



The Influence of Fixed Asset Investments and Bank Penetration on Access to Capital for SMEs in Latin America

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Abstract

Small and medium-sized enterprises (SMEs) usually need external financing to expand their operational activities. However, most banks in developing countries, like the majority of Latin America, do not have sufficient penetration to meet this demand. The difficulties to obtain access to financing for such companies arise for a number of reasons, including the lack of collateral, informality, the challenge to cope with legal requirements, and the decreased availability of lines of credit from financial institutions. Small businesses that have fixed assets can find it easier to obtain loans because they can use these assets as collateral, with land and equipment being the most common collaterals accepted by banks. The purpose of this study is to understand the impact of fixed assets on the likelihood of SMEs to access bank loans. We analyze the role of several types of collateral, including land, buildings, vehicles, and machinery. We also investigate the impact of banking penetration on access to capital for SMEs that lack fixed assets investments. The results demonstrate that increased banking penetration is not associated to more access to financing for SMEs that have fixed assets, and we find that this occurs because SMEs usually avoid new sources of funding and prefer to rely on their credit history to obtain such loans.

Introduction

According to national governments and statistical agencies, one can define an enterprise as small and medium-sized depending on its number of employees (Ardic, Mylenko, & Saltane, 2011). Small and medium-sized enterprises (SMEs) play an important role in the recovery of the global economy after periods of economic distress, and the access to financing is the key to foster their growth (Ayyagari, Beck, & Demirguc-Kunt, 2007). SMEs also have an important role in job creation, especially in developing economies. SMEs need financing to carry out their necessity of investing in fixed asset to improve their activities, and the difficulty in accessing is a barrier that hinders SMEs from expanding their operations (The World Bank, 2014). In this sense, their need for financing may depend on the development of financial markets.

Financial institutions play a key role in providing credit to foster firm growth, especially in the case of SMEs. However, several factors may influence the access to bank loans, and the lack of available financial information that functions as a signal for a good quality firm is one of them. Indeed, banks may find it difficult to assess SME risk due to the higher presence of soft financial information. (OECD, 2010). In other words, the existence of information asymmetries can lead to credit rationing (Stiglitz & Weiss, 1981). When faced with a decreased availability of information to assess credit risk and the challenge of adverse selection, financial institutions (FIs) usually prefer to avoid offering new financing contracts. To offset this problem, FIS usually rely on lending technologies and loan contract mechanisms that minimize information asymmetry (Berger & Udell, 2006). These tools can function as a signal of higher-quality projects, risk profile, and provide an incentive for SMEs to perform according to contractual stipulations (Bester, 1987). As a result, firms with access to fixed asset investments may be in a better position to obtain access to external financing (Islam, Muzi, & Rodriguez Meza, 2017). For firms that lack adequate access to fixed asset investments, however, higher levels of financial inclusion through bank penetration, measured by the number of branch or ATMs per inhabitant or squared kilometer, may mitigate credit constraints and facilitate greater access to capital (Berger and Udell, 2006).

The purpose of this study is to investigate the impact of fixed asset investments on access to capital for SMEs in Latin America. In addition, we analyze the role of financial inclusion, through bank penetration, in mitigating SMEs constraints. We hypothesize that SMEs with fixed assets that apply for a bank loan will be more likely to obtain access to capital in Latin American countries with higher bank penetration. We contribute by showing that financial inclusion, through higher levels of bank penetration, may mitigate credit constraints for SMEs that lack adequate access to fixed asset investments. We also demonstrate that the impact of fixed asset investments on access to capital for SMEs can vary depending on the country under investigation. The lack of consistent and high-quality data usually poses a challenge to such investigations in Latin America. We overcome this issue by using firm-level data from the 2010 World Bank Enterprise Survey.

Our results demonstrate that older firms and firms that operate in the service sector are less likely to obtain a loan, and that SMEs that have fixed asset investments are more likely to have access to external sources of bank financing. Companies with more

employees are also more likely to obtain a loan, while the opposite holds for SMEs owned by male entrepreneurs. Results on bank penetration are mixed and, in general, are not statistically significant to explain the likelihood of getting a loan.

The paper proceeds as follows. The second section reviews the issue of access to financing for SMEs in developing economies from Latin American and the influence of bank penetration in financing to SMEs. The third section describes the methodology, the fourth section presents results, the fifth section discusses the results, and the sixth section concludes the article.

Literature Review

We separate this section in two parts: first, we review the literature regarding the access to financing for small and medium-sized enterprises. Second, we explore the articles focused on the relationship between bank penetration and SMEs financing.

Access to Financing for SMEs

A study by the International Finance Corporation (2011) estimated the number of SMEs in the world and determined the degree of access to credit and use of accounts for deposits by SMEs. World Bank data, the study describes the characteristics of around 36 to 44 million SMEs in the world. While 65 to 70% of these companies operate in developing markets, 35% to 45% are not served by banks, and 20% to 25% of those that actually are do not enjoy a full array of services. They also argue that there is a gap in credit for financing SMEs in developing countries of about \$ 1.1 trillion. The study highlights the importance of financial inclusion to foster growth and development. Indeed, a survey by The World Bank showed that some SMEs have restricted access to financing and often resort or opt by informal lending, hindering growth and performance (Chavis, Klapper, & Love, 2011). Another study by the same institution demonstrates that in developing countries, the problem of insufficient access to capital for SMEs harmed their businesses development (Allen, Demirgüç-Kunt, Klapper, Soledad & Martinez-Peria, 2012). Schans et. al (2012) also argue that many SMEs with adequate growth characteristics may be unable to obtain the necessary loan to develop.

There are several barriers to the access of formal financial services by SMEs, such as insufficient legal documentation, high costs, and the geographical distance from bank branches (Bruhn & Love, 2014). These barriers could be alleviated by an increased provision of technology, a wider access through bank branches and by offering more information about financial institutions and the availability of financial products and services (Allen, Demirgüç-Kunt, Klapper, Soledad & Martinez-Peria, 2012).

Both the access and the cost of financing are ranked as the biggest constraints for SMEs development (Beck, 2007). Over 35% of small and medium enterprises rate the cost of financing as a major growth constraint in the developing world, and 30% of these companies rate the access to financing as another major obstacle. Indeed, the study demonstrates that the probability that small firms list financing as a major obstacle is 39%, while the number decreases to 32% for large firms. The main financial

obstacles faced by SMEs to obtain financing are collateral requirements, bank paperwork, interest rate payments, the need for special connections and banks' lack of lending resources (Beck, 2007). The difficulties reported by SMEs have reflections on their capital structure: they finance less than 10% of their long-term needs with bank resources. Large companies, on the other hand, finance more than 20% of their necessities with banks. To overcome this problem, small businesses often rely on informal financing mechanisms or prefer to use internal resources, such as retained earnings (Beck & Maksimovic, 2002). The lack of access to specific forms of financing like export, leasing and long-term finance are additional impediments to growth.

The access to financing to SMEs depends on the infrastructure that supports financial transactions, including the legal system, cost structure and the system of information. Companies in countries with higher levels of financial development have lower financing obstacles than companies in countries with less developed financial operating in emerging markets. Besides, SMEs suffer more from lack of financial development than large firms do. In this sense, financial development helps closing the gap between large and small companies (Beck & Demirguc-Kunt, 2006; Bruhn & Love, 2014).

The limited access to external financing can influence the development of SMEs. The lack of long-term loans to finance fixed assets make SMEs grow at a lower rate than large companies do. Fostering financial inclusion of SMEs by increasing bank penetration may facilitate greater access to credit for small enterprises and enable them to grow their operations.

In Latin America, bank credit history is the second most relevant factor for lending to SMEs (Beck, Demirgüç-kunt, & Martinez, 2008). 75% of the financial institutions that provide credit to SMEs require some kind of collateral make commercial loans, and 40% of FIs classify real estate collateral as the most relevant (Beck et al., 2008), regardless of company size. Cash and other assets are the second most important sources of collateral. The Department for Business Innovation & Skills (BIS 2012) argues that the use of fixed assets as collateral is common practice for SMEs.

In Latin America, SMEs assume a relevant role in the generation of employment for different income groups and have higher sales growth in comparison to large companies (Ayyagari, Demirguc-Kunt, & Maksimovic, 2014), being responsible for about 40% to 60% of job positions and contributing to almost 50% of gross domestic product (GPD) (World Bank, 2015). Access to credit by SMEs in Latin America is even more difficult than other regions, and bank concentration harms this already fragile situation (Berger, Goulding, & Rice, 2014; Clarke, Cull, Martinez Peria, & Sanchez, 2005). Some authors also highlight the development of legal institutions (Ayyagari, Demirgüç-Kunt, & Maksimovic, 2008) and the existence of rigid labor laws as two other important concerns in Latin America (Djankov & Ramalho, 2009).

Financial Inclusion to SMEs Through Bank Penetration

Banks and other financial institutions assume an important role in fostering economic growth, poverty alleviation, income distribution and economic stability. Financial inclusion through bank penetration can make financial services accessible to SMEs and influence the development of this kind of such enterprises. Banks are attracted to

the SME segment can attract bank financing because of higher margins, perceived high profitability and good prospects (Beck et al., 2008).

Financial inclusion includes three dimensions: access, use and quality of financial services (Allen, Demirgüç-Kunt, Klapper, Soledad, & Martinez-Peria, 2012). Banks help SMEs with financial planning, access to external sources of capital and with facilitated transactions. Financial inclusion occurs when SMEs start using the bank as a tool to develop their business. However, SMEs in developing countries usually remain without access to financial services for several reasons, including limited bank branches and ATMs, and relatively high costs (Morgan & Pontines, 2014). Often, SMEs rely on financial services just to make simple transactions, and rarely use them to increase their operations.

There are some common indicators to measure the evolution of financial inclusion on a country level, such as the number of bank accounts (per 1000 adults), the number of bank branches (per million people), the number of ATMs (per million people), the penetration of geographical agencies, loan accounts and per capita deposits (Allen, F. Demirgüç-Kunt, A. Klapper, L. Soledad, Martinez-Peria, 2012; Beck, Demirgüç-kunt, & Martinez Peria, 2007). The International Finance Corporation (2017) estimated that SMEs in emerging countries face a funding shortfall of \$ 2 trillion, and this constraint has severe impacts on the development of such companies, which in turn leads to negative impacts on the development of these economies. The survey also estimated that 70% of SMEs in developing economies do not have access to financial services. They argue that financial inclusion through increased bank penetration could reduce this deficit (World Bank Group, 2017), and bank penetration can be a way to increase access to financial services and to reduce the distance between development of SMEs and banks. Bank penetration is an indicator of the evolution of the services provided by the banking industry. Increasing the number of customer service channels, for instance, can help small enterprises to boost their activities (Bataa, 2008). Bank penetration can also increase the volume of financing mechanisms available to SMEs, improve the quality of financial services and reduce costs through increased banking competition (Dages, Goldberg, & Kinney, 2000).

A study by the Central Bank of Kenya using World Bank data (2015) revealed that an increased access to the financial system increases the volume of financing for SMEs. Banks can increase their penetration through a larger network of banking agencies and through the offer of diverse services channels. Increasing financial access for SMEs can also improve banks' knowledge of SMEs and encourage them to innovate and improve their decision making process (FS Deepening, 2015). Credit rationing is a more relevant problem to SMEs than to other segments of the economy.

Methodology

The purpose of this study is to analyze the role of fixed assets on access to capital as well as to understand the role of financial inclusion through bank penetration in mitigating the loan constraints faced by SMEs. We used public firm-level data provided by the 2010 World Bank Enterprise Survey (WBES), which includes an array of topics related to business environment, such as access to finance, corruption, infrastructure, crime, competition, and performance. We selected data from 15 Latin American countries with enough available information: Brazil, Ecuador, Honduras, Argentina,

Chile, Bolivia, Colombia, El Salvador, Mexico, Guatemala, Paraguay, Nicaragua, Uruguay, Venezuela, and Peru.

Private contractors on behalf of the World Bank conduct this survey. The confidentiality of the survey respondents and the sensitive information they provide is necessary to ensure the greatest degree of survey participation, integrity, and confidence in the quality of the data. Business owners and top managers provide the answers. Typically, they conduct 1200-1800 interviews, 360 in medium-sized economies, and 150 in smaller economies. The primary sectors of interest are manufacturing, retail, and services. They focus on formal (registered) companies with five or more employees, and firms with 100% government/state ownership are not eligible to participate. Firm size depends on the number of employees: the range goes from 5 to 19 for small companies, from 20 to 99 for medium companies and the ones with more than 100 employees are considered large.

Using data on 7311 Latin American SMEs, we compared the companies that had fixed assets, applied for a bank loan, and received it to those that applied but were not successful using a categorical variable. The variable assumes the value of 1 if the company received a loan and zero otherwise. We then used logistic regressions to analyze the factors associated with the odds ratio of receiving a loan, according to the following:

$$(1) \ln \left[\frac{p(y_i^*)}{1-p(y_i^*)} \right] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_i X_i$$

Our independent variables are categorical, indicating whether the SME invested in fixed asset new or used such as machinery, vehicles, equipment, land, or buildings, including expansion and renovations of existing structures. We also decomposed the analysis into different categories of fixed assets using a continuous log-transformation, using two categories: a) land and buildings and b) equipment, machinery, and vehicles.

We use several control variables that define some characteristics of SMEs: the natural logarithm of firm size and age (both divided by the number of employees), ownership, business segment, location, experience and kind of owner (Nichter and Goldmark, 2009). To classify the business sector, we used the Service variable, which is equal 1 if it is a service firm and zero otherwise. Ownership is also categorical and assumes the value of one if the company has more than one owner. City is another categorical variable that indicates whether the firm is located in a city with less than 250,000 inhabitants (code as 1). Finally, we use Women owned SME to indicate whether the owner is female and Experience, which is a continuous variable that considered the years of experience of the SME.

We also controlled for variables at the country level to measure bank penetration: the number of ATMs per 10.000 square kilometers - *ATMs (Km)*, the number of ATMs per 100.000 habitants - *ATMs(pop)*, the number of bank branches per square 10.000 square kilometers - *Branch(Km)* and the number of bank branches per 100.000 inhabitants - *Branch(pop)*. We collected this data using the Financial Access Survey (FAS) survey issued by the International Monetary Fund (IMF) in 2010.

Results

Table 1 shows the logit model proposed in equation (1). We observe that SMEs that have fixed asset investments are on average 2.26 times more likely to obtain a loan from a formal financial institution. Regarding control variables, we verify that firm size, location, and experience are positively associated to the probability of obtaining a bank loan. Moreover, companies with more employees are 1.4 times more chance to obtain bank loan. SMEs located in cities with more than 250.000 inhabitants are 1.4 times more likely to obtain a bank loan. These results are statistically significant at the 1% level. Experience is also positively associated to the probability of obtaining access to capital, although this variable has low statistical significance. The results also demonstrate that firm age and firms in the service sector are less likely to obtain access to capital. Sole proprietors are also less likely to obtain bank loans. Although women-owned SMEs are more likely to obtain access to financing through formal institutions, the results are not statistically significant.

Table 2 shows the interaction effects between fixed asset investments and bank penetration on access to financing. This table demonstrates the influence of banking penetration to obtain access to capital by SMEs that have fixed assets and applied for a bank loan. Contrary to our expectations, an increased number of ATM and bank branches per square kilometers are not statistically significant to explain access to capital. The number of ATMs and the number of bank branches per 10.000 inhabitants has a negative association to access to capital.

Table 1: The Impact of Fixed Assets on Access to Capital

	Base Model	ATMs(km)	ATMs(pop)	Branch(km)	Branch(pop)
Fixed Asset	0.817*** (0.0526)	0.809*** (0.0527)	0.816*** (0.0528)	0.789*** (0.0530)	0.811*** (0.0528)
Firm Size	0.349*** (0.0275)	0.351*** (0.0275)	0.349*** (0.0275)	0.358*** (0.0277)	0.350*** (0.0275)
Firm Age	-0.0766*** (0.0289)	-0.0790*** (0.0290)	-0.0765*** (0.0290)	-0.0789*** (0.0290)	-0.0774*** (0.0290)
Service	-0.204*** (0.0532)	-0.207*** (0.0533)	-0.201*** (0.0546)	-0.194*** (0.0533)	-0.211*** (0.0535)
Ownership	-0.180** (0.0709)	-0.173** (0.0709)	-0.178** (0.0712)	-0.145** (0.0713)	-0.182** (0.0708)
City	0.364*** (0.0792)	0.361*** (0.0801)	0.364*** (0.0792)	0.395*** (0.0804)	0.376*** (0.0799)
Women-owned SME	0.0514	0.0601	0.0499	0.0569	0.0539

	(0.0520)	(0.0520)	(0.0523)	(0.0521)	(0.0520)
Experience	0.00543** (0.00212)	0.00512** (0.00212)	0.00544** (0.00212)	0.00506** (0.00212)	0.00540** (0.00212)
ATMs(km)		-0.00833*** (0.00263)			
ATMs(pop)			0.000269 (0.000878)		
Branch(km)				-0.0201*** (0.00381)	
Branch(pop)					-0.00313 (0.00274)
<i>N</i>	7311	7311	7311	7311	7311
chi2	605.6	611.8	605.9	622.9	606.3

* p<0.10, ** p<0.05, *** p<0.01

Dependent variable: Bank Loan

Marginal effects as coefficients

Robust standard errors in parentheses

Table 2: Interaction effects between fixed assets and bank penetration on access to capital

	ATMs(km)	ATMs(pop)	Branch(km)	Branch(pop)
Fixed Assets	0.706*** (0.0859)	0.992*** (0.0972)	0.748*** (0.0692)	1.001*** (0.110)
Firm Size	0.351*** (0.0275)	0.349*** (0.0275)	0.358*** (0.0277)	0.349*** (0.0275)
Firm Age	-0.0789*** (0.0290)	-0.0758*** (0.0290)	-0.0791*** (0.0290)	-0.0764*** (0.0290)
Service	-0.208*** (0.0533)	-0.198*** (0.0548)	-0.195*** (0.0533)	-0.213*** (0.0535)
Ownership	-0.172** (0.0709)	-0.168** (0.0715)	-0.143** (0.0713)	-0.182** (0.0709)
City	0.356*** (0.0800)	0.359*** (0.0793)	0.392*** (0.0804)	0.376*** (0.0802)
Women-owned SME	0.0570 (0.0521)	0.0542 (0.0523)	0.0568 (0.0521)	0.0545 (0.0520)

Experience	0.00505** (0.00212)	0.00535** (0.00212)	0.00501** (0.00212)	0.00543** (0.00212)
ATMs(km)	-0.0135*** (0.00465)			
Asset*ATM(km)	0.00848 (0.00567)			
ATMs(pop)		0.00287* (0.00149)		
Asset*ATM(pop)		-0.00386** (0.00179)		
Branch(km)			-0.0242*** (0.00585)	
Asset*Branch(km)			0.00703 (0.00769)	
Branch(pop)				0.00283 (0.00413)
Asset*Branch(pop)				-0.0107** (0.00539)
<i>N</i>	7311	7311	7311	7311
chi2	605.9	606.3	619.9	608.7

* p<0.10, ** p<0.05, *** p<0.01

Dependent variable: Bank Loan

Marginal effects as coefficients

Robust standard errors in parentheses

Table 3: Interaction effects between fixed assets and bank penetration on access to capital

	Base Model	ATMs(km)	ATMs(pop)	Branch(km)	Branch(pop)
Land	0.0507*** (0.0118)	0.0317 (0.0208)	0.0401* (0.0228)	0.0188 (0.0169)	-0.0880*** (0.0263)
Firm Size	0.341*** (0.0396)	0.338*** (0.0400)	0.340*** (0.0399)	0.354*** (0.0402)	0.355*** (0.0405)
Firm Age	-0.173*** (0.0483)	-0.173*** (0.0483)	-0.174*** (0.0484)	-0.167*** (0.0483)	-0.157*** (0.0486)
Service	-0.233*** (0.0798)	-0.218*** (0.0809)	-0.230*** (0.0815)	-0.176** (0.0812)	-0.236*** (0.0817)
Ownership	-0.0308 (0.116)	-0.0359 (0.116)	-0.0365 (0.116)	0.0338 (0.117)	0.0231 (0.117)
City	0.471*** (0.109)	0.449*** (0.111)	0.466*** (0.109)	0.474*** (0.112)	0.442*** (0.112)
Women-owned SME	-0.129* (0.0763)	-0.126* (0.0766)	-0.126 (0.0774)	-0.135* (0.0766)	-0.0725 (0.0775)
Experience	0.000524 (0.00328)	0.000410 (0.00328)	0.000428 (0.00328)	0.000249 (0.00328)	-0.000501 (0.00332)
ATMs(km)		-0.0214 (0.0195)			
Land*ATM (km)		0.00184 (0.00171)			
ATMs(pop)			-0.00261 (0.00492)		
Land*ATM (pop)			0.000227 (0.000411)		
Branch(km)				-0.102*** (0.0289)	
Land*Branch(km)				0.00624*** (0.00220)	

Branch(pop)					-0.157*** (0.0205)
Land*Branch(pop)					0.00899*** (0.00131)
<i>N</i>	3091	3091	3091	3091	3091
chi2	141.1	141.1	141.2	151.3	188.3

* p<0.10, ** p<0.05, *** p<0.01

Dependent variable: Bank Loan

Marginal effects as coefficients

Robust standard errors in parentheses

Table 4: Interaction effects between fixed asset value (machinery, vehicles, and equipment) and bank penetration on access to capital

	Base Model	ATMs(km)	ATMs(pop)	Branch(km)	Branch(pop)
Equipment	0.109*** (0.0230)	0.146*** (0.0348)	0.0952** (0.0423)	0.106*** (0.0330)	-0.0472 (0.0493)
Firm Size	0.278*** (0.0630)	0.283*** (0.0627)	0.277*** (0.0637)	0.278*** (0.0630)	0.298*** (0.0636)
Firm Age	0.0231 (0.0803)	0.0260 (0.0816)	0.0231 (0.0803)	0.0237 (0.0803)	0.0300 (0.0802)
Service	-0.0510 (0.131)	-0.0817 (0.133)	-0.0398 (0.135)	-0.0476 (0.133)	-0.0355 (0.134)
Ownership	-0.369** (0.171)	-0.347** (0.171)	-0.372** (0.171)	-0.370** (0.171)	-0.392** (0.171)
City	0.324* (0.178)	0.365** (0.181)	0.315* (0.179)	0.318* (0.182)	0.292 (0.179)
Women-owned SME	-0.0443 (0.127)	-0.0523 (0.127)	-0.0414 (0.128)	-0.0446 (0.127)	-0.0200 (0.128)
Experience	0.00138 (0.00572)	0.00157 (0.00574)	0.00126 (0.00572)	0.00136 (0.00572)	-0.000263 (0.00573)
ATMs(km)		0.0397 (0.0281)			
Equip*ATM (km)		-0.00295 (0.00242)			

ATMs(pop)				-0.00408 (0.0105)	
Equip*ATM (pop)				0.000371 (0.000863)	
Branch(km)				-0.00747 (0.0534)	
Equipm*Branch (km)				0.000615 (0.00401)	
Branch(pop)					-0.163*** (0.0435)
Equip*Branch(pop)					0.00978*** (0.00271)
<i>N</i>	1140	1140	1140	1140	1140
chi2	76.73	76.92	76.54	77.29	82.96

* p<0.10, ** p<0.05, *** p<0.01

Dependent variable: Bank Loan

Marginal effects as coefficients

Robust standard errors in parentheses

Table 3 shows the decomposition of different categories of fixed assets. The results demonstrate that the SMEs that invested in land and applied a bank loan were more likely to obtain access to capital, although the statistical significance is small. Moreover, the number of ATMs per square kilometers and ATMs per 10.000 inhabitants do not have statistical relevance to explain the probability of an SME obtaining a bank loan, contrary to our expectations. Finally, the number of bank branch per square kilometers and per 100.000 inhabitants influences the access to capital for SMEs that own land.

Table 4 shows the decomposition of fixed assets on equipment that include equipment, machinery, and vehicles. We observe that the SMEs that invest in equipment and apply for a bank loan are 1.15 times more likely to obtain a loan, with robust statistical significance. Bank penetration (the number of ATMs per square kilometers, ATMs per 10.000 inhabitants and the number of bank branches per square kilometers), does not have statistical relevance to explain access to capital, which is not in accordance to our initial expectations. The number of bank branches per 100.000 inhabitants is the only statistically significant variable that has a small influence on access to capital by SMEs that had equipment and applied for a bank loan.

Concluding Remarks

Small and medium-sized enterprises (SMEs) have an important role in job creation and represent the majority of companies in developing markets. However, SMEs face credit rationing due to asymmetry of information problems, high costs, and the geographical distance from bank branches. The lack of long-term loans to finance fixed assets make SMEs grow at a lower rate than large companies do and has negative impacts on economic development. In Latin America, the problem is even worse, because companies face challenges related to the use of collateral and to bank credit history. In this sense, the purpose of this study was to investigate the impact of fixed asset investments on access to capital for SMEs in Latin America. In addition, we analyze the role of financial inclusion, through bank penetration, in mitigating SMEs constraints.

We used public firm-level data provided by the 2010 World Bank Enterprise Survey (WBES) on 7311 Latin American SMEs and compared the companies that had fixed assets, applied for a bank loan and received it to those that applied but were not successful. We used logistic regressions to analyze the factors associated with the odds ratio of receiving a loan. Our independent variable consists of a categorical variable for fixed assets (we later consider different categories of fixed assets) and we control for size, age, ownership, business segment, location, experience, and the gender of the owner. We also controlled for variables at the country level to measure bank penetration.

Our results demonstrate that SMEs that have fixed asset investments are on average 2.26 times more likely to obtain a loan from a formal financial institution, and firm size, location and experience are positively associated to the probability of obtaining a bank loan. Companies with more employees are 1.4 times more chance to obtain bank loan, and firms in the service sector are less likely to obtain access to capital. SMEs headquartered in large cities are also more likely to receive a loan, as well as companies with greater experiences. These findings can be explained by the easiness to access a financial institution as well as by the ability to handle loan processing.

We find mixed results for bank penetration: while an increased number of ATM and bank branches per square kilometers are not statistically significant to explain access to capital, regardless of the existence of real estate as collateral, the number of ATMs and the number of bank branches per 10.000 inhabitants have a negative association to the probability of obtaining a loan. These findings may have to do with relationship banking, as these institutions often rely on information about the client's previous loans and prefer to deal with an already known customer base (Beck et al., 2008). As per the decomposition of fixed assets, we observe that the SMEs that invest in equipment and apply for a bank loan are 1.15 times more likely to obtain it. Companies that invest in real estate, possibly due to the availability of land as collateral (Beck et al.(2008), Dennis (2008)). Moreover, these companies may rely on previous banking relationships when looking for external financing (Beck et al., 2008).

Ownership exhibited a negative association with access to capital. This can be the case because SMEs with a single owner are more likely to face financial distress (Schans et. al, 2012).

As per the limitations of the study, one can consider the different economic situations of the 15 countries included in the sample, which can have significant impacts on the ex-ante characteristics of their financial markets. Besides, results can go in another

direction depending on the period under investigation. Future research on the topic might include analyzing the association between bank penetration and access to capital for companies in the service sector, as well as a deeper investigation on why older companies are less likely to obtain a loan.

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