DETERMINANTS OF ACCESS TO BANK FINANCE FOR SMALL AND MEDIUM-SIZED ENTERPRISES: THE CASE OF SRI LANKA

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Abstract

This paper examines what determines access to bank finance in small and medium-sized enterprises in Sri Lanka. The empirical evidence for this study is drawn from the Sri Lanka Enterprise Survey data set obtained from the World Bank. The logistic regression is used to analyse the data. This study found that access to bank finance is largely determined by location of the firm, availability of audited financial statements and the owner-manager's perception ofaccess to finance. This paper can helppolicy makers make informed decisions to articulate policies, to develop training programmes, and to design support systems that can positively address the factors affecting access to bank finance forSMEs in Sri Lanka.

Keywords: Bank Finance, SMEs, Access to Finance, Enterprise Surveys

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1 Introduction

Policy makers have, for a long time, voiced concerns about small and medium-sized entrerprises' (SMEs) lack of access to finance. While much havebeen written about SME financing gaps, there is a lack of research investigating the determinants of access to bank finance by SMEs. Previous studies have been primarily concerned with the efficient provision of resources to the sector, and they frequently refer to the difficulty of SMEs in sourcing adequate finance. This focus on market efficiency and supply of finance to the sector has resulted in less attention to the determinants of capital structures (Mac anBhaird, 2010).Consequently, it is important that policy makers be well-informed about the determinants of bank finance. However, the review of the literature dealing with this area indicates that there is a significant gap in knowledge of the determinants of bank finance.This paper aims to fill this gap by investigating what factors determine the access to bank finance, employing the firm level data from Sri Lanka. An understanding of these factors could greatly improve our knowledge of the sector and could result in more appropriate support targeted atSMEs.

The article proceeds as follows. The second section presents a brief summary of the literature concerned with factors affecting access to bank finance for SMEs. The third section describes the data set used and the statistical method employed. The results are then summarised and analysed in the fourth section. Finally, section five draws the main conclusions, highlights policy implications, addresses the limitations of the study, and points to avenues for future research.

2 Access to bank finance and its determinants: a review of the literature

This section provides a review of the literature in order to identify the independent and dependent variables used in the empirical analysis. Additionally, this review leads to the development of a model to estimate the probability of access to bank finance.

2.1 Ownership type

Entrepreneurs choose ownership structures in large part to ensure adequate financing. Hence ownership structures in the firms can influence the ability to gain access to bank finance. For example, a sole proprietorship business is a high risk for borrowers as the repayment of the loan depends on one person. In contrast, other ownership types such as partnerships, listed firms, etc. have their repayment risks spread among several owners. Previous research foundthat listed firms and foreign-owned firms faced lesser financial constraints (Harrison and McMillan, 2003; Beck *et al.,* 2006). Moreover, Storey (1994) found that corporate status at start-up appears to be associated with a greater likelihood of bank lending: '...from the bank's point of view, a limited company status can offer benefits if it reflects the 'seriousness'

of the business activity and also means that the owner's personal collateral can be lodged with the bank in the event of failure (Storey, 1994, p.129).

2.2 Firm age

As firms' sources of finance change over time, firm age can be stated as another important determinant of access to bank finance. For instance, a firm may start as a family-owned business and use internal financing sources, such as personal savings and family finance. Subsequently, it might grow to obtain funds from its suppliers.

When it has a well established legal identity, business track record and accounting systems, it may be able to obtain loans from banks. Previous studies (see Aryeetey*et al.,* (1994) and North *et al.,*(2010)) have found a positive correlation between firm age and access to bank finance. Being in the business for many years suggests that the firm is competitive in general and more transparent so that the information required by the lenders to evaluate and process applications is readily available. Moreover, new firms are not likely to meet the collateral requirements of the banks since they have not accumulated sufficient assets. Insufficient assets combined with the absence of information on financial recordsmakesit difficult forlenders to assess lending proposals submitted by new firms. Previous studies foundthat financing constraints wereparticularly severe for start-up enterprises and relatively young firms (three years old or less). For example, according to Aryeetey *et al.*, (1994) who conducted a survey of 133 firms in various industries in Ghana, only 10 percent of start-up firms could obtain bank loans and medium-sized enterprises and older firms were provided with credit three times more often than their smaller counterparts. North *et al.* (2010) reported that the main reasons for younger firms encountering problems in accessing finance werelack of credit history, insufficient security and poor business performance.

2.3 Industry sector

Industry sector can be identified as a possible factor in the provision of bank loans to SMEs. A possible reason might be that lending banks may favour industry sectors that are growing. Likewise, some industry sectors have a much lower demand for loans than others, simply because they do not need loans. For example, the SMEs in the manufacturing sector require relatively large investments in assets such as land, factory building, plant and machinery, vehicles, while most of the service organisations and retail sector organisations in the SME sector need fewer investments in fixed assets. Using data from Mozambican manufacturing firms, Byiers *et al.* (2010) found that industry sector was an important determinant for having access to credit. For example, both metal-mechanic and wood-furniture sectors hadsignificantly lower credit access than the food processing sector. Their interpretation was that banks attached a lower risk premium to the food processing sector compared to other two sectors.

Usinga Business Environment and Enterprise Performance Survey III, which covered 9500 firms from 26 transition countries, Drakos and Giannakopoulos (2011) similarly reported that the likelihood of credit rationing for firms operating in the mining sector wasabout 14.9 percent higher. In contrast, they foundthat firms that operated in the real estate and hotel sectors respectively exhibited approximately 4.8 percent and 7.1 percent lower probability of being credit rationed. Moreover, some industries are more likely to depend on external financing than others. Firms in certain sectors require more credit to invest in equipment, machinery, buildings, labour and raw materials and, hence, may face proportionately greater constraints than firms in other industry sectors (Kumar and Francisco, 2005). According to Deakins *et al.* (2010), although no sectors wereexcluded by the banks, entrepreneurs in competitive sectors mightfind it difficult to raise finance, especially if they wereoperating in ways that didnot meet the banks' own benchmarkings for the sector. Furthermore, North *et al.* (2010) reported that manufacturing SMEs in Scotland weretwice as likely to experience problems compared with SMEs in other sectors. A further reason why industry sector plays a role in lending is due to tangible assets across industry sectors. Some industry sectors such as manufacturing have a greater concentration of tangible assets, whilst some other sectors such as computer services are primarily composed of intangible assets. For example, Cressy and Olofsson (1997) stated that service SMEs, with lower level of collateralizable assets and greater risk associated with their activities, had greater difficulty to obtain debt. Additionally, Silva and Carreira (2010) argued that, for most services, the main input washuman and not physical capital and therefore service sector firms found it hard to use physical capital as collateral when resorting to external finance.

2.4 Location of the firm

The location of the firm is another factor in accessing bank finance. Petersen and Rajan (1995, p.417) noted that banks located closer to borrowing firms enjoyed significantly lower transportation and monitoring costs, to such an extent that "if other banks are relatively far, close banks have considerable market power". Due to this, small firms may end up paying high interest on bank loans or may have to adhere to restricted covenants such as collateral and other conditions. Additionally, the bank branch managers assigned in rural bank branches may have limited delegation of authority.

As a result, there may be high amount of loan rejections or delays in approving loans requested by

rural firms, as the applications are processed, approved or turned down by officials in the head office, who have no personal knowledge of customers or projects based in rural locations. Finally, property value and marketability differ substantially between rural and urban locations. Consequently, banks may be reluctant to lend to small firms located in rural areas, as the assets offered as collateral by these firms may have less market value, and might be difficult to realise in case of default.O'Farrell (1990) suggested, on the basis of research in Nova Scotia in Canada, that banks weremore reluctant to lend to small firms in rural areas, because if these firms failed, it wasmore difficult to sell their assets. Kumar and Francisco (2004) also noted that there was a large variation in branch density across different regions in Brazil and argued that well branched regions hadeasier physical access and lower information asymmetry problems as a consequence of greater ratios of banks per firm and that firms located in these regions hadeasy access to credit.

2.5 Having audited financial statements

Previous studies stated that the imperfect information of the borrowers was a great limitation for banks to grant loans (Jaffee and Russell (1976); Stiglitz and Weiss (1981)). Accordingly, banks often require audited financial statements before granting credit to mitigate this issue. Berry *et al.* (1993) found that lenders in the UK paid much more attention to accounting information in order to deal with the loan applications of small firms. Therefore, it might seem plausible that audited financial statements improve borrower's credibility and therefore reduce risk for lenders. Meanwhile, Aga and Reilly (2011) conducted a study using firm level data from Ethiopia and foundthat a firm that maintainedaccounting records wassix percentage points more likely to have access to credit than firms that didnot have such accounting records. Likewise, Caneghem and Campenhout (2012) relied on a sample of 79,097 Belgian and Luxembourgian SMEs to test whether the amount and/or quality of financial statement information affects the financial structure of SMEs.

Their findings showed that both the amount and quality of financial statement information are positively related to SME leverage. Similarly, Dharan1993) also pointed out that the auditor's opinion wasassumed to convey the risk characteristics of the firm to the lenders without error.

2.6 Asset tangibility

Usually, banks require a tangible fixed asset as security (collateral) for the loan and banks typically lend to a firm based on the value of fixed assets offered as security. However, small firms have fewer collateralizable assets than large firms. This may partly relate to the stage of growth of the firm. In the earlier stages of the firm, it may have lower retained profits which may hinder it from purchasing fixed assets. Another reason for small firms to have a smaller proportion of fixed assets is the capital constraints they face. Because of the need to raise large amounts of capital, it is difficult for them to acquire a large number of fixed assets. The above reasoning implies that firms with tangible assets have relatively easier access to bank finance and lower costs of financing. Previous studies (see Storey, 1994; Berger and Udell, 1998; Michaelas *et al.*, 1999) also suggest that bank financing depends on whether lending can be secured by collateral. Moreover, Sogorb-Mira (2005) found a positive effect of tangible assets on leverage for SMEs. Johnsen and McMahon (2005) also stated that other factors held constant, firms with more intangible assets need to borrow less because of collateral factor.

2.7 Sales growth

Many studies that have attempted to construct the measures for firm performance in the SME sector - which is, in itself, a difficult task - indicated that greater sales and profits wereassociated with greater access to credit (see Bigsten *et al.*, 2000; Topalova, 2004). Therefore, the growth rate of sales can be considered as another factor affecting access to bank finance because growth over a period of time is likely to give a better indication of financing needs than sales of a single year.The European Commission (2003) also supported this view and stated poor business performance as one of the reasons for not receiving credit. In general, firms with increasing sales and sales turnover ratios are expected to have less credit constraints. According to Delmer *et al.* (2003), sales could be considered as an appropriate measure of growth.

As they suggested, "if only one indicator is to be chosen as a measure of firm growth, the most preferred measure should be sales" (p.194). Barkham *et al.* (1996) also notedthat sales wasthe most commonly used measure of growth even by entrepreneurs themselves, because the data wererelatively easy to obtain.

2.8 Gender of the owner-manager

The ability of female entrepreneurs to access bank financing has been in the research agenda of the small business discipline over the past 15 years. Carter *et al.* (2007) identified two main reasons for women's lesser likelihood of using external debt finance, namely, structural dissimilarities between male and female owned firms and, gender discrimination in the supply and demand side factors. Several studies have tested gender-based discrimination in credit markets, but they arrived at conflicting conclusions. For instance, Hisrich and Brush (1986) suggested that women experienced difficulties in accessing bank

loans because of their gender. This mightbe due to that fact that loan officers wererisk averse and they negatively viewed female loan applicants because of perceived poor track record, lack of strategic planning and market plans. Watson (2002), in support of this argument, pointedout that because women-owned businesses generally started small and wereyounger as compared to men-owned ones, women who owned a businessfaced credibility problems with their bankers. Other researchers assumed that this wasdue to women's propensity to operate with low personal equity or to their lack of skills. (See Carter *et al.* , 2007; Coleman, 2002). Despite the volume of research, there is no unequivocal support for the idea that there are gender- based differences in access to finance.

2.9 Experience of owner-managers

Entrepreneur experience is also viewed as an asset with regard to resource allocation decisions, including accessing financing facilities from banks (Politis, 2008). Lenders emphasise the importance of experience of the owner-manager at the time of lending assessment and they may look favourably to loan applicants with more experience in the business compared to an inexperienced applicant who carries a great risk to the bank. For example, Cowling *et al.* (2012) conducted a study using small business survey data in the UK and foundthat human capital playedan important role in accessing finance. In fact, they concluded that experienced managers were10 percent more likely to have their financing needs met compared to the inexperienced ones.

2.10 Perception of owner-manager

Perceptions of business owners influence both growth motivation and behaviour of owner-managers. As Kwong *et al.* (2012, p.78) stated, "perception is important because it often comes before real action and such perceptions, even when false, can be as damaging as the presence of an actual barrier". With regard to entrepreneurs' perceptions on difficulties in accessing finance, Wyer *et al.* (2007) argued that it was important to recognise that individuals mightadjust their personal constructs and thus their perceptions, beliefs and expectations in the face of a new experience and mightchoose not to borrow based on the perceived difficulties in accessing finance. The entrepreneurs' perception of access to finance might induce potential SME borrowers to voluntarily decide not to apply for bank loans despite having feasible projects which were credit worthy. In other words, even if the supply side is favourable, a perception that there are finance constraints can artificially suppress the demand side. This is the concept of 'discouraged borrowers' identified by Kon and Storey (2003) who revealed that finance gaps mightarise when entrepreneurs' perceptions wereinfluenced by their own and others' experiences of applying for external finance. Based on a large sample of New Zealand SMEs, Hamilton and Fox (1998) argued that managerial perceptions played an important role in determining the capital structure of SMEs. Norton (1991) reached a similar conclusion when he stated that: "In small businesses and entrepreneurial firms, managerial beliefs and desires will play an especially important role in determining capital structure...(and) models must include management preferences, beliefs and expectations if we are to better understand capital structure policy" (p.174).

3. Methods

3.1 Data and sample description

The data employed in this paper were extracted from the Sri Lanka Enterprise Survey data set carried out by the World Bank in 2011. The survey was conducted as part of the World Bank surveys based on standardised survey instrument, and a uniform sampling methodology that yielded a nationally representative sample of enterprises of Sri Lanka, including both manufacturing and service sector firms. To the best knowledge of the author, this is the only representative data set of this kind.

The sample consisted of a total of 610 enterprises. Fifty-three percent (322 enterprises) of these enterprises weresmall (5-19 employees), 29 percent (179 enterprises) weremedium (between 20-99 employees) and 18 percent (109 enterprises) of them belonged to the large category (100 or more employees). In accordance with the objective of this paper, large enterprises have been disregarded and only small and medium-sized enterprises were included in the analysis.

3.2 Estimation method

Logistic regression was used to measure the strength of association between pairs of variables, to determine the relationship between access to bank finance and SME characteristics. Logistic regression wasan appropriate choice in this research as the survey only providedinformation as to whether or not a business secured a bank loan, but didnot provide the actual amount of the loan. The dependent variable in the binary logistic regression wasa dummy variable which wasequal to one if the firm had access to credit and waszero otherwise. The independent variables were: ownership type, the age of the firm, sector, location of business, asset tangibility, firm performance, availability of audited financial statements, gender of the owner-manager, experience of the owner-manager and the owner-manager's perception of their access to bank finance.

The empirical specification of the model employed for the study is as follows:

$$\text{Prob}(\textit{Access to bank finance} > 0) = \alpha + \beta_1 Ownership + \beta_2 Age + \beta_3 Sector + \beta_4 Location + \beta_5 Audit + \beta_6 Tangibility + \beta_7 Salesgrowth + \beta_8 Gender + \beta_9 Experience + \beta_{10} Perception + \varepsilon_1$$

Where:
Dependent variable is access to bank finance
Ownership refers to the ownership type of the firm
Age represents no of years of operation of the firm
Sector represents the industry type
Location refers to whether the head office waslocated in urban or rural area
Audit refers to whether the firm's financial statements wereaudited or not
Tangibility represents the fixed assets ratio
Salesgrowth represents growth rate in sales over a three-year period
Gender denotes the gender of the owner-manager
Experience refers to the years of prior experience of top manager
Perception represents the entrepreneurs' perception of access to finance;and
$\varepsilon_1$represents the error term assumed to be normally distributed with constant variance, which is supposed to capture the influence of all other variables affecting access to bank finance.

3.3 Dependent variables

The most important variable is access to bank finance, i.e. the amount of bank finance rationed in the loan market. It should be measured by excess demand. However, the demand for bank finance is not directly observable. Because of this difficulty, most previous studies used a dummy variable for using bank finance or not, as a proxy variable for access to bank finance. However, there is a considerable difference between the actual use of bank finance and access to bank finance, so usage of finance is not sufficient to identify financially constrained firms. Therefore, this study adopted a different approach to measure access to bank finance. In order to provide evidence on who gotbank finance among SMEs, the author classified the firms into two categories based upon their response to the question whether they hada bank loan or overdraft. One possibility wasthat the firm didnot need, or didnot apply for,a bank loan (voluntary exclusion). Firms in this category couldnot be considered as credit constrained. The second possibility wasthat the firm applied for a bank loan but was rejected by the bank. Finally, a firm might not apply for a loan at all because it wasdiscouraged to do so by the complexity of loan application procedures, high interest rates, lack of collateral, unfavourable loan conditions (for example, loan amount, maturity period) or simply consideredits chance of getting a bank loan wasminimal. In this paper, the second and third types of firms were classified as firms with *"no access to bank finance"*.

3.4 Independent variables

Based on the existing literature discussed in section 2, the following independent variableswere identified and their descriptions are listed in Table 1.

Table 1. Description of independent variables

Variable	Description
Ownership type	Sole proprietorship = 1 Partnership = 2 Private, Public limited company or cooperative = 3
Age of the business	No. of years running the business
Sector	Manufacturing = 1 Services = 0
Location	If situated in a main business city = 1 If not situated in the main business city = 0
Having audited financial statements	Yes = 1 No = 1
Tangibility	Tangible assets ratio (the ratio of property, plant and equipment to the total assets)
Sales growth	Percentage growth rate of sales
Gender of owner-manager	Male = 1 Female = 0

Experience of owner-manger	Years of prior experience of owner-manager
Perception ofaccess to finance	No obstacle = 1 Minor obstacle = 2 Moderate obstacle = 3 Major obstacle = 4 Very severe obstacle = 5

4. Empirical results and discussion

The direct logistic regression analysis was carried out by the logistic procedure in SPSS version 19. Table 2 shows the final model regression results including the logistic regression coefficient, Wald Test, level of significance and odds ratios for the variables in the equation (Exp (B_1). The value under (Exp (B_1)) is the predicted change in odds for a unit increase in one independent variable, holding other variables constant.

Table 2. Logistic regression results

Variables	B	S.E.	Wald	Sig.	Exp (B_1)
Ownership type			.931	.628	
Sole proprietorships	-.675	.770	.769	.380	.509
Partnerships	.371	1.342	.076	.782	1.449
Firm age	-.028	.020	1.941	.164	.973
Location (Urban)	1.276	.643	3.936	.047**	3.583
Availability of audited statements (Yes)	1.520	.695	4.775	.029**	4.571
Sales growth	-.001	.002	.388	.533	.999
Tangibility	2.161	1.264	2.924	.087	8.676
Owner-manager's experience	.018	.031	.331	.565	1.018
Owner-manager's gender (Male)	-.047	1.171	.002	.968	.954
Perception ofaccess to finance			12.934	.024**	
No obstacle	-.060	1.354	.002	.965	.942
Minor obstacle	.008	1.409	.000	.995	1.008
Moderate obstacle	-.190	1.239	.023	.878	.827
Major obstacle	-2.648	1.360	3.793	.051	.071
Constant	-.567	1.694	.112	.738	.567

Summary statistics

Hosmer and Lemeshow (H-L) test	Walds's χ^2	6.407	*p*- value .602
-2 log likelihood		84.631	
Cox and Snell R square		.289	
Nagelkerke R square		.447	
Correct predicted %		85.1%	

***p*< .05 ; one-tailed

Note: In running the logistic regression, the sector was used as the reference point and, therefore, is not shown in the table. For ownership type, the last category is private and public limited firms; for location, it is a rural location;for availability of audited statements, it is firms with no audited statements; for gender, it is female;for perceptions, the last reference point is 'very severe obstacle' category.

The full model containing all predictors was statistically significant, χ^2 (15, N = 452) = 44.46, *p*< .001, indicating that the model was able to distinguish between the respondents who had access to bank finance and those who did not have access. In regard to testing the validity of the model, Hosmer-Lemeshow test yielded a χ^2 test statistic of 6.407 with a *p*- value of .602. Consequently, there is no evidence against the null hypothesis that there is no difference between observed and model predicted values, implying that the model fits to the data reasonably well. However, the result of the Hosmer-Lemeshow test can be misleading since it can be due only to the wide range of values of the original predictors. Therefore, Cox and Snell R^2 and Nagelkerke R^2 were also calculated and as can be seen from the above table, the overall fit is satisfactory, with Nagelkerke square of .447 and Cox and Snell R square of .289. The overall percentage

prediction accuracy of the model is 85.1 percent. Given the aim of the model, this model is considered acceptable.

According to the results, three independent variables hadsignificant impact on the probability of a firm having access to bank finance: the location of the firm, whether the firm has audited statements and the owner-manager's perception of access to finance. As regards the estimated marginal effects of these variables on access to credit, the probability of accessing bank loans wasabout 3.6 times higher for the firms located in main business cities than for firms in rural areas, 4.6 times higher for firms with audited financial statements than for firms with no such statements. The rest of the variables identified in the study didnot appear to have any significant influence on the probability of having access to bank finance as indicated by the low odd ratio and insignificant *p*value.

5. Conclusion, policy implications and future research

This paper attempted to explore the determinants of bank finance for SMEs in Sri Lanka. A priori reasoning, and an overview of the literature, suggested a number of factors that are likely to be associated with access to bank finance. The factors identified were: the ownership type, the age of the firm, sector and location of the business, asset tangibility, firm performance, availability of audited financial statements, gender of the owner-manager, experience of the owner-manager, and perception of the owner-manager of access to bank finance.

The data utilised in this research were extracted from the Sri Lanka enterprise survey data set.To the best knowledge of the author, this is the only representative data set of this kind. In this paper, the determinants of access to bank finance by SMEs in Sri Lanka were analysed using the logistic regression model because the dependent variable, having access to bank finance, is a categorical variable with two discrete, non-overlapping and identifiable categories. According to the results, the access to bank finance is largely determined by location of the firm, availability of audited statements and the owner-manager's perception of access to finance.

The findings of the paper provide some insights to policy makers. First contribution of this study is to the loan evaluation process as whereby the processcan help distinguish credit worthy borrowers from the rest of the applicants. One of the findings of this study is that certain entrepreneurial characteristics, like the perceptions of owner-managers, have a high association with the access to bank finance. Hence, it is clear that assessing creditworthiness exclusively from a financial point of view is not suitable in the case of SMEs and loan officers should devote sufficient time to attempting to determine qualitative factors such as characteristics of the borrowers at the time of evaluating loan applications. Second, it was found in this study that having audited financial statements increases the probability of getting access to bank finance. Hence, policy makers should look at this area in an effort to promote access to bank finance for SMEs and could support the education and training of small and medium business operators to develop their financial record keeping skills.

While this paper has provided some insights into factors affecting access to bank finance for SMEs, the research admittedly has a number of limitations. The findings in this paper were based on managers'/owners' self-reporting in the surveys. This produces certain constraints, such as a positive response bias. Therefore, it is also recommended to explore the relationships tested in this research by obtaining data from multiple sources such as interviewing bank lending officers and conducting case studies. In regard to the statistical analysis of the data, the present study applied logistic regression analysis to predict accessing bank finance by SMEs. While the method used for testing the hypotheses is technically sound, it may not be the only way in which to test the model.

Future research may consider the potential advantages of statistical techniques such as structural equation modelling which allows the inclusion of interrelated dependence relationships.

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