, the lower would be the probability of being credit rationed. Similarly the coefficient for SMEs being owned by individual proprietors being positively correlated with the probability of being credit rationed was unexpected. SMEs engaged in the hotels, financial and real estate sectors were more likely to be credit rationed (coefficients positive and statistically significant at the 10 percent level). It was interesting to observe that all types of collateral pledged by SMEs as security for loans (house, car, and business assets) were statistically insignificant and dropped out of the model. The conclusion from the econometric results is that business experience of the SMEs stands out one important factor that reduces the probability of SMEs being credit rationed in credit markets in Botswana.

[15] The variable business experience was constructed from the question that asked when the business started operating with responses captured as a categorical variable: 1 = Less than a year ago; 2 = 1 but < 3 years ago; 3 = 3 but < 5 years ago; 4 = 5 but <10 years ago; 5 = 10 or more years ago.

Table 3: Heckman Probit Model with Sample Selection Estimates of Determinants of Credit Rationing of SMEs

Model of Interest: Dependent Variable (=1 if credit rationed, otherwise zero)			
Explanatory Variables	Coefficient	Z	P>Z
Monthly Business Earnings (Pula)	0.0000734	1.92	0.055
Age of Proprietor (in years)	-0.0050723	-0.23	0.816
Dummy: SME Owned by Individual Proprietor	0.5088572	2.13	0.034
Dummy: Business Experience 1 – 3 years	-0.5082551	-3.71	0.000
Dummy: Business Experience 3 – 5 years	-0.1703914	-1.15	0.250
Dummy: Business Experience 5 - 10 years	-0.0526190	-0.42	0.673
Dummy: Business Experience 10 or more years	0.0192371	0.15	0.883
Dummy: Main Activity Construction	0.3429801	1.35	0.176
Dummy: Main Activity Hotels	1.1427080	3.97	0.000
Dummy: Main Activity Transport	0.0918247	0.43	0.666
Dummy: Main Activity Financial Services	0.6107041	2.06	0.040
Dummy: Main Activity Real Estate	-0.0521879	-0.21	0.834
Dummy: Main Activity Health Services	0.5502553	2.55	0.011
Constant	-0.9007159	-0.92	0.360
Selection Model: Dependent Variable (=1 if applied for a loan, otherwise zero)			
Explanatory Variables	Coefficient	Z	P>Z
Monthly Business Earnings (Pula)	0.0000562	7.98	0.000
Age of Proprietor (in years)	-0.0067991	-1.31	0.192
Dummy: SME Owned by Individual Proprietor	0.2861954	8.26	0.000
Dummy: Employment Status Unpaid Labour	-0.4068190	-12.74	0.000
Constant	-1.6086920	-27.20	0.000
/athrho	-0.2385303	-0.62	0.533
Diagnostic Tests			
Wald Chi2 (13)	61.24		
Prob>Chi2	0.000		

From the discussions with SMEs (the demand side), the main issues that raised in terms of policy recommendations to improve the banking sector/financial services in Botswana to meet the financing needs of SMEs revolved around loan processing, security requirements, and interest rates. Regarding loan processing, the SMEs recommend that the banks should reduce the long loan processing period through a number of measures that include the simplification of the loan application forms (which according to them are too long, complicated and confusing to clients); and employment of more qualified persons to handle the assessment of IT related projects. Regarding security requirements, the SMEs suggest that the banks should reduce the rigid security requirements and develop loan products that are tailor made for SMEs since SMEs differ in operations, needs and challenges. Regarding interest rates, the SMEs recommend that the banks should reduce the high interest rates. However an aspect that falls outside the mandate of banks which SMEs recommended is their own training in

business management and preparation of financial statements that are usually required by banks.

9. POLICY IMPLICATION

The study findings suggest that the experience of SMEs reduces their probability of being credit rationed by banks. From the bank perspective the experience of SMEs is determined from their ability to keep proper financial statements, the performance of their bank accounts with the banks, and their ability to make profits. This calls for capacity building of SMEs in areas of business management (including financial record keeping) if they are to be rated as credit worthy borrowers by the banks. From the perspective of SMEs, banks need to improve on their efficiency that can be reflected in reduction of loan processing time and the cost of borrowing (i.e. interest rates). This will improve access to bank credit by the SMEs and promote their growth thereby stimulating economic diversification, employment creation opportunities, increase household incomes, and contributing to poverty reduction in line with Botswana's Vision 2016.

Given the above, it could be suggested that Government will gain a lot from promoting SMEs through training and skill acquisition that will enable them better qualify for bank loans thereby reducing the probability of their being credit rationed. This becomes even more important for Botswana given the level of unemployment and government efforts in terms of policy frameworks that the Government has put in place to address them. Specific policies and programmes geared towards resolving all the problems contributing to credit rationing against SMEs will go a long way in actualising the dream of getting everybody willing and able to work a decent work thereby ameliorating the incidence of poverty in the country.

Finally, the SMEs themselves can also do a number of things to reduce their lack of access to credit in Botswana. One of the feasible options open to SMEs in Botswana is the formation of cooperative societies where there will be a kind of risk pooling when applying for bank loans. Indeed, banks are likely to be more comfortable dealing with groups than individual SMEs who may not have relevant experience and financial skills to convince banks to part with liquidity in form of loans. Hence, SMEs in Botswana are likely to benefit more from commercial bank loans if they work with themselves as a group rather than doing it all alone. We must bear it in mind that the most important goal of commercial banks is profit making.

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