



Munich Personal RePEc Archive

## **Access to Finance Constraint and SMEs Functioning in Ghana**

Nyanzu, Frederick and Quaidoo, Matthew

Mississippi State University, US., University of Cape Coast, Ghana.

December 2017

Online at <https://mpra.ub.uni-muenchen.de/83202/>  
MPRA Paper No. 83202, posted 10 Dec 2017 23:30 UTC

# Access to Finance Constraint and SMEs Functioning in Ghana

**Frederick Nyanzu**

*Department of Agricultural Economics*

*Mississippi State University, US.*

*Email: fred.nyanzu@gmail.com*

**Matthew Quaidoo**

*Directorate of Research Innovation and Consultancy*

*University of Cape Coast, Ghana.*

*Email:kofiquaidoo@gmail.com*

## **Abstract**

Well-functioning small and medium enterprises (SMEs) are a fundamental part of the economic fabric in developing countries, and play a crucial role in contributing to GDP growth, reducing unemployment as well as furthering innovation and prosperity. Unfortunately, they are strongly restricted in accessing the capital that they require to grow, expand and function, with nearly half of SMEs in developing countries rating access to finance as a major constraint. This paper examines the link between access to finance and SMEs functioning in Ghana. The study resorts to the current World Bank Enterprise Survey data released for Ghana (2013); and using chi square, logit and ordered logit analysis, it finds out that access to credit is a major constraint of SMEs in Ghana with implications for their functioning and growth. The study recommends, therefore, that governments should create the enabling environment for SMEs to function effectively by providing financing avenues and improving access to financing.

**Key words:** Financial Constraint, Small and Medium Enterprises, Functioning, Ghana

**JEL codes:** G21, M00, M10,

## **Introduction**

A well-functioning small and medium enterprises (SMEs) sector contributes immensely to economic growth and development of countries the world over. In the last decade, SMEs are reported to have contributed an average of 20 to 50 percent in GDP growth all across the world (Ayyagari, Beck, & Demircuc-Kunt, 2007; Hall, 2002). Likewise, Cobbold et al (2008) in Ahiawodzi and Adade (2012) postulate that SMEs are particularly important in supporting economic growth and livelihoods in developing countries. Over 90 percent of the enterprises in most African countries are SMEs and they account for 50 to 60 percent of employment. In Sub-Saharan Africa, specifically in Ghana, Quainoo (2011) and Abor & Quartey (2010); submit that SMEs provide about 85 percent of manufacturing employment; contribute about 70 percent to Ghana's Gross Domestic Product (GDP); and account for over 90 percent of businesses, according to available data from the Registrar General's Department.

Despite the considerable role of SMEs in economic growth and development as a prolific job creator and income generator, access to finance remains the bane of their very survival. Access to credit is core to SMEs development and functioning since finance constitutes the lifeblood of every business. Empirical evidence across the globe shows that access to finance stymie the functioning of SMEs, hinders SMEs investment and innovation, and impedes SMEs growth as well (Dauda & Nyarko, 2014; Mohammed & Obeleagu-Nzelibe, 2014; Oum, Harvie, & Narjoko, 2011; Ayyagari, Demirguc-Kunt, & Maksimovic, 2011; and Fatoki & Odeyemi, 2010).

In fact, per the World Bank Enterprise Survey (WES), access to finance constraint is more binding than others such as corruption or infrastructure (Ayyagari, Demirgüç-Kunt, & Maksimovic, 2008). Elsewhere, Beck and Cull (2014) and Bouri et al (2011) found financial constraints are greatest in low-income countries while firms in Sub-Saharan Africa (SSA) countries almost twice as many as outside Africa mentioned availability and cost of finance as the most important growth obstacle. In Ghana, Aryeetey et al (1994) in Nkuah, Tanyeh, and Gaeten (2013) reported that a significant number of SMEs surveyed in Ghana mentioned access credit as a dominant constraint.

The foregoing issues put, therefore, sets the paper while drawing on Nega and Hussein (2016) to synthesize the issue of access to finance as a key obstacle to the functioning of SMEs in Ghana and test the factors that influence the financing gap. Essentially, the paper examines the link between access to finance and SMEs functioning in Ghana using World Bank's enterprise survey. Though literature on SME finance gap or access to finance problem abounds, research on the effect or link between SMEs' access to finance and functioning is very limited from the Ghanaian context. The paper thus provides empirical evidence on the determinants of SME access to finance and how such constraint relates to SME functioning in Ghana, complementing the growing literature on SME finance.

The remainder of the paper is organised as follows: The next section presents review of related literature, both theoretical and empirical review, which is followed by a description of the research methodology and data used. This section principally discusses the approaches and rationale for using both logit and ordered logit estimation techniques for this study. The results of the study are presented and discussed after the methodology section. The paper ends with recommendations and conclusion deduced from the findings.

## **Literature Review**

### **Theoretical Issues**

According to Romano, Tanewski, and Smyrnios (2001), financial theories do not adequately explain financial behaviour of Small and medium-sized enterprises (SMEs), and are equivocal in their description of the use of equity finance by SMEs. Different theories suggest different approaches to explain the factors that influence SMEs access to external formal financing.

Berger and Udell, (1998) financial growth cycle paradigm postulate that financial needs and the financing options available for SMEs change throughout the various phases of a firm's lifecycle. The model presents firms on a size/age/information continuum and describes the increasing array of financing options available to the firm as it grows. Thus, as SMEs advance through their business lifecycle, they gradually end up adjusting their capital structure (La Rocca, La Rocca, & Cariola, 2011).

Generally, due to the unique features that characterize SMEs during the start-up phase, taking for instance their informational opacity (Berger & Udell, 1998), lack of trading history (Cassar, 2004), high risk of failure (Huyghebaert & Van de Gucht, 2007), among others, SMEs in this stage depend heavily on insider funding sources. During subsequent growth stages as SMEs

mature, they start to establish a track record, provide collateral, become informationally transparent, develop access to securitised debt and publicly listed equity markets (Berger & Udell, 1998) among others. However, the business model is critique on grounds of inability to provide complete picture of SME financial decisions and behaviour.

Pecking Order Theory (POT) of business financing propounded by Myers (1984) suggests that the capital structure decisions of a firm are a function of the firm's age. The POT assumes that businesses adhere to a hierarchy of financing sources and prefer internal financing when available; and, if external financing is required, debt is preferred over equity. POT seeks to explain observed differences between SMEs and large enterprises' financial structures or practices, especially non-publicly traded SMEs that might not have the additional financing alternative of issuing external equity finance. POT having been criticised on lack of information to assess risk, both individual and collective of the SMEs, the POT suggests a preference for internal equity and an aversion to external equity but provides no a priori prescription for the overall capital structure.

### **The Concept of SMEs**

Defining SME has always been a subject of debate. Different organizations and countries have based their definition on headcount (number of employees), sales, amount of investment, annual turnover, market share or spread, loan size and capital; capital assets, skilled labour, turnover level, firm size, legal status, and method of production (Ardic, Mylenko, & Saltane, 2012 ; Abor & Quartey, 2010; Lopez-Gracia & Aybar-Arias, 2000)

Internationally, SMEs constitute a diverse and dynamic group of enterprises in that firms differ in their levels of capitalisation, sales, and employment. The Bolton committee (1971) proposed three criteria to define the small enterprises: they have relatively small share of market place; they are managed by the owner or part owner with no formal management structure; they are independent and not a part of any large enterprise (Bolton & Firms, 1971).

The most acceptable definition is on the basis of number of employee (Ayyagari et al., 2007). Organizations such as European Commission (EC), UNIDO, OECD, among others have also defined SMEs in terms of the number of employees or employment, putting forward a number of thresholds. In addition, The World Bank and The Inter-American Development Bank generally define SMEs in terms of number of employees, average annual sale, and assets, with thresholds varying by country, and according to the size of the economies and structure of their corporate sector.

Clearly, the number varies across national statistical systems, and the definition for SMEs keeps varying all around the world, across industries and countries. Ogboru (2007) notes that classification of businesses into large, medium or small scale is subjective and qualitative judgment. Hence, operational definition by researchers based on country context mostly seems to be the order of the day.

### **SMEs in Ghana**

In the Ghanaian context, there have been various definitions given for small-scale enterprises but the most commonly used criterion is the number of employees of the enterprise. The Ghana Statistical Service (GSS), in its Industrial Statistics, considers firms with fewer than 10 employees as small-scale enterprises and their counterparts with more than 10 employees as medium and large-sized enterprises. The Regional Project on Enterprise Development Ghana manufacturing survey paper as cited in Abor and Quartey, (2010) offers a more recent definition, classifying firms in Ghana as follows: (i) small enterprise, 5-29 employees; (ii) medium enterprise, 30-99 employees; (iii) large enterprise, 100 and more employees. Alternatively, the National Board for Small Scale Industries (NBSSI), a body mandated to promote the growth and development of

SMEs in Ghana applies both the fixed asset and number of employees' criteria. NBSSI defines small enterprises as one that employs between 6 and 29 employees with fixed assets of \$100,000; medium enterprises: employ between 30 and 99 employees with fixed assets of up to \$1million (Mensah, 2004 cited in Quainoo, 2011). Regardless of the definition used, it is clear that SMEs and particularly micro businesses constitute the vast majority of businesses in Ghana. This paper follows the standardized definition of SMEs provided by the World Bank's enterprise survey: small (5 to 19 employees), medium (20 to 99 employees), and large (more than 99 employees).

## **Empirical Issues**

### ***Firm-Entrepreneur Characteristics and Access to Finance***

In general, the characteristics of SMEs affect their financial decisions and behaviour and ultimately the enterprises functioning, performance and growth. Factors which include firm size and age, ownership type and legal status or form, geographical location, industry sector and asset structure /ownership (depicting its capacity to provide collateral), level/perception of corruption (depicting the opacity of the business environment), and business registration (depicting the formality), managerial competence owner-manager age and gender, owner-manager education and experience contributes to SMEs access to credit (Nega & Hussein, 2016; Nkuah et al., 2013).

#### *Size and Age*

A firm's size is usually related to its age as these variables tend to have similar and possibly stronger influence on the firm's life cycle, especially in the financial decision making process (Cassar, 2004), noting that banks tend to issue more credit to large firms as compared to smaller firms. Again, Cassar (2004) conclude that there is a positive correlation between the size and banks' willingness to provide credits. Likewise, Aryeetey et al. (1994) cited in Quainoo (2011) observed that large firms in Ghana were more favoured by banks than small and medium-scale firms in terms of loan processing.

With respect to age, Klapper et al. (2006) agreed with Woldie, Isaac Mwita, and Saidimu (2012) that start-ups and firms less than four or five years depended more on informal financing sources than on bank loan. Fatoki and Asah (2011) supported this assertion by observing that SMEs established more than five years have a far better chance to be successful in their credit applications compared with SMEs established for less than five years. Using data from African countries, Beck and Cull (2014) corroborate the above findings that older firms are more likely to have a formal loan than their younger counterparts. In Ghana, a study by Quartey (2003) concluded the significant positive effect of firm age on the ability to access external finance.

#### *Ownership Type and Legal Status*

Abor (2008) identified the form of business as one of the factors explaining the capital structure decisions of Ghanaian SMEs. In the paper, ownership structure and the type of firm were found to have a significant impact on financing. In terms of legal form, Cassar (2004) notes that incorporation may be perceived by banks and other finance suppliers as an encouraging sign of the firm's formality and creditability. Consequently, incorporated firms appear to be in a very favoured position in receiving external funding in comparison with unincorporated firms. Other studies including Storey (1994) concluded that limited private companies are more likely to be reliant on bank financing.

#### *Location*

The geographical area where a firm is located in the proximity of banks is also believed to have influence on the firm's ability to gain external finance (Berger & Udell, 2006). SMEs located

outside major cities face greater difficulties in acquiring external finance, especially long-term debt as compared with their counterparts operating in cities. In the same vein, SMEs close to their banks provide relationship advantages than their counterpart SMEs elsewhere (Fatoki & Asah, 2011; Abor, 2008).

### *Industry Sector*

Factors related to the industry sector in which a firm operates also explain capital structure and financial decisions (MacKay & Phillips, 2005). The effect of industry classification on the capital structure of Ghanaian SMEs was examined by Abor (2007), revealing some differences in the funding preferences of the SMEs across industries. Abor (2007) further concluded that wholesale and retail trade sectors use more short-term credit compared with manufacturing SMEs, whereas construction, hotel and hospitality, and mining industries appear to depend more on long-term finance and less on short-term debt. Abor and Biekpe (2007) also found that the Ghanaian firms involved in the agricultural or manufacturing sector have higher capital and asset structures than those operating in wholesale and retail sectors, making them more bankable.

### *Owner-Manager Characteristics*

The personal characteristics of the owner-manager contribute to the firm's ability and the likelihood of accessing external finance (Irwin & Scott, 2010; Cassar, 2004). Reason being that the owner-managers in SMEs have dominant position in the firm in their role as the primary decision makers.

Women SME owners appear to have a smaller amount of start-up capital, however, women face more credibility issues when dealing with bankers (Alina, 2011). In parallel, credit denial rate, credit discrimination against female entrepreneurs due to high interest rate charge, and strict conditionalities among others are issues women have to go through until credit is issued out to them. Thus women notably in sub-Saharan Africa are more likely to be financially constrained than male-owned firms (Nti-Addae, 2013; Garwe and Fatoki, 2012; Coleman (2007) cited in Abdulsaleh & Worthington, 2013).

Again, *Owner-Manager's Education* and Experience are employed by institutional financiers as a proxy for human capital. The educational background of the SME owner-manager is often positively related to the firm's usage of leverage (Coleman, 2007). Owners with higher education are more likely to use and have access to formal loans/banking services (Aterido, Beck, & Iacovone, 2013; Scott & Irwin, 2009).

*Owner-Manager's Experience*-measured by the number of years in an industry- also enhances the availability of credit to SMEs. Nofsinger and Wang (2011) hypothesized and proved that the experience of the entrepreneur is one factor that explains the difference in external financing levels available to SMEs. From the lender's perspective, as experienced entrepreneurs are believed to be better performers than less experienced entrepreneurs, it is then rational to factor experience into the process of evaluating the creditworthiness of SMEs ((Gompers, Kovner, Lerner, & Scharfstein, 2010). Thus, high experience enhances increased access to external financing.

### *Corruption*

Perception of corruption depicts the opacity of the business environment. Hallward-Driemeier and Aterido (2007) see corruption as relatively less constraining. The frequency of bribes is reported as comparable across the regions, although the frequency with which 'gifts' are expected during inspections is somewhat lower. However, the cost of the bribes paid "to get things done" as a share

of sales is 0.89 percentage points higher in Africa. Indeed, the evidence seems consistent with the perception that corruption is less of an obstacle, even if it is seen as prevalent.

### ***The Access to Finance Constraint and SMEs Functioning***

It is imperative to operationalize the term ‘functioning’ in this paper. The terms functioning, as used interchangeably for success, operation, and performance are to connote how SMEs are performing well in their operations. If the SMEs is facing difficulty, through financial constraint, electricity, and many other factors which stymies the day-to-day activities, and cannot see to the smooth daily activities to go on, then such SME is not functioning well. Beck, Demirgüç-Kunt, & Maksimovic (2005) put forward that access to finance is not only a self-reported obstacle but turns into a growth constraint, especially for smaller firms. It is inferred, therefore, that the access to finance constraint hampers the functioning of SMEs, and in the absence of this constraint SMEs function effectively, grow and prosper (Butler & Cornaggia, 2009). The Same opinion is expressed by Dalberg (2011) that small firms are disproportionately handicapped by a lack of finance, but they receive a stronger boost in growth than large firms if financing is provided.

The Investment Climate Surveys of the World Bank as cited by Hallward-Driemeier, Wallsten, and Xu (2006) show that access to finance improves firm performance and productivity. Similarly, De Maeseneire and Claeys (2012), Beck and Demirguc-Kunt (2006) and Beck et al. (2005) argue that SMEs that have access to credit can grow faster and hence achieve optimal size (expand), those with limited access to finance remain stagnant and hence remain smaller in size. Therefore, access to finance ease the operations of SMEs, enhance performance and growth. Furthermore, firms with greater access to capital are more able to exploit growth and investment opportunities (Klapper, et al., 2006).

## **Methodology**

### ***Source, Description, and Justification of data***

This study employs the most current World Bank Enterprise Survey (WES) data released for Ghana in 2013 which consist of 720 firms. WES is a firm level survey of a representative sample of an economy’s private sector, conducted and sponsored by the World Bank. These surveys have been conducted over the past 10 years in over 100 countries with standardized survey instruments and a uniform sampling methodology. The surveys employ the stratified probability/random sampling technique, affording every subset of a statistical population an equal chance of being chosen. Three levels of stratification were used: firm sector, firm size, and geographic region. The enterprise surveys are conducted in selected urban centers which are intended to coincide with the location for the implementation. Enterprise surveys target formal firms with five or more employees that are not 100 percent state/government owned. The population or universe of the study is all the privately owned firms in the manufacturing, services and other industries in Ghana. The dataset is country specific and extant studies have been done using the same data justifying data credibility. The dataset is chosen because the firms in the sample are not truncated by size and cover many sectors at the same time (manufacturing, services, and other form of services). The firms in the survey include small, medium and large, young and old firms as well as registered and unregistered firms among other characteristics. The surveys also try to capture business perceptions of the most important obstacles to enterprise operation and growth. Aside from helping to ascertain reasons enterprises do not have loans with formal financial institutions, the Enterprise Surveys allow a detailed exploration of variation in the use of financial services across firms with

different characteristics. Apparently, the data contains information that details financial challenges SMEs are facing.

### ***Estimation technique***

The study employed both descriptive statistics and econometric analysis to determine factors that enhance SMEs functioning. Patterns regarding access to credit by SMEs were done mainly using descriptive statistics where chi-square was employed to test the significance in the pattern. In determining covariates effect of the likelihood of access to finance from formal financial institution, the study employed both logit and ordered logistic models for the analysis. The logit model is justified in its extreme flexibility and widely used function in cases where outcome variable is binary (Wright,1995). In addition, the logit model is seen to be a powerful tool as a result of its ability to estimate individual effect of continuous and categorical variables on qualitative binary outcome variable. On the other hand, if the outcome variable is a categorical variable other than binary and exhibits levels in the outcome variable, resorting to ordinal measure such as ordered logit is deemed appropriate. In this paper, the outcome variable is measured in two ways: *one captured as dichotomous and another captured in levels*. The binary variable examines whether SMEs have the opportunity to access credit from financial institutions or not by virtue of certain firm-level characteristics such as age, size (small or medium), economic activities, legal status, previous lending history, age and experience of firm's manager, geographical location, etc. The other variable captures whether SME is highly constrained by credit, moderately constrained or not constrained in any form. These informed the choice of the econometric model.

### ***Econometric model***

The probability to examine whether an SME has access to external credit is a function of key factors such as the firm-level variables earlier mentioned. From the above function theoretically stated, access to finance by SMEs probability production function is stated as:

$$AF_i = \pi(\text{Age, Agesq, Fz, Sec, FmO LS, Reg, Cop, OSM, Loc,}) \quad (1)$$

$$AF_i = \varphi_i\beta + \delta_iAF_i = \begin{cases} 1 & \text{if } FA_i > 0 \\ 0 & \text{otherwise} \end{cases} \quad (2)$$

Equation 2 can be reduced to a general format as:

$$AF_i = \beta_0 + \sum_{j=1}^n \beta_j X_{ij} + \varepsilon_i \quad (3)$$

Where  $AF_i$  is our outcome variable with a value of 1 when a firm have access to credit from financial institutions and 0 if otherwise,  $X_{ij}$  is a vector of explanatory variables and  $\varepsilon_i$  is the disturbance term.

From the above model (3), it is believed that the SME that does not access finance from the financial institutions may have their peculiar reason for not doing so. Hence, the need to go beyond using only access to finance with a binary outcome (i.e. whether the SME access credit or not from financial institutions) in determining their financial challenges. Reasons being that an SME with little external borrowing could be very constrained in terms of credit to help them undertake many prospective projects. In cases where SMEs may have run out of good projects, applying for external financial assistance will not be an option, under such circumstance, such SME cannot be termed as credit constrained. This extends our analysis to access to credit by extending the issue.



The SMEs cannot be termed as credit unconstrained on the grounds that they have enough capital or have not run out of projects and will not need external fund for business activities. However, such firm in the binary classification is likely to fall under firms without access to credit or finance as credit constrained. It then becomes imperative to have a variable that can further examine SME's credit constraint status. Hence, this study follows the measurement of credit constraint by Kuntchev, Ramalho, Rodriguez-Meza, and Yang (2014); and Nega and Hussein (2016). The current study puts the measure of credit constraint into three levels: a) the SME is Not Credit Constrained (NCC); b) Partially Credit Constrained (PCC); and c) Fully Credit Constrained (FCC). Here, FCC captures SMEs that do not use external source of finance for its working capital and investment during the previous fiscal year; the SMEs do not have an outstanding loan at the time of the survey; and whether the SME either applied for loan in the previous fiscal year and loan was not approved or either the SME did not apply for loan due to reasons other than having enough capital for their business. FCC represents SMEs limited to external finance from formal financial institution due to the fact that loan application was refused or did not consider applying for loan for reasons other than having enough finance. PCC denotes SMEs that used external source of finance as working capital and/or investment during the fiscal year and/or the SMEs have an outstanding loan in the previous fiscal year. Alternatively, PCC may be SMEs which do not apply for loan in the last fiscal year and reasons associated are to issues other than having enough finance for their business need. Apparently, the SMEs in this category managed to have external source of finance for their businesses.

Finally, the SMEs that are NCC include those that fit into the following category: the NCC use external sources of finance for working capital and/or investment in the last fiscal year and have an outstanding loan at the time of the survey; such SME applied for loan from a financial institution and loan was granted in the last fiscal year, or the SMEs did not apply for loan by virtue of the fact that there is enough finance for their business.

The categories for our dependent variable have rankings; therefore, an index for a single latent variable can be denoted as follows:

$$y^* = X_i' \beta + u_i \quad (4)$$

$$y_i = j \text{ if } \alpha_{j-1} < y_i^* \leq \alpha_j \quad (5)$$

The probability that an observation  $i$  will select alternative  $j$  is

$$p_{ij} = p(y_i = j) = p(\alpha_{j-1} < y_i^* \leq \alpha_j) = F(\alpha_j - X_i' \beta) - F(\alpha_{j-1} - X_i' \beta) \quad (6)$$

$$\text{Where } F \text{ is the logistic cdf } F(z) = e^z / (1 + e^z)$$

With an increase or decrease in the probability of one being credit constrained effect is given as percentage by the marginal effect  $\frac{\delta p_{ij}}{\delta x_{ij}} = \{F'(\alpha_{j-1} - X_i' \beta) - F'(\alpha_j - X_i' \beta)\} \beta_r \quad (7)$

### **Variables**

**Dependent Variable:** the main outcome variable for this study is access to finance, measured in two different ways: a dichotomous variable and an ordinal variable. The dichotomous variable captures whether the SME has access (finance unconstrained) to finance or do not have access to finance (finance constraint). On the other hand, the other measurement for the access to finance is in levels of constraint: no constraint, moderate constraint, and severe constraint as earlier explained.

Independent Variable: the explanatory variables used in this study include age of the firm, ownership share of credit in the SME, corruption, firm size, legal status firm, sector, and location.

**Table 1: Variable, Definition and Measurement of variables**

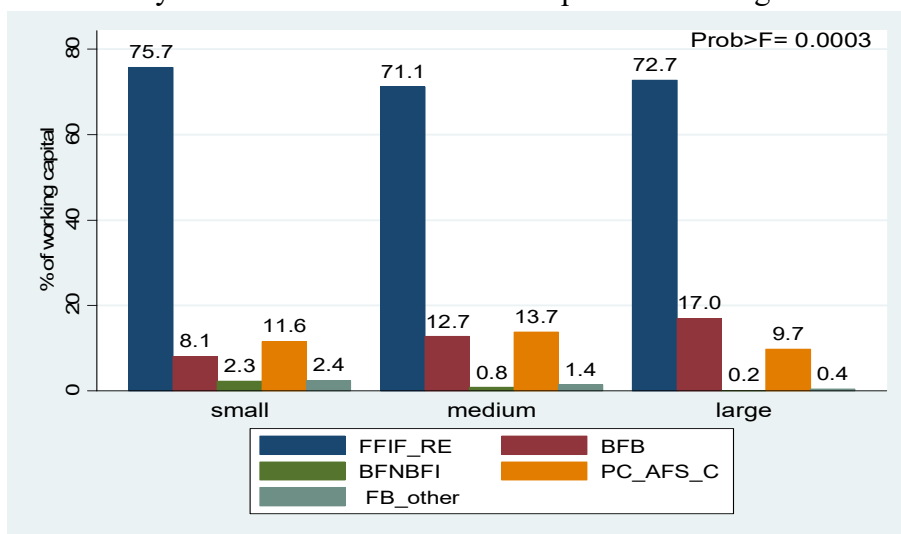
<b>Variable</b>	<b>Definition</b>	<b>Measurement type</b>
Legal Status of firm [LS]	legal status of publicly listed company	Categorical variable
Sector of operations [Sec]	The sector that defines the SMEs activity: Either in Manufacturing, Service or Other sector other than the two mentioned	Categorical variable
Access credit [AC]	Whether the SME had access to credit in the last fiscal year or not	Dummy variable
Credit Constraint	Fully Credit Constraint, Partially Credit Constraint and Not Credit Constraint	Categorical Variable
Firm size [Fz]	Firm size is a composite measure of permanent and temporary workers worked in a year	Dummy variable
Age of firm [Age] and AgeSq	Age refers to the date of the establishment of the firm up to 2013 when the data was collected	Continuous variable
Female Ownership [FmO]	It is defined as whether the ownership of the SME is own by Female or not	Dummy variable
Location [Loc]	Region where SMEs are located (Takoradi, North, Tema, Accra)	Dummy variables to capture the regions SMEs located
Corruption [Cop]	Whether establishments consider corruption to be the biggest obstacle	Binary Variable
Registered firm [Reg]	Establishment formally registered when it began operations?	Binary variable
Owner/Manager Share [OS]	Percentage of the firm that the largest owner(s) own?	Continuous

*Source: Authors' own computation from WES dataset for Ghana, 2013.*

## Results

### *Percentage of Working Capital across firm size*

The sustainability of the SMEs is crucial upon the SMEs working capital. Figure 1 presents proportions of working capital financed by size of firms. A cursory glance at figure 1 shows that larger SMEs' working capital is financed through an internal fund or retained earnings (FFIF\_RE). Other financing options of working capital differ across SME sizes. For larger firms, working capital is supported by borrowing from banks (BFB and PCAF); medium size SMEs have their working capital financed by purchasing on credit/advances from suppliers /customers (PCAF) and BFB; while small size SMEs are financed by PCAF and BFB. It is evidentially clear that from small sized SMEs, a significant share of their working capital is from non-bank financial institutions (BNFBI) or other sources (FB\_other). Large SMEs working capital, aside using their own internal fund, come the from banks. The pattern shows that small SMEs working capital is predominantly from informal sources as compared to the large size SMEs.

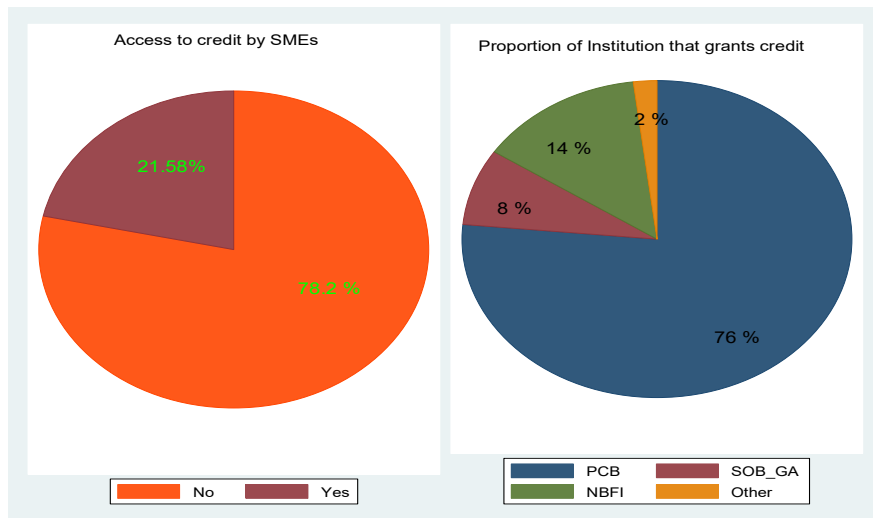


**Figure 1: Percentage of Working Capital across Firm Size**

*Source: Authors' computation from WES dataset for Ghana, 2013.*

### *Access to Finance by SMEs*

Figure 2a indicates that only 21.58 percent of SMEs have access to finance and 78.42 percent of SMEs do not have access to finance. This pattern obviously shows that SMEs do not have easily access to finance. It is noteworthy that out of the 21.58% of the SMEs that have access to credit, 76%, 14%, 8%, and 2% are from private commercial banks (PCB), non-bank financial institution) (NBF), state own banks or government agencies (SOB\_GA) and other sources respectively. The comparison in Figure 2a and 2b show that SMEs are hugely constrained with respect to access to finance, especially from formal financial services. Those who have access to finance (21.58 per cent) are from private sources where government finance remains limited. At times some SMEs do not even want to apply for credit as a result of varying reasons that stem from the financial institution's side. Here, government can step in to support SMEs who are neglected by the formal financial institution.

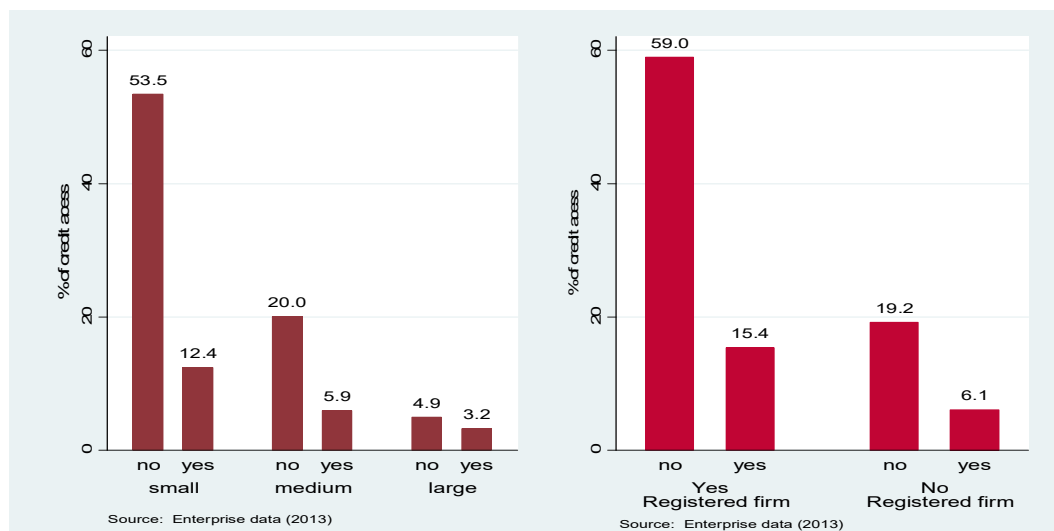


**Figure 2: Access to Finance by SMEs**

*Source: Authors' computation from WES dataset for Ghana, 2013*

**Proportion of Access to Credit by Firm Size and Registered Firm**

Figure 3a and 3b extend the issue of access to credit on size and registered firms. Small size firms are hardest hit by the access to finance problem compared to their counterparts. On the average, more than half (53.5 percent) of the firms facing access to finance constraint are small size firms. Figure 3a strikingly presents the proportion of firms with access to finance constraint across the firm size categories. Small, medium and large are 4.3, 3.4 and 1.5 times credit constraint than those with access to credit respectively. The result reinforces tragedies small size firms are facing. Small size SMEs are grappling with the access to credit problem. Reasons include: informational opacity, lack of trading history, the high risk of failure (Huyghebaert & Van de Gucht, 2007); poor management and accounting practices (Idowu, 2010; Huyghebaert & Van de Gucht, 2007; Cork & Nixon, 2000); among others. These factors set the SMEs and particularly the small size firms unlikely to meet the standards set by formal financial institutions.

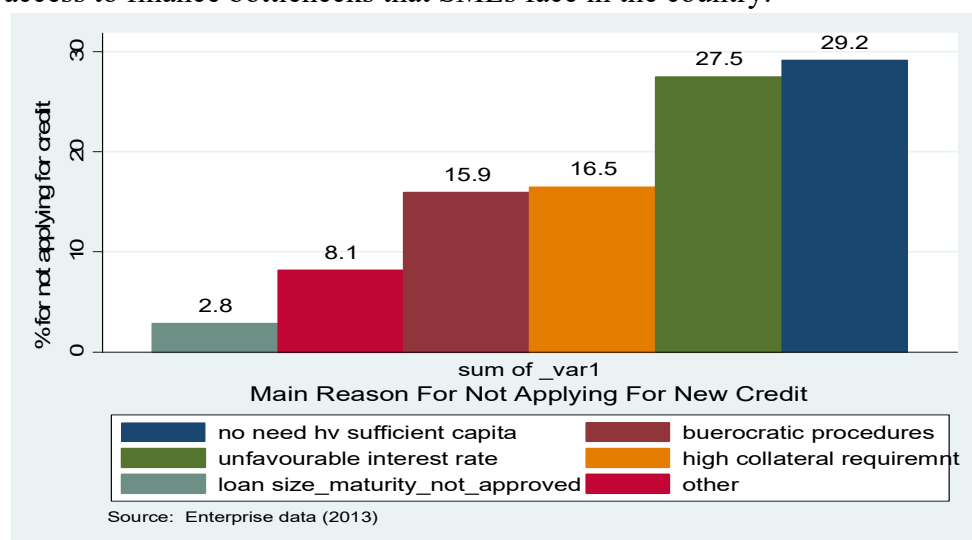


**Figure 3: Proportion of Access to Credit by Firm Size and Registered Firm**

*Source: Authors' computation from WES dataset for Ghana, 2013.*

### *Reasons SMEs do not apply for Credit*

Most SMEs are deterred from applying for credit for a number of reasons. Figure 4 shows the institutional factors that deter most SMEs from accessing credit. Out of the 78.2% who did not have access to credit depicted in Figure 2a, only 29.2 percent of them mentioned that they have sufficient capital and that they do not need credit. The remaining reasons for the SMEs not applying for credit (constituting 70.8 per cent) even though might be in need for credit are due to unfavorable interest rate, loan maturity not approved, bureaucratic procedures, high collateral requirement, among others. These factors restrain the SMEs from applying for credit from the financial institutions (Idowu, 2010; Quainoo, 2011). The reasons outlined by the SMEs show that the financial institutions are partly to be blamed for the SMEs financial constraints. This situation undoubtedly hampers SMEs operations and warrants government involvement in addressing access to finance bottlenecks that SMEs face in the country.

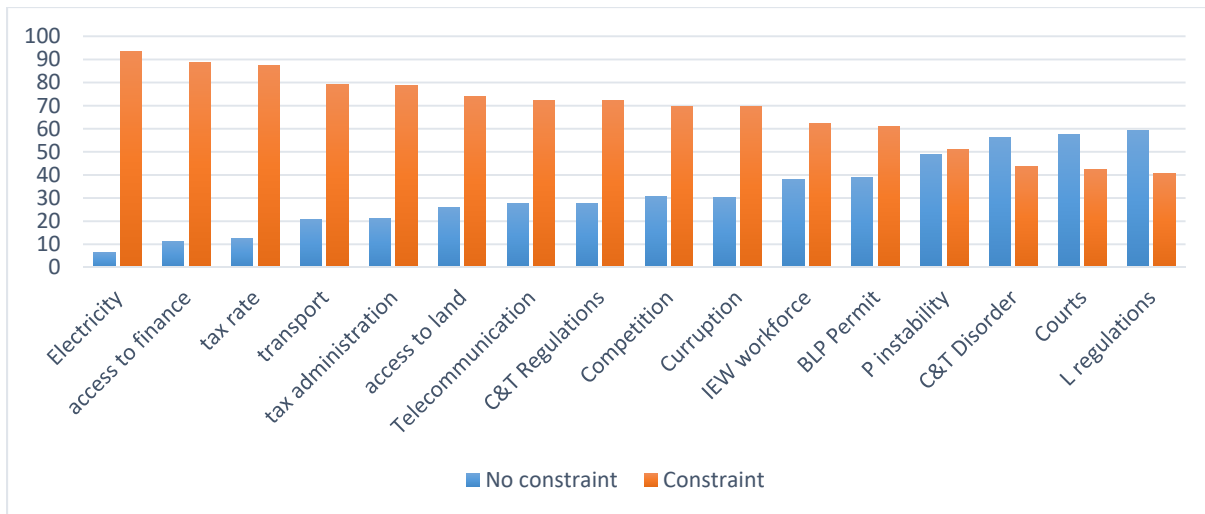


**Figure 4: Reasons for not Accessing Credit by SMEs**

*Source: Authors' computation from WES dataset for Ghana, 2013.*

### *Obstacles to SMEs in Ghana*

A cursory look at factors posing a challenge to the success of the SMEs indicates that access to finance and power supply are in the lead (WES dataset for Ghana, 2013). Figure 1, a description computed from the WES dataset for Ghana, 2013, presents the need for an investigation into the most pressing challenges the SMEs are facing in their operations in Ghana. Following a particular order, the pattern shows that electricity, access to finance, tax rate, and transportation, among others constitute a binding constraint for SMEs functioning. Aside these, regulations, courts, crime and theft (C&T) disorder and political instability are areas that are non-challenging to the SMEs growth (WES dataset for Ghana, 2013). The pattern further explains why this paper picks on access to credit and power outage as overarching issues that need policy makers attention relative to the other factors.

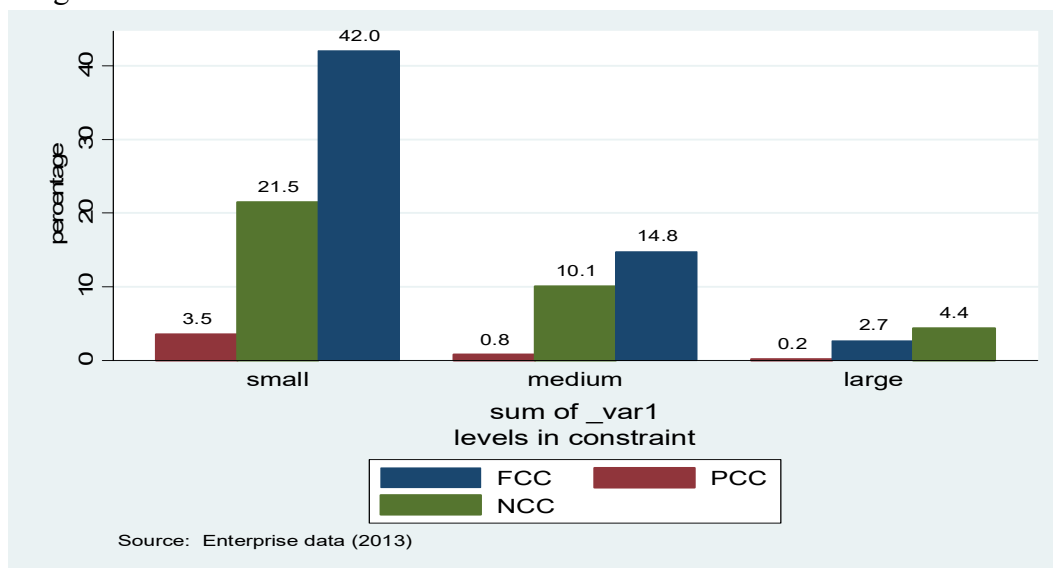


**Figure 5: Obstacles to SMEs in Ghana**

Source: Authors' computation from WES dataset for Ghana, 2013.

***Distribution of Levels of Financial Constraints across Firms based on Size and Sector of Operation***

Measuring financial constraints in levels, figure 6 depicts small size firms are severely constrained in credit as compared to the other categories. Large size firms are not credit constrained as depicted in figure 6.

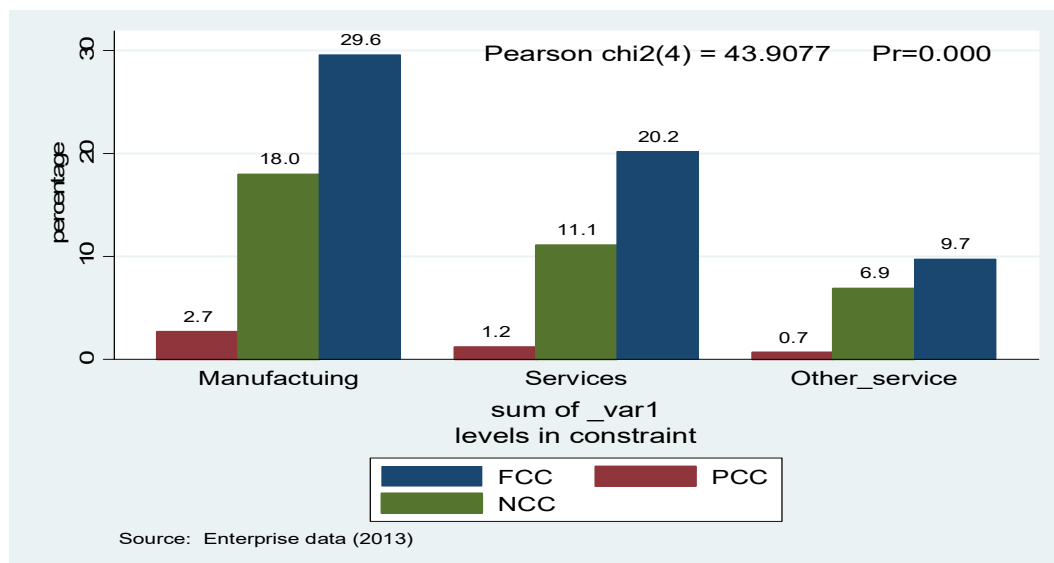


**Figure 6: Financial Constraint across Firm Size**

Source: Authors' computation from WES dataset for Ghana, 2013.

## Financial Constraint across Firm Sector of Operation

Based on figure 7, access to credit by the level of operation indicates that manufacturing sector is much more constrained with credit as compared to firms in the service sector. This could be attributed to the levels of economic activity, investments, and projects undertaken by firms operating in the sectors.



**Figure 7: Financial Constraint across Firm Sector of Operation**

Source: Authors' computation from WES dataset for Ghana, 2013.

## Regression Results and Discussions

### Logistic Regression Results on Access to Finance by SMEs

Table 2 presents logistic regression results on access to credit. Age, location, manager ownership, and size of firms contribute to SMEs access to finance. These variables show significant influences on SMEs access to credit. Age of firms indicates a positive association with access to credit. An additional one year increase in the age of the SME in causes 8 percent probability increase in the SMEs likelihood for accessing credit. Thus as the SME advances in age, there is the tendency for it to have easy access to credit from financial institutions. Besides, the age of firm in the industry exhibits a U-turn relationship as depicted by the square of age. The square of age significantly shows a negative relationship with access to credit. By implication, the likelihood for SMEs to access credit as they advance in age increases at a decreasing rate. A point will be reached where age will turn to negative factor justifying for credit access. This result is in agreement with the financial growth cycle paradigm proposed by Berger and Udell (1998). Furthermore, the findings by Klapper et al. (2010), Fatoki and Asah (2011), Beck and Cull (2014), and finally that of Quartey (2003) in Ghana lend credence to this assertion.

With regard to location, SMEs in the North, Takoradi, and Tema are about 8.1 and 28 percent times higher to access credit relative to SMEs at Accra. This is significant at 1 and 5 percent levels respectively. Apparently, SMEs located in Tema revealed a negative relationship of about 4.4 percent less likely to access credit relative to those in Accra. This is in contrast to what Fatoki and Asah (2011), and Abor (2008) found. Increasing managers share in asset by 1 percentage point increase the probability of access to credit by 3 percent holding all other factors constant. This is significant at 5 percent level. This implies that owners who are managers of an enterprise are more likely to be weighed as reliable by financial institutions. This influence the tendency for SMEs that

mangers own share to be financially unconstrained (Irwin & Scott, 2010; Cassar, 2004). Turning to the size of the SME, it is evident that large size SMEs are financial unconstrained. At 5 percent significance level, large SMEs are 18.8 percent more financial unconstrained relative small size SMEs holding all other factors constant. It is argued that size of the firm plays crucial role when an issue of access credit from financial institution in terms of financial decision (Cassar, 2004) is brought to fore. Confirming that indeed large firm stands tall for accessing credit from financial institutions and at an advantage of being favorites of the financial institutions than small size firms (Aryeetey et al. (1994) cited in Quainoo (2011); Cassar 2004).

**Table 2: Logit for Credit Constraint**

Explanatory Variable	Dependent Variable= Access to Credit			
	Coefficient	Margins (dy/dx)	Standard Error	P>z
Age of firm	0.054	0.008**	0.003	0.021
Agesq	-0.001	0.000**	0.000	0.031
<i>Sector(Reference = Manufacturing )</i>				
Services	0.055	0.008	0.034	0.825
Other service	0.514	0.080	0.049	0.104
<i>Legal status (Reference=Shareholding)</i>				
Sole Prop	-0.553	-0.076	0.213	0.720
Partnership	0.597	0.107	0.221	0.630
Limited partnership	0.528	0.093	0.210	0.658
<i>Location (Reference= Accra)</i>				
North	0.528	0.081*	0.046	0.080
Takoradi	1.499	0.280***	0.067	0.000
Tema	-0.375	-0.044	0.036	0.221
Corruption	-0.098	-0.014	0.034	0.675
Registered firm	0.074	0.011	0.038	0.779
Owner/manger	0.021	0.003**	0.001	0.023
Female manager	0.067	0.010	0.041	0.814
Manager experience	-0.010	-0.001	0.002	0.504
<i>Firm size (Refrence = small )</i>				
Medium	0.260	0.038	0.039	0.332
Large	1.082	0.188**	0.079	0.017
Sample Size (N)	618			
Link Test	Coefficient	Standard Error	P-Value	
y_hat	0.754	0.237	0.001	
y_hatsquare	-0.132	0.112	0.237	

The stars \*\*\*, \*\*and \*, show p values associated with correlation significant at and 1%, 5% and 10% respectively.

### ***Ordered Logistic Regression Results on Access to Credit***



Table 3 presents levels that exhibit the extent of constrained by the SMEs in terms of access to credit. From the ordered logit results, age, location, corruption, ownership, and size of firms are all factors that determine SMEs credit constraint in their operations. A cursory glance shows that at 5 percent significance level, one more increase in age of the SMEs contributes to the SMEs not being financial constrained. Likewise, this increase is not constant as SMEs advances in years. The SMEs likelihood of non-financial constraint as the enterprise ages increase at a decreasing rate. SMEs in the North, Takoradi, and Tema are at 36, 22 percent more likely to be credit constrained while SMEs located in Tema is 12.3 percent less likely to be credit constrained relative to SMEs in Accra. This is significant at 1 and 5 percent significance respectively. At 5 percent significance level, an SME with high corruption records is 10.4 percentage points more likely to be financially constrained relative to their counterparts without corruption record. As expected, large and medium firms are less financially constrained than small size firms, accentuating the need for measures to be put in place to ensure that small size SMEs are supported financially in their day-to-day activities for effective operations.

**Table 3: Ordered Logit for Financial Constraint by Firms**

Dependent Variable= Financial constraint				
Explanatory Variable	Coefficients	Margins (dy/dx)	Standard Error	P>z
Age firm	0.021	-0.004*	0.007	0.089
Agesq	0.001	0.000	0.000	0.246
<i>Sector (Ref=Manufacturing)</i>				
Services	-0.049	0.010	0.044	0.828
Other service	0.424	-0.085	0.055	0.119
<i>Legal status (Ref=Shareholding)</i>				
Sole Prop	-0.840	0.164	0.320	0.608
Partnership	0.099	-0.020	0.322	0.950
Limited partnership	0.282	-0.058	0.313	0.854
<i>Location (Ref=Accra)</i>				
North	0.995	-0.220***	0.056	0.000
Takoradi	1.525	-0.336***	0.072	0.000
Tema	-0.694	0.123**	0.047	0.009
Corruption	-0.528	0.104**	0.041	0.012
Registered firm	0.017	-0.003	0.048	0.944
Owner/Manager Share	0.023	-0.004**	0.002	0.017
Manager experience	-0.008	0.002	0.003	0.564
<i>Firm size (Ref= Small)</i>				
Medium	0.412	-0.083*	0.050	0.096
Large	1.541	-0.317***	0.085	0.000
Sample size (N)	519			
/cut1	2.279	1.699		
/cut2	2.478	1.700		

The stars \*\*\*, \*\*and \*, show p values associated with correlation significant at and 1%, 5% and 10% respectively.

## **Conclusions and Recommendations**

The study investigated the issue of SMEs financing gap or SMEs access to credit. The study resorted to logit and ordered logit in the analysis to examine the determinants of the SMEs financing gap at the extent to which SMEs in Ghana are constrained by access to credit. The paper discussed extensively the issue of SMEs financing or access to credit. It offered a broader array of investigation of factors influencing SMEs access to credit and essentially conclude that access to credit constraint plays a crucial role in stymieing the functioning of SMEs in Ghana. Consequently, SMEs efforts to expand, undertake new projects, increase investment, adopt new technology are severely hampered.

The paper looked beyond the issue as to whether or not SMEs have access to finance, moving from logistic analysis to ordered logistic analysis. The rationale being that access to finance alone is not enough to model SMEs financial constraint. Hence, the need to estimate access to finance in levels resulting in ordered logit analysis. Detailed information on firm characteristics such as firm location, age, size, ownership and other factors were all considered. The findings revealed that access to finance is significantly influenced by the age of the firm, location, experience of the manager and firms managed by owner (owner-manager) and size of the firm. Similarly, the ordered regression results reinforce the logit results that age, location, size of firm significantly influence SMEs access to finance constraint. Additionally, SMEs with corruption records are likely to face financial constraint. In short, small size SMEs are more prone to financial constraints as shown by both the descriptive and the regression results. This could be due to reasons such as inadequate managerial and operational experience, inadequate collateral, among others.

The foregoing issues bring to the fore the need for government to create the enabling environment for SMEs to function effectively and efficiently by improving SME access to financing, providing quality of infrastructure, access to market, access to modern technology and low investment in research and development in as asserted by KPMG in 2014. In addition, the government should provide regulatory, legal and financial frameworks conducive to entrepreneurship and SME start-up to grow and function. Any support for SMEs by way of policy interventions is worthwhile because of their immense contributions to the GDP growth of the economy.

## References

- Abdulsaleh, A. M., & Worthington, A. C. (2013). Small and medium-sized enterprises financing: A review of literature. *International Journal of Business and Management*, 8(14), 36.
- Abor, J. (2007). Corporate governance and financing decisions of Ghanaian listed firms. *Corporate Governance: The International Journal of Business in Society*, 7(1), 83–92.
- Abor, J. (2008). *Determinants of the capital structure of Ghanaian firms*. African Economic Research Consortium Nairobi.
- Abor, J., & Biekpe, N. (2007). Corporate governance, ownership structure and performance of SMEs in Ghana: implications for financing opportunities. *Corporate Governance: The International Journal of Business in Society*, 7(3), 288–300.
- Abor, J., & Quartey, P. (2010). Issues in SME development in Ghana and South Africa. *International Research Journal of Finance and Economics*, 39(6), 215–228.
- Ahiawodzi, A. K., & Adade, T. C. (2012). Access to credit and growth of small and medium scale enterprises in the Ho municipality of Ghana. *British Journal of Economics, Finance and Management Sciences*, 6(2), 34–51.
- Alina, B. (2011). Start-up financing sources: Does gender matter? Some evidence for EU and Romania. *THE ANNALS OF THE UNIVERSITY OF ORADEA*, 207.
- Ardic, O. P., Mylenko, N., & Saltane, V. (2012). Access to Finance by Small and Medium Enterprises: a Cross-Country Analysis with A New Data Set. *Pacific Economic Review*, 17(4), 491–513.
- Aterido, R., Beck, T., & Iacovone, L. (2013). Access to finance in sub-Saharan Africa: Is there a gender gap? *World Development*, 47, 102–120.
- Ayyagari, M., Beck, T., & Demirguc-Kunt, A. (2007). Small and medium enterprises across the globe. *Small Business Economics*, 29(4), 415–434.
- Ayyagari, M., Demirgüç-Kunt, A., & Maksimovic, V. (2008). How important are financing constraints? The role of finance in the business environment. *The World Bank Economic Review*, 22(3), 483–516.
- Ayyagari, M., Demirguc-Kunt, A., & Maksimovic, V. (2011). Small vs. young firms across the world: contribution to employment, job creation, and growth.

Beck, T., & Cull, R. (2014). Small-and medium-sized enterprise finance in Africa. *Global Economy and Development Program*, 16.

Beck, T., & Demirguc-Kunt, A. (2006). Small and medium-size enterprises: Access to finance as a growth constraint. *Journal of Banking & Finance*, 30(11), 2931–2943.

Beck, T., Demirgüç-Kunt, A., & Maksimovic, V. (2005). Financial and legal constraints to growth: Does firm size matter? *The Journal of Finance*, 60(1), 137–177.

Berger, A. N., & Udell, G. F. (1998). The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle. *Journal of Banking & Finance*, 22(6), 613–673.

Bolton, J. E., & Firms, C. of I. on S. (1971). *Small firms: report of the Committee of Inquiry on Small Firms. Cmnd 4811*.

Bouri, A., Breij, M., Diop, M., Kempner, R., Klinger, B., & Stevenson, K. (2011). Report on support to SMEs in developing countries through financial intermediaries. *Dalberg, November*.

Butler, A., & Cornaggia, J. (2009). Does access to external finance improve productivity. *Evidence from a Natural Experiment*.

Cassar, G. (2004). The financing of business start-ups. *Journal of Business Venturing*, 19(2), 261–283.

Dalberg, H. (2011). Report on support to SMEs in developing countries through financial intermediaries. *SME Briefing Paper*.

Dauda, S., & Nyarko, S. H. (2014). Chasing credit: the bane of small and medium scale enterprises in Assin North Municipality, Ghana. *International Journal of Entrepreneurship and Small Business*, 22(2), 218–230.

De Maeseneire, W., & Claeys, T. (2012). SMEs, foreign direct investment, and financial constraints: The case of Belgium. *International Business Review*, 21(3), 408–424.

Fatoki, O. O., & Asah, F. (2011). The impact of firm and entrepreneurial characteristics on access to debt finance by SMEs in King Williams' Town, South Africa. *International Journal of Business and Management*, 6(8), 170.

- Fatoki, O., & Odeyemi, A. (2010). The determinants of access to trade credit by new SMEs in South Africa. *African Journal of Business Management*, 4(13), 2763.
- Gompers, P., Kovner, A., Lerner, J., & Scharfstein, D. (2010). Performance persistence in entrepreneurship. *Journal of Financial Economics*, 96(1), 18–32.
- Hall, C., & others. (2002). Profile of SMEs and SME issues in East Asia. *The Role of SMEs in National Economies in East Asia*, 2, 21.
- Hallward-Driemeier, M., & Aterido, R. (2007). Impact of access to finance, corruption, and infrastructure on employment growth: Putting Africa in a global context. In *Committee of Donor Agencies for Small Enterprise Development Conference on Business Environment Reform in Africa, Accra*.
- Hallward-Driemeier, M., Wallsten, S., & Xu, L. C. (2006). Ownership, investment climate, and firm performance. *Economics of Transition*, 14(4), 629–647.
- Huyghebaert, N., & Van de Gucht, L. M. (2007). The determinants of financial structure: new insights from business start-ups. *European Financial Management*, 13(1), 101–133.
- Idowu, F. C. (2010). Impact of microfinance on small and medium-sized enterprises in Nigeria. In *International conference on Innovation and management*.
- Irwin, D., & Scott, J. M. (2010). Barriers faced by SMEs in raising bank finance. *International Journal of Entrepreneurial Behavior & Research*, 16(3), 245–259.
- Kuntchev, V., Ramalho, R., Rodriguez-Meza, J., & Yang, J. S. (2014). What have we learned from the enterprise surveys regarding access to credit by SMEs?, World Bank Policy Research Working Paper, No. 6670.
- La Rocca, M., La Rocca, T., & Cariola, A. (2011). Capital structure decisions during a firm's life cycle. *Small Business Economics*, 37(1), 107–130.
- MacKay, P., & Phillips, G. M. (2005). How does industry affect firm financial structure? *The Review of Financial Studies*, 18(4), 1433–1466.
- Mohammed, U. D., & Obeleagu-Nzelibe, C. G. (2014). Entrepreneurial skills and profitability of Small and Medium Enterprises (SMEs): Resource acquisition strategies for new ventures in Nigeria. In *Proceedings of 25th International Business Research Conference* (pp. 13–14).
- Myers, S. C. (1984). The capital structure puzzle. *The Journal of Finance*, 39(3), 574–592.

Nega, F. & Hussein, E. (2016). Small and Medium Enterprise Access to Finance in Ethiopia: Synthesis of Demand and Supply. The Horn Economic and Social Policy Institute (HESPI) Working Paper 01/16

Nkuah, J. K., Tanyeh, J. P., & Gaeten, K. (2013). Financing small and medium enterprises (SMEs) In Ghana: Challenges and determinants in accessing bank credit. *International Journal of Research in Social Sciences*, 2(3), 12–25.

Nofsinger, J. R., & Wang, W. (2011). Determinants of start-up firm external financing worldwide. *Journal of Banking & Finance*, 35(9), 2282–2294.

Ogboru, P. L. (2007). An evaluation of funding arrangements for small and medium enterprises in Nigeria. *St. Clements University, British, West Indies*.

Oum, S., Harvie, C., & Narjoko, D. (2011). Overview: Small and Medium Enterprises' (SMEs') Access to Finance in Selected East Asian Economies (1).

Quainoo, T. K. (2011a). Examining the impact of loans on SMEs in Ghana. *Unpublished MBA Research Thesis. Kwame Nkrumah University of Science and Technology*.

Quainoo, T. K. (2011b). *The Impact of Loans on SMEs in Ghana*. Masters Dissertation, Institute of Distance Learning, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.

Romano, C. A., Tanewski, G. A., & Smyrnios, K. X. (2001). Capital structure decision making: A model for family business. *Journal of Business Venturing*, 16(3), 285–310.

Scott, J. M., & Irwin, D. (2009). Discouraged advisees? The influence of gender, ethnicity, and education in the use of advice and finance by UK SMEs. *Environment and Planning C: Government and Policy*, 27(2), 230–245.

Storey, D. J. (1994). *Understanding the Small Business Sector* (Thomson Learning, London).

Woldie, A., Isaac Mwita, J., & Saidimu, J. (2012). Challenges of microfinance accessibility by SMEs in Tanzania. *Thunderbird International Business Review*, 54(4), 567–579.

Wright, R. E. (1995). Logistic regression.

## APPENDICE

### Summary Statistics

Variable	Observation	Mean	Std. Dev.	Min	Max
Access Credit	618	-	0.41	0	1
Age of SME (firm)	618	15.12	11.71	1	104
Agesq	618	365.45	763.99	1	3136
Sector	618	-	0.74	1	3
Legal Status	618	-	0.96	1	4
Location	618	-	1.19	1	4
Corruption	618	-	0.46	0	1
Registered Firm	618	-	0.44	1	2
Owner/Manager share	618	86.48	20.76	17	100
Female Manager	618	-	0.46	0	1
Manager experience	618	16.24	9.32	2	64
Firm size	618	-	0.64	1	3