Access to Formal Finance: Constraints for Small and Medium Manufacturing Firms in Kenya

Wilson Ng'ang'a

Kenya Institute for Public Policy
Research and Analysis

KIPPRA in Brief

The Kenya Institute for Public Policy Research and Analysis (KIPPRA) is an autonomous institute whose primary mission is to conduct public policy research leading to policy advice. KIPPRA's mission is to produce consistently high-quality analysis of key issues of public policy and to contribute to the achievement of national long-term development objectives by positively influencing the decision-making process. These goals are met through effective dissemination of recommendations resulting from analysis and by training policy analysts in the public sector. KIPPRA therefore produces a body of well-researched and documented information on public policy, and in the process assists in formulating long-term strategic perspectives. KIPPRA serves as a centralized source from which the Government and the private sector may obtain information and advice on public policy issues.

The Discussion Paper Series disseminates results and reflections from ongoing research activities of the Institute's programmes. The papers are internally refereed and are disseminated to inform and invoke debate on policy issues. Opinions expressed in the papers are entirely those of the authors and do not necessarily reflect the views of the Institute.

This paper is produced under the KIPPRA Young Professionals (YPs) programme. The programme targets young scholars from the public and private sector, who undertake an intensive one-year course on public policy research and analysis, and during which they write a research paper on a selected public policy issue, with supervision from senior researchers at the Institute.

Abstract

Small and Medium manufacturing firms are an integral sub-sector to the Kenyan economy. However, they have limited access to finance, which limits their growth. This paper examines the constraints of access to formal finance by small and medium manufacturing firms in Kenya. The study uses the World Bank (2013) Enterprise Survey data on Kenyan manufacturing firms and applies the Probit regressions technique. The study finds that registration of firms at the start of operation, as well as the experience of the manager of the firm significantly improves access to formal finance by the small and medium enterprise. However, the perception of the firm towards corruption, as well as informal competition, negatively and significantly worsens the possibility of access to finance by the SMEs.

Based on these findings, the study suggests that the government should simplify and computerize business procedures in order to curb corruption, introduce formal incentives that will entice firms to formalize, strengthen the Competition Authority to carry out advocacy on anti-competitive behaviours, and initiate joint public-private partnerships with manufacturing entrepreneurs on areas of financial management and managerial skills. The study also recommends further studies on practices of competitors from the informal sector, so as to inform specific policies. Such studies would highlight various malpractices in the informal firms, which are detrimental to the formal manufacturing SMEs in terms of accessing formal finance and their growth in general.

Abbreviations and Acronyms

ADB	African Development Bank
AEO	African Economic Outlook
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GEMs	Growth Enterprise Market Segment
GoK	Government of Kenya
IFC	International Financial Corporation
KNBS	Kenya National Bureau of Statistics
LDCs	Less Developed Countries
ML	Maximum Likelihood
NSE	Nairobi Stock Exchange
OECD	Organization for Economic Cooperation and Development
SMEs	Small and Medium Enterprises
UNDP	United Nation Development Programme
WBES	World Bank Enterprise Survey

Table of Contents

1.   Introduction

1.1   Background to the Study

The debate on access to formal finance by Small and Medium Enterprises (SMEs) is a policy concern. Within the context of this paper, access to finance implies absence of price and non-price barriers while SMEs implies enterprises with five but less than 100 employees. The SMEs definition based on the number of employees is due to availability of such data collected by the World Bank in 2013. However, Kenya and World Bank definitions slightly differ; whereas Kenya's definition has the minimum number of employees as 10 (Government of Kenya, 2012), the World Bank's definition has the minimum number of employees as 5 (World Bank, 2013). Nonetheless, the definition of SMEs in the manufacturing sector also takes into account the registered capital, investment in plant and machinery (Government of Kenya, 2012).

Despite the differences in definition, the relative importance of SMEs to various economies and Kenya in particular is significant. In high income countries, SMEs contribute over 55 per cent of Gross Domestic Product (GDP) and over 65 per cent of total employment, while in low income countries they contribute 60 per cent of formal employment (Ayyagari et al., 2011). In Kenya, SMEs contributed 18.4 per cent of Gross Domestic Product (GDP) and employed 5.1 million, representing 74 per cent of Kenyan labour force, in 2003 (Ong'olo and Awino, 2013). The sector has seen growth over time contributing 80 per cent of employment and about 20 per cent of the GDP in 2011 (ADB, 2012).

However, access to finance is a greater obstacle for SMEs in most economies, Kenya included. Globally, Stein et al (2010) estimates that about 45 to 55 per cent of formal SMEs have no access to finance at all and 21 to 24 per cent are underserved. In Kenya, SMEs' financing gap is estimated to average US$ 4.1 billion (IFC, 2013). Inadequate access to finance adversely affects the growth of SMEs than it does large firms (Beck et al., 2006) and is consistently and robustly linked to firm performance (Ayyagari et al., 2008b; Calice et al., 2012). In closing the finance gap, SMEs borrow from various credit markets; however, literature finds that financing from the formal financial system is associated with faster firm growth (Ayyagari et al., 2008a).

Studies have linked demand and supply constraints facing SMEs access to finance. However, there are very few studies linking environmental and institutional constraints facing manufacturing SMEs and access to formal finance. To fill this gap, we focus on access to formal finance, constraints for small and medium manufacturing firms in Kenya with more emphasis on registration of firms, and the perceptions of firms towards informal competition and corruption. We also

include the experience of SMEs' managers, and the size of firm. We use the unique Kenyan formal manufacturing firm-level data from the World Bank (2013).

Moreover, there are very few studies that directly linking Kenyan manufacturing SMEs and the constraints of access to finance. Closer studies include Kimuyu and Omiti (2000), focusing on institutional impediments to credit access by micro and small-scale enterprises in Kenya; Bigsten et al (2000) focusing on firm-level informality, ethnicity and productivity among small manufacturers in Kenya; and Bigsten et al (2010) focusing on the Kenyan manufacturing sector's industrialization strategy and constraints.

1.2   Overview of Manufacturing SMEs in Kenya

Over the years, the Kenyan government has recognized the potential of the manufacturing sector as the engine for growth, industrial transformation and employment creation. The Kenya Vision 2030 envisages that the manufacturing sector will contribute at least 10 per cent to the Gross Domestic Product (GDP), necessary to propel Kenya to be Africa's industrial hub (Government of Kenya, 2007).

However, the contribution of the manufacturing sector to GDP has stagnated at 10 per cent (Government of Kenya, 2013). Medium and large enterprises comprise 50 per cent of total firms but contribute 60 per cent of the sector's contribution to GDP, while micro and small enterprises which comprise 95 per cent of the total firms contribute less than 20 per cent to GDP (Government of Kenya, 2013). Moreover, the sector is ranked third and fourth best in terms of wage employment and payment by industry, respectively (KNBS, 2014). However, 80 per cent of employment opportunities created over the first Medium Term Plan (2007-2012) were from the informal sector.

To realize its ambition, the government targets strengthening manufacturing SMEs to become the key industries of the future by improving the sector's productivity and innovation. Thus, the Kenya Vision 2030 identifies several constraints facing Kenyan manufacturing SMEs, such as:

(a)   Diminished expected returns on investment, and lack of long term financing;

(b)   Unfavourable business environment, poor legal enforcement; and

(c)   Limited access to capital (Government of Kenya, 2007).

However, literature finds that access to finance is the most binding constraint (Ayyagari et al., 2008b), where approximately 43 per cent of Kenyan formal

manufacturing firms cite access to finance as "moderate' to "very severe" obstacle (World Bank, 2013).

Statistics indicate that formal and informal manufacturing firms constitute 11.3 and 88 per cent, respectively (Government of Kenya, 2006) of total manufacturing firms. More than 50 per cent are small and medium enterprises (SMEs), with only 5.8 per cent of them formalized (Government of Kenya, 2007; IFC, 2011).The high number of unregistered/informal firms is associated with negative externalities, among them anti-competitive practices. Indeed, practices of competitors in informal firms (hereafter informal competition) were ranked the worst obstacle by formal manufacturing firms with 59 per cent of firms indicating that they compete with unregistered/informal firms (World Bank, 2013).

Such a high level of informality generates negative externalities such as tax evasion, low productivity, property rights infringements, and anti-competitive practices that directly affect the performance of formal firms (OECD, 2009). This may explain the stagnation of the manufacturing sector's contribution to the GDP. Literature suggests that a high number of informal firms distorts competition (Gandelman et al., 2013), inhibits effectiveness of government policies (World Bank, 2012) and affects the growth of the manufacturing firms (Straub, 2005). Studies also show that informality affects economic growth, with a single standard deviation in the size of the informal sector leading to a negative and significant decline of 1 to 2 percentage points in the rate of GDP per capita growth (Ana et al., 2009).

Although there is no consensus on the definition of informality in economic literature (Nancy and Mbaye, 2014), the notion of informality most commonly used refers to any economic activity that is not fully compliant with laws and regulations (OECD, 2009). Assuming Kenya and Egypt share similar economic structures, then the three distinct forms of informal competition identified in Egypt in 2009 holds for Kenya as well, namely:

(a)   Informal operators who undercut formal firms' cost;

(b)   Formal operators who practice "in the shadow" economy; and

(c)   Privileged competitors who package inferior goods thus violating trademarks, patents or copyrights (World Bank, 2012).

In terms of unfavourable business environment, corruption is another emerging issue affecting manufacturing SMEs. Corruption commonly occurs when firms seek approvals and connections. As such, of the enterprises surveyed, 16.99 per cent of the manufacturing SMEs indicated that tax officials requested informal payments during inspection and 17.43 per cent were requested for informal

payment when applying for operating licences. In addition, more than 37 per cent of manufacturing SMEs indicated corruption is a "moderate" to "very severe" obstacle to their businesses (World Bank, 2013). Studies find that corruption increases the cost of doing business, and hurts SMEs more than large firms (Fiestas and Sinha, 2011). There is a strong link between informality and the incidence of corruption (World Bank, 2007).

1.3   Current Policies on SMEs Access to Finance

The Government of Kenya has initiated a number of policies targeting SMEs financing, such as:

• The Kenya Vision 2030, which acknowledges that SMEs are faced with inadequate access to finance;

• The yet to be operational Biashara Kenya, which will consolidate all enterprise funds, SME fund and provide one stop shop for SMEs;

• The 30 per cent procurement rule on Women, Youth and Persons with Disability; and

• Listing of SMEs in the Nairobi Stock Exchange (NSE), especially through the Growth Enterprise Market Segment (GEMS) initiatives that seek to increase SMEs trading in the stock market.

Despite the past and current government initiatives in ensuring increased supply of finance, inadequate access to finance by SMEs as an emerging issue gives credence to this study.

1.4   Problem Statement

Access to finance by manufacturing SMEs is necessary in improving diversification and competitiveness of Kenya's manufacturing sector. Since the early 1990s, Kenyan policy makers and entrepreneurs expected that market imperfections constraining SMEs' access to financing would ease with improvement in financial sector policies. However, inadequate access to finance for SMEs and high level of financial exclusion are emerging challenges identified in the Medium Term Plan II (Government of Kenya, 2013).

Indeed, despite government's efforts in increasing the supply of finance, most SMEs with growth potential still face inadequate access to formal finance. On average, 40 per cent of SMEs are underserved, while a further 30 per cent of them are completely un-served (IFC, 2011). Specifically, approximately 40 per cent of

firms in the manufacturing sector indicate access to finance as an obstacle (World Bank, 2013). This will be detrimental to the manufacturing sector's growth because access to finance negatively constrains the performance of firms (Bigsten et al., 2000; Bigsten et al., 2010). Thus, the high percentage of financially constrained manufacturing SMEs affects the rate of Kenya's industrial transformation, employment creation, and economic growth, thus hampering the attainment of the Vision 2030.

1.5   Objective

The overall objective of the study is to examine the access to formal finance constraints on small and medium manufacturing firms in Kenya.

1.5.1   Specific Objectives

The specific objectives of this study are to:

(i)   Establish the effects of firm size and top managers' experience on manufacturing SMEs access to formal finance;

(ii)   Establish the effects of firm registration on manufacturing SMEs' access to formal finance;

(iii)   Establish the effects of informal competition on manufacturing SMEs' access to formal finance; and

(iv)   Establish the effects of corruption on manufacturing SMEs' access to formal finance.

1.6   Justification of the Study

To ensure consistent financial support towards high growth SMEs, there is need to address the financing obstacles faced by manufacturing SMEs. Thus, understanding the factors constraining manufacturing SMEs' access to formal finance is critical in creating a vibrant and diversified manufacturing sector, attainment of Kenya's industrial transformation agenda, creation of employment for the youth, and robust economic growth as envisaged in the Kenya Vision 2030. Moreover, policy makers will be able to improve the business environment and strengthen manufacturing SMEs to be the industries of tomorrow.

This paper supplements current government's efforts aimed at addressing constraints facing manufacturing SMEs' access to finance. Such initiatives include Biashara Kenya, the listing of SMEs in the Nairobi Stock Exchange, and

the 30 per cent procurement directive. It will also be essential to private sector development as most of the manufacturing firms are privately-owned and operated (Government of Kenya, 2007). Moreover, the study will bridge the literature gap as there are limited studies that focus on firm registration, informal competition and corruption to explain manufacturing SMEs' access to formal financing.

2.   Literature Review

2.1   Theoretical Literature

The main theoretical literature related to firms' access to finance include: Capital Structure theory by Modigliani and Miller (1958); Information Asymmetry theory by Stiglitz and Weiss, (1981); and the Pecking Order theory by Myers and Majluf (1984).

The Capital Structure theory suggests that the value of the firm is irrelevant in its financing decisions in a perfect capital market. It is inapplicable to manufacturing SMEs' access to finance as it analyzes the financial behaviour of firms based on the absence of capital market inefficiencies such as bankruptcy or information asymmetry problems.

Thus, this paper is based on Julien (2009) findings that information asymmetry, which cannot be offset by adequate loan securitization, is one of the main stumbling blocks to SMEs' access to finance in Sub-Saharan Africa. Information Asymmetry theory suggests that due to market imperfections, lenders can ration credit based on observational groups of identical borrowers; as such firms are classified based on the risk they pose (Gandelman et al., 2013). It affects manufacturing SMEs access to finance through two channels: increase in the transaction costs; and inaccurate risk assessments (Julien, 2009).

Due to information asymmetry problem, Holf and Stiglitz (1990) suggest that lenders are faced with three main problems:

(a)   The problem of acquiring information regarding the characteristics of loan applicants and the actions of borrowers (screening problem);

(b)   The incentives problem; and

(c)   Enforcement problems.

To counter these problems, banks have adopted relationship lending, which includes:

(a)   Demand for collateral;

(b)   Informational search and monitoring; and

(c)   Relationship banking.

The Pecking Order theory suggests that there exists a fixed order in how firms prefer to finance their activities subject to information costs; with internally generated funds mostly preferred followed by low-risk short-term debts, while new capital is least preferred due to higher information costs associated with it (Myers and Majluf, 1984). According to Lopez-Garcia and Sogorb-Mira (2008),

the pecking order pattern is applicable to manufacturing SMEs in two ways:

(a)   The opaqueness of manufacturing SMEs and asymmetrical information leads to higher information costs and subsequent high costs of financing.

(b)   SMEs' management tends to maximize the control of their firm, preferring the internal generated funds

2.2   Empirical Literature

Studies find that firm size and institutional development amongst other variables are the most significant financing constraints (Beck et al., 2006; Kermani and Afandi, 2014). Specifically, studies suggest that firm size is inversely correlated with financing constraints (Beck et al., (2006). Cassar (2004) suggests that it is difficult for SMEs to deal with information asymmetry as opposed to large firms, thus resulting in less debt capital offered to them. This arises because SMES are likely to have fewer assets to pledge as collateral, are more informational opaque, and lenders perceive the profitability of lending low amount is likely to be lower due to risk and transaction costs involved (Fiestas and Sinha, 2011).

Utilizing the Binary Probit Maximum Likelihood estimation, the Kermani and Afandi (2014) study ascertained what prevents firms from accessing finance amongst developed and Less Developed Countries (LDCs). They used firm size dummies as defined by the World Bank Enterprise Survey (WBES) where small firms have 5-19 employees, medium firms have 20-99 and large firms have more than 99 employees. In addition, they constructed a binary dependent variable from the various firm responses to the question "How much is an obstacle: access to financing". The firm responses were expected to be zero "no obstacle", one "minor obstacle", two "moderate obstacle", three "major obstacle", and four "very severe obstacle". They found that firm size is amongst the most significant determinants of access to finance for firms in LDCs.

The extensive and sensitive information requirements by banks is a constraint particularly for SMEs, as absence of sufficient information leads to information asymmetry and may jeopardize access to credit finance (Sarapaivanich and Kotey, 2006). As such, firm registration, managers' experience, and lenders' perceptions towards firms to be prone to practices of competitors from the informal sector may signal vital information about the borrowing firm. In terms of practices of competitors in informal firms, studies find a negative association between firm access to and use of finance in sectors prone to informal competitors (Straub, 2005; Dabla and Inchauste, 2008; Gati et al., 2008; Gandelman et al., 2013). According to Gandelman et al (2013), all else equal, if lenders conjecture that firms operating in sectors with a higher proportion of informal firms face more

unfair competition, they can differentially restrict the financing provided to firms in such sectors due to information asymmetry.

Moreover, Fiestas and Sinha (2011) suggest that the attitudes of entrepreneurs towards losing control over their firms may make them unwilling to borrow or to allow third party equity into their businesses. In addition, lenders may have incomplete information regarding the underlying quality of the project and the top management of the SMEs, resulting in adverse selection problem (Stiglitz and Weiss, 1981), or the top management of SMEs may fail to perform to their full capabilities, resulting in moral hazard problem. Moral hazard arises because it is costly for lenders to effectively monitor the projects of small firms, thus resulting in equilibrium credit rationing and a shortfall in debt provision (Binks and Ennew, 1996).

On firm formality, studies find conflicting findings with regard to firm formalization and access to finance. McKenzie et al (2007) suggest that although there is scanty evidence linking firm formalization and access to finance, formalization can potentially increase firm's access to credit markets by increasing its customer base. Other studies find that firm formality increases access to formal finance, which offer capital at more attractive rates (Dabla and Inchauste, 2008; Medevdev and Oviedo, 2013). However, a study in Sri-Lanka by De Mel et al (2012) finds that firms that formalize are not any more likely to get a business bank account or a business loan while, in Bolivia, McKenzie and Sakho (2010) find no impact on the likelihood of a bank loan.

To increase firms' registration, it is evidenced that countries that implement policies to reduce tax, regulatory constraints and improve their legal environment reduce the incentives for firms to operate informally, both by increasing the benefits of accessing formal credit markets and by reducing the costs of doing so (Beck et al., 2010; Kermani and Afandi, 2014) amongst other studies. Perry et al (2007) suggest that governments should ensure that procurement policies create demand for goods and services produced by informal enterprises, as this will encourage them to formalize. However, surveys of informality in Mexico, Guatemala and Dominican Republic found that firms mainly fail to register due to lack of formal benefits contrary to high cost of registration as the main reason for remaining informal (Perry et al., 2007; McKenzie et al., 2007).

In their study on bank financing for SMEs, Beck et al (2010) conclude that an enabling environment is more important than both supply and demand side factors in shaping bank financing to SMEs, concluding that the difference in pricing of SMEs loans is largely driven by institutional and legal environment. It is evidenced that SMEs pay more in bribes than do larger firms, especially where

bribes are a fixed sum (Aterido et al., 2007) as they are easier targets for rent seeking especially if they have not fulfilled the legal requirements or are operating semi-formally (Fiestas and Sinha, 2011). Studies find a significant link between corruption and firms' access to formal finance constraints. For example, Dabla and Inchauste (2008) finds that firms that frequently give bribes to deal with taxes and regulations have a 5 percent lower probability of using bank credit than firms that report that bribing is not common.

A more direct policy to curb corruption adopted by most economies is the formation of anti-corruption commissions. However, lack of such commissions' response to national consensus and broad domestic political goodwill leads to consistent failures to meet their mandate (Heilbrunn, 2004). However, greater transparency and accountability, simplification of administrative procedures and public administration merit-based human resource management are alternative and proven ways of curbing corruption (Fiestas and Sinha, 2011). Fiestas and Sinha (2011) suggest that Senegal's customs administration implemented such reforms, resulting in decreased level of fraud by 85 per cent between 1990 and 1995.

Studies in Sub-Saharan Africa

Within the East Africa region, and using firm-level data, Ojah et al (2010) find robust evidence that external finance channels enhance firms' decision to invest in fixed capital, while a study in Kenya by Nkurunziza (2010) using macroeconomic data from the manufacturing sector found that firms using external finance grow faster than those not using external finance. Similarly, studies by Bigsten et al (2000) and Bigsten et al (2010) show that financial access constraints affect firms' investment, productivity and competitiveness.

A study by Kira (2013) on the determinants of SMEs' access to finance using ordered Probit and multivariate analysis on firm level data from Kenya, Uganda and Tanzania found that firms possessing SME characteristics especially those in the manufacturing sector are mostly credit constrained than do large firms. Kira (2013) used general financing constraint as the dependent variable derived from the firm responses; a vector of firm characteristic dummies, which included firm size and a vector of country dummies such as corruption and interest rates.

In Tanzania, Kira and He (2012) used applied logistic regression in analyzing firm-level data. They used firm access to loan facility as the dependent variable, and they found that firms' size and business information, among other variables, influence their firm access to debt finance. Similarly, the study by Bigstein et al (2000) in Kenya found that small firms have much less in terms of access to credit

than larger firms, while Aryeetey et al (1994) in Ghana and Ghamire et al (2013) in Cote d'Ivoire found a positive relationship between the size of the firm and access to bank finance. In terms of top manager experience in years, Kimuyu and Omiti (2000) found that the age and number of years an entrepreneur has been in business is an important factor in accessing bank credit.

With regard to firms' perception towards informal competitors, corruption and political instability, there are limited studies in Sub-Saharan Africa to be reviewed. Nonetheless, a study by Fisman and Svensson (2007) on Ugandan firms found that a one percentage point increase in the bribery rate reduces the growth of a firm by three percentage points. Similarly, studies by Bigsten et al (2000), and Kimuyu and Omiti (2000) in Kenya found a negative and significant relationship between firm-level informality and access to finance.

2.3   Overview of Literature

Both theoretical and empirical literature provide consensus on the role of information asymmetry in explaining the constraints of firms' access to formal finance. The literature reviewed finds firm characteristics and country-specific characteristics to be significant in explaining firms' access to finance. In both country-specific and cross-country studies where firm-level data is available, studies have used Maximum Likelihood (ML) estimations techniques (logistic, probit or ordered probit) to estimate the sample data.

However, in Sub-Saharan Africa and in most country-level studies reviewed, the studies focus on firm characteristics to explain firm access to financing, with limited attention on institutions and the business environment. This study bridges the gap by using firms' perception towards informal competition and corruption to explain what influences Kenyan manufacturing SMEs to access formal finance.

3.   Methodology

3.1   Theoretical Framework

We use the Pecking Order and Information Asymmetry theories to explain manufacturing SMEs' access to finance in Kenya. The Pecking Order theory stipulates that firms have a fixed order when it comes to financing their activities subject to information costs, with new capital (external finance) least preferred due to higher information costs associated with it (Myers and Majluf, 1984). Since the paper is focusing on new capital, we suggest that corruption distorts the environment, and firms operate through increased business costs. This will in turn force manufacturing SMEs to choose how to finance their activities as business environment worsens.

Evidence shows that SMEs are prone to informational opaqueness, which affects their ability to access external finance. Thus, we suggest that firm formalization is vital in reducing the information asymmetry barriers. Moreover, negative externalities associated with informal competition affects the performance of formal firms. As such, firms operating in informal competitive prone areas will tend to prefer internally generated funds or short term debts as managers may fear sharing their intellectual rights to lenders for fear of losing the know-how to informal competitors.

3.2   Conceptual Framework

We derive a conceptual framework explaining the relationship between the explanatory variables and manufacturing SMEs' access to financing based on the Pecking Order theory. The framework is borrowed from Sheng et al (2011), with slight modification as shown in Figure 1. Sheng et al (2011) framework focused on SMEs character in loan approval. We thus modify the framework to include firms' size, managers' experience, firm registration and firms' perception towards informal competition and corruption.

Since lenders want to avoid high costs of information opaqueness associated with SMEs, we argue that firm size and formalization are vital in determining the ability of firms to access finance. Firm size is directly related to the type of assets at its disposal, and hence lenders would easily lend to firms with a large asset base while firm registration indicates the openness of the firm to laws and regulations. How a firm-owner perceives informal competition and corruption describes the institutions and business environment where manufacturing SMEs operate. These factors are associated with increased business costs, thus making manufacturing firms either to choose internally generated earnings or short-term debts.

Figure 3.1: Conceptual framework: Constraints for manufacturing SMEs access to formal finance
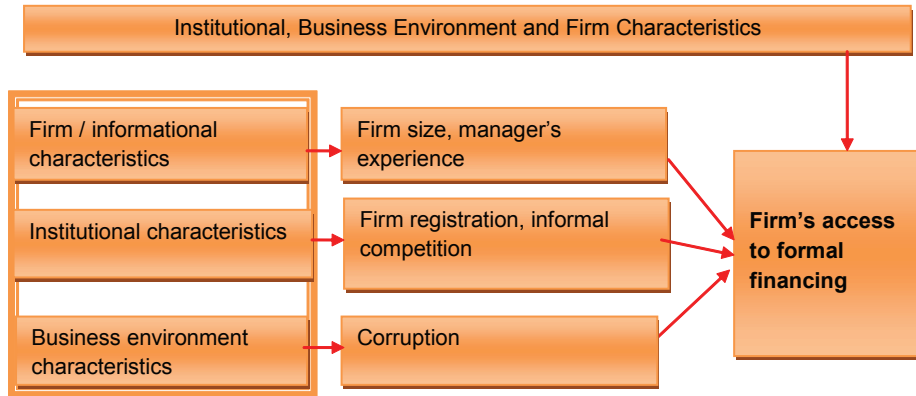
Sources: Adopted from Sheng et al (2011) with modification

3.3   Analytical Framework

Given that firms' access to financing is a binary dependent variable, a binary probit maximum likelihood estimation technique is adopted. The choice of study methodology is inspired by studies such as Kira (2012), Ghamire and Abo (2013), and Kermani et al (2014) whose focus was on SMEs access to financing constraints.

Practically, manufacturing SMEs' access to finance is unobservable, thus we assume that the observable outcomes of the binary choice problem can be represented by a binary indicator variable y_i that is related to the unobserved dependent variable y_i^* such that:

$y_i=1: If\ y_i^*>0.$ that is firm *i* indicate access to formal finance is an obstacle

$y_i=0:\ If\ y_i^* \leq 0.$ that is firm *i* indicate access to formal finance is not an obstacle

We also let x_{ij} denote vector of explanatory variables (as discussed below). We thus make use of a Probit model by defining y_i^* as the underlying response variable for access to finance (loan/line of credit) as follows:

$$y_i^*=\beta_{ij} x_i+\mu_i \text{...(1)}$$

Where μ_i=normally distributed disturbance error term for observation i and $\beta_j=\beta_1,..\beta_j=$ Regression coefficients

The Probit model equation (1) above analytically represents binomial probabilities in terms of standard normal cumulative density functions such that:

$$Pr(y=1)=Pr\ (y^*>0)=\rho(x_i\,\beta_i) \dotfill (2)$$

$$Pr(y=0)=Pr\ (y^*\leq 0)=1-\rho(x_i\,\beta_i) \dotfill (3)$$

Where y is as defined above and $x_i=x_1,x_2.....xn$. Since our explanatory variables (x_i) are indicator variables, we obtain the marginal probability effect of x_i (partial effect of each explanatory variable on the probability that observed dependent variable $y_i=1$) when:

1. the value of $\rho(x_i\beta)$ when $x_{ij}=1$ and the other explanatory variables equals the same fixed values; minus,

2. the value of $\rho(x_i\beta)$ when $x_{ij}=0$ and the other explanatory variables equals the same fixed values

Thus, the marginal probability of $x_i=\rho(x_{1i}\,\beta) - \rho(x_{0i}\,\beta)$ \dotfill (4)

3.4   Econometric Model Specification

Using the analytical framework derived above, we expand equation (1) above to include our variables of interest, such that the firm's underlying access to financing equation to be estimated is specified below:

$$y_i^*=\beta_0+\beta_1 firm+\beta_2\,s_{inf}+\beta_3\,mexp+\beta_4\,corpt+\beta_5 f\_reg+\mu i \dotfill (5)$$

Where:

y_i^*= A real-valued index variable of observation ithat is a latent

firm=Firm size

s_{inf}=Informal competition

mexp=Managers' experience in the sector

Corpt= Corruption

f_reg= Firm registration at start of operation

μ_i and $\beta_0..\beta_4$= As defined above

3.5   Data Source and Definition of Variables

This study uses the Kenyan World Bank (2013) Enterprise Survey - WBES firm-level data to ascertain the constraints for manufacturing SMEs' access to formal finance. We focus on firm size and registration, specific survey questions on access to finance, firms' perceptions towards informal competition, managers' experience and corruption.

The Survey had a sample population of 713 Kenyan manufacturing firms, where small firms were 332 while medium firms were 206. The survey's common strata were the manufacturing firms, firm size and geographical location (Kisumu, Nairobi and Mombasa). Theoretically, we expect firm size, firm registration and managers' experience to have an inverse relationship with access to financing obstacles, while practices of informal competitors and corruption to have a positive relationship. The variables under consideration are discussed below.

Dependent Variable

Access to Finance

Using the finance section of the 2013 WBES, the study assumes that the dependent variable (access to finance) reflects the financing obstacles facing firms in Kenya. The variable is obtained from the World Bank survey question: "Is access to financing, which includes availability and cost an obstacle to the current operations of this establishment?" Firms responses ranged from: 0) No Obstacle; 1) A Minor Obstacle; 2) A Moderate Obstacle; 3) A Major Obstacle or, 4) A Very Severe Obstacle.

Based on firms' responses, the study constructs a binary dependent variable, which is assigned one (1) if a firm considers access to financing as "moderate", "major" or "very severe" obstacle and zero (0) otherwise. This follows other studies such as Kermani and Afandi (2014), Kira (2013) and Dabla and Junko (2008). Unfortunately for this study, the WBES did not ask the total loan/credit requested and the percentage the firm received, as such data provides vital information on firm access to finance.

Independent Variables

Informal Competition

The use of informal competition as a dependent variable follows Julia and Wacker (2013), who suggest that competition by the unregistered/informal firms provides enriching additional insights on the multidimensional phenomenon of informality and can be used as a more precise measure of informality as the surveyed formal firms know their markets and competitors best. We construct informal competition as a factor variable which takes the value 1 if a firm considers informal competition to be "no" obstacle or "minor" obstacle, the value 2 if a firm considers such practices to be "moderate" and the value 3 if a firm considers informal competition as "major" or "very severe" obstacle. We expect the increase in informal competition to worsen a firm's probability of accessing finance.

We hypothesize that H1: manufacturing SMEs that do cite informal competition is an obstacle have more access to formal financing.

Firm Size

This is a categorical variable indicating whether the firm is small sized, such that it has five (5) but less or equal to nineteen (19) or medium sized with 20 to 99 employees. It takes the value 1 if a firm is large, the value 2 if a firm is medium and value 3 if a firm is small. We expect access to financing and firm size to be inversely related, such that the probability of a large firm indicating access to financing is an obstacle is lower compared to small or medium sized firms.

Thus we hypothesize that H1: manufacturing SMEs have more access to formal financing than do the large manufacturing firms.

Firm Registration (Formalization)

This is a binary variable included to account for firm transparency. The variable whose proxy is firms registered takes the value of 1 if the firm was formally registered when it started operating and zero otherwise. We avoid using firms whose financial accounts are externally audited to proxy for firm formalization as there could be a self-selection problem in semi-formal firms using external auditors. Brown et al (2007) suggest that a firm's transparency does not only influence its access to bank credit but also the incentive to operate informally.

We hypothesize that H1: firms registered when they started operation are less likely to report that access to financing is an obstacle.

Managers' Experience in the Sector

This is a continuous variable included to capture the information characteristics that banks solicit before financing firms. It is obtained from the question: "how many years of experience working in this sector does the top manager have?"

This study suggests that the higher the top manager's experience, the lesser the firm would cite access to finance is an obstacle. We assume that managers' experience comes with improved financial, managerial skills and corporate governance, which lenders seek for in manufacturing SMEs.

We hypothesize that H1: firms with top managers having many years of experience are less likely to report that access to financing is an obstacle.

Corruption

Using the firms' responses to this question: "How much of an obstacle is corruption to your business?", we construct a categorical variable that we assign the value 1 if a firm considers corruption to be "no" or "minor" obstacle, the value 2 if a firm considers corruption to be "moderate" and the value 3 if a firm considers corruption as "major" or "very severe" obstacle. This study suggests that corruption discourages firms from investing, and it also increases the cost of doing business, which affects firms' ability to access finance.

We hypothesize that H1: firms that do cite corruption is an obstacle have more access to formal financing.

4.   Results and Discussions

4.1   Descriptive Analysis

Table 4.1 shows a summary of the variables under study, where all variables have 388 observations. From the table, access to finance is a binary variable with a mean of 0.4588 and standard deviation of 0.4989. This implies that 45.88 per cent of the firms would indicate access to finance is an obstacle. The minimum value is 0 (no obstacle), while the maximum is 1 (obstacle). Registered firms have a mean of 0.92 with a minimum value of 0 (not registered) and maximum of 1 (registered). Managers' experience has a mean of 20.51 years with a minimum value of 1 year and maximum of 50 years. The other variables: firm size, corruption, and informal competition have a mean of 2.08, 1.80 and 1.81, respectively, with minimum value of 1 indicating "no" obstacle and maximum of 3 for obstacle.

Table 4.1: Summary statistics of variables used in the probit regression

Variable	Mean	Std. Dev	Minimum	Maximum
Financial access	0. 4588	0.4989	0	1
Firm registration	0.9201	0.2715	0	1
Firm size	2.0773	0.8000	1	3
Corruption	1.7990	0.8358	1	3
Managers' experience	20.5129	10.7553	1	50
Informal competition	1.8067	0.8467	1	3

Source: Author's computation using the WBES (2013) data

We also tabulated firms' response to the question: "how much is an obstacle: access to finance" against our explanatory variables firm size, informal competition and managers' experience. The descriptive statistics indicate the proportions of small, medium and large firms that indicated access to finance is an obstacle were: 17.53, 17.58, and 10.57 percent respectively. This conforms to literature findings that SMEs are access constrained than do large firms. Similarly, when we tabulate managers' experience against access to finance, the number of firms that report access to finance is less of an obstacle as managers' experience increases.

Moreover, 30.41 per cent of firms consider both access to finance and practices of competitors as not an obstacle. However, the proportion of firms that indicates access to finance is not an obstacle declines from 13.66 per cent to 10.05 per cent

as practices of informal competitors worsen from moderate to severe obstacle, respectively. When firms cite access to finance is an obstacle, such firms' access to finance worsens as practices of informal competitors change from no obstacle (16.24%) to severe obstacle (17.27%). Similarly, tabulating firms' responses between access to finance and how firms perceive corruption yield similar trends as those of informal competition. This implies that informal competition and corruption influences firms' ability to access financing.

4.2   Regression Results

Before any estimation, the variables were tested for correlation and the results are tabulated in Appendix Table 1. The results show no likelihood of multicollinearity. We then empirically estimated all the objectives using the derived empirical model equation (5) in Section 3, Sub-section 3.4. The results of average marginal effects after probit at levels are tabulated in Table 4.2. All the variables have the expected prior signs. The predicted probability when y=1 is 45.88 per cent and 54.12 per cent when y=0. This implies that our model is able to explain 45.88 per cent of manufacturing SMEs' access to financing constraints.

Effects of managers' experience on firm access to formal finance

The results show that holding all other variables as they are, a change in top manager experience by one year will on average decrease the predicted probability of a firm indicating access to financing is an obstacle by 0.62 per cent. The average change in probability is significant at five per cent. This suggests that manufacturing firms whose owner managers have many years of experience in the manufacturing sector have greater access to finance compared to firms with less experienced top managers. This can be associated with long term relationship building between top managers and lenders, or managers have gained experience in firms' financial matters.

Effects of firm registration on firm access to formal finance

Holding all other factors constant, a change in firm status from unregistered to registered decreases the average predicted probability of a firm indicating access to finance is a constraint by 22.13 per cent. The change in average probabilities is negative and highly significant at 5 per cent. This implies that manufacturing SMEs' registration at the start of doing business eases firms' access to finance obstacles.

Effects of firm size on firm access to formal finance

Literature shows that firm size is a significant determinant of firm access to financing. Our results show that, on average, a change of firm status from large to medium or from large to small, holding all other variables constant, will increase the probability of the firm indicating access to finance is a constraint by approximately 6.5 and 6.2 per cent, respectively. However, the results are insignificant at levels although they reveal that access to formal finance becomes more probable as the size of the enterprises increases. The insignificancy may also indicate the importance of informal financing to manufacturing SMEs.

Effects of corruption on firm access to formal finance

Holding all other variables as they are, our results show that a change in firm perception that corruption is not an obstacle to "moderate" or "major" obstacle increases the average predicted probability of a firm citing access to financing is an obstacle by 19.56 and 18.66 percent, respectively. The average changes in probabilities for both categories are highly significant at 1 percent, respectively. This implies that if a firm perception towards corruption changes slightly from no obstacle to "moderate" or "major" obstacles, it worsens the firm ability to access financing. Evidence shows that corruption mostly affects SMEs as it increases the cost of doing business as well as discouraging firms from investing.

Effects of informal competition on firm access to formal finance

Holding all factors constant, if the effect of a change in firm perception that informal competition is not an obstacle to a "moderate" or "major" obstacle will increase the average probability of a firm indicating access to financing is an obstacle by 10.2 and 21.96 percent, respectively. The change in average probability from not an obstacle to "major" obstacle is positive and highly significant at 1 percent. This implies that access to financing constraints increase as informal competition increases in the manufacturing sector.

Table 4.2: Average marginal effects after Probit regressions at levels

Dependent Variable: Access to Finance			
Observation: 461			
Variable	**Coefficient**	**z**	**P>|z|**
Manager experience	-0.0062 (0.0022)	-2.80	0.005**
Firm registration	0.2213 (0.0879)	-2.52	0.015**
Firm size			
Medium firms	0.0651(0.0607)	1.07	0.284
Small firms	0.0620 (0.0603)	1.03	0.304
Corruption			
Moderate obstacle	0.1956 (0.0583)	3.36	0.001*
Major obstacle	0.1866 (0.0606)	3.08	0.002*
Informal competition			
Moderate obstacle	0.1017(0.0591)	1.72	0.085
Major obstacle	0.2197 (0.0605)	3.63	0.000*
Constant	0.1718	0.56	0.576
Log likelihood	-241.2890	Pseudo R²	0.0984
LR chi-square(10)	52.66	Prob>chi2	0.0000
Observations	388		

Note: */**/*** indicates significance at 1%, 5% and 10%, respectively

Base levels: Firm size: large; corruption and informal competition: firms indicating no obstacle.

Standard errors in parenthesis

Source: Author's computation using the WBES 2013 data

5.   Conclusions and Policy Recommendations

5.1   Conclusions

To attain the Vision 2030 dream of a competitive and robust manufacturing sector, easing firms' access to finance is a prerequisite especially due to the effect it has on private sector development. This study empirically explores how managers' experience, firm size, firm registration, corruption, and informal competition constraints manufacturing SMEs' access to finance in Kenya. The study used the WBES 2013 data and found that informal competition and corruption are inversely related with manufacturing SMEs' access to financing. However, growth in firm size, managers' experience and firm registration positively influences manufacturing SMEs access to financing.

In conclusion, holding all factors constant, an increase in either informal competitors practices or corruption will on average increase the probability of a firm indicating access to finance is an obstacle and vice versa. Moreover, holding all factors constant, firm registration, growth of firm size or one year increase in managers' experience in the manufacturing sector will, on average, decrease the number of firms indicating that access to finance is an obstacle. The findings provide the need for policies that will help shape institutions and growth of manufacturing firms so as to increase firms' access to financing.

5.2   Policy Recommendations

Based on findings of this study, we propose the following policy recommendations:

1. Managers' experience in the manufacturing sector: The government should consider assessing the financial knowledge of managers among manufacturing SMEs through surveys and initiate joint capacity building programmes for top firm managers in partnership with the private sector where deficiencies are found.

2. Firm size: The government should implement investment incentives that will enhance development of linkages between manufacturing SMEs and large firms.

3. Corruption: The government should simplify administrative procedures, increase transparency and accountability in public service, and computerize procedures.

4. Firm registration and informal competition: The government has put in place policies that reduce bureaucratic regulatory constraints that encourage SMEs to remain informal. However, the government should

increase formal incentives as studies have shown that firms do not fail to register due to cost but mainly due to lack of formal benefits. The study recommends:

- Apart from the current 30 per cent procurement rule targeting Women, Youth and Persons with Disabilities, the national government should allocate a further 30 per cent procurement contracts targeting SMEs of between one to five years old. Such measure would provide significant opportunities for such SMEs to do business, encourage them to register, operate formally and make productivity enhancing investments.

- The National Government should operationalize the Biashara Kenya initiative through the public-private partnership framework. Despite most SMEs being privately-owned, the proposed framework does not mention the vital role of the private sector in decision making. Moreover, the Biashara Kenya initiative funds should be accessible to SMEs whose capital investment is below Ksh 50 million at discounted rates.

- The National Assembly should draft laws that will expand the kind of assets that firms can potentially use as collateral. The expansion of assets base should include property rights so as to reduce over-reliance on traditional assets used as collateral. This should also go in hand with policies that will protect property rights from infringement that is common in Kenya.

To reduce anti-competitive practices arising from informal competition, the Competition Authority should:

- Take action against anti-competitive decisions of the national and county governments, which impose additional pressures on businesses such as arbitrary increased levies, taxes and paperwork.

- Increase competition advocacy on informal sector, and in particular on anti-competitive practices so as to promote healthy competition.

5.3   Limitation of the Study

Definition of SMEs by the WBES differ with the official Government of Kenya's definition, hence the results obtained using the WBES may have elements of micro enterprise characteristics. Moreover, the data used is based on firms' perception (subjective) and such perceptions are subject to change over a short period, hence there is need to check if results obtained would corroborate with objective measures if such data exists.

In addition, Silva and Carreira (2010) suggest that it is difficult to find an optimal and appropriate measure for financial constrained firms. They argue that for the measure to be optimal, it should be objective, firm-specific, time-varying and continuous.

5.4   Future Research Areas

The study proposes further research on practices in the informal firms, which have been cited as the major obstacles facing manufacturing SMEs' performance.

References

African Development Bank (2012), "Kenya", in African Economic Outlook 2012: Promoting Youth Employment, OECD Publishing. http://dx.doi.org/10.1787/aeo-2012-34-en.

Ana, M. O., Thomas, R. M and Kamer, K. (2009), "Economic Informality: Causes, Costs and Policies: A Literature Review", Working Paper No. 167, Washington DC: World Bank.

Aryeetey, E., Hettige, B., Duggleby, H. and William, S. (1994), "Supply and Demand for Finance of Small Enterprises in Ghana", World Bank Discussion Paper, 251.

Aterido, R., Hallward, M. and Pages, C. (2007), "Investment Climate and Employment Growth: The Impact of Access to Finance, Corruption and Regulations Across Firms", Working Paper Series, Washington DC: Inter-American Development Bank.

Ayyagari, M., Demirgüç-Kunt, A. and Maksimovic V. (2011), "Small vs Young Firms Across the World: Contribution to Employment, Job Creation, and Growth", Working Paper 5631. Washington DC: World Bank.

Ayyagari, M., Demirgüç-Kunt, A. and Maksimovic V. (2008a), "Formal versus Informal Finance: Evidence from China," Working Paper 4465, World Bank: Washington, D.C.

Ayyagari, M., Demirgüç-Kunt, A and Maksimovic V. (2008b), "How important are financing constraints" The role of finance in the business environment, *World Bank Economic Review*, World Bank: Washington DC.

Beck, T., Demirgüç-Kunt, A. and Peria, M. S. (2010), "Bank Financing for SMEs: Evidence across Countries and Bank Ownership Types", Journal of Financial Services Research 39, 35-54.

Beck, T., Demirguc-Kunt, A., Maksimovic, V., and Laeven, L. (2006), "The Determinant of Financing Obstacles", International Journal of Money and Finance, Vol. 25: 932-952.

Binks, M. and Ennew, T. (1996), "Financing Small Firms", In P. Burns and J. Dewhurst (eds), Small Business and Entrepreneurship (2nd Ed), London: Macmillan Publishers.

Bigsten, A., Kimuyu, P. and Soderbom, M. (2010), "Chapter 10: The Manufacturing Sector", forthcoming. In C. Adam, P. Collier and N. Ndung'u 9eds), Kenya: Policies for Prosperity. Oxford University Press and Central Bank of Kenya.

Bigsten, A., Kimuyu, P. and Soderbom, M. (2000), "Informality, Ethnicity and Productivity: Evidence from Small Manufacturers in Kenya", Working Papers in Economics No. 27, Department of Economics, Göteborg University.

Brown, M. Jappelli, T. and Pagano, M. (2007), "Information sharing and credit: Firm-level evidence from transition countries," Swiss National Bank Working Paper 15.

Calice, P., Chando, V. M. and Sekioua, S. (2012), "Bank Financing to Small and Medium Enterprises in East Africa: Findings of a Survey in Kenya, Tanzania, Uganda and Zambia", African Development Bank Working Paper Series No. 146, Tunis, Tunisia.

Cassar, G. (2004), "The Financing of Business Start-ups", Journal of Business Venturing, 19(2): 261-283.

Dabla-Norris, E. and Inchauste, G. (2008), "Informality and regulations: What drives the growth of firms?", International Monetary Fund, Washington, DC., Vol. 55, No. 1: 50-82.

Dabla-Norris, E. and Junko, K. (2008), "Informality and bank credit: Evidence from firm-level data", IMF Working Paper WP/08/94, Washington DC: International Monetary Fund.

De Mel, S., McKenzie, D. and Woodruff, C. (2012), "The Demand for, and Consequences of, Formalization among Informal Firms in Sri Lanka." Policy Research Working Paper 5991, Washington DC: World Bank.

Fiestas, I. and Sinha, S. (2011), "Constraints to Private Investments in the Poorest Developing Countries: A Review of Literature", London: Nathan Associates.

Fisman, R. and Svensson, J. (2007), "Are Corruption and Taxation Really Harmful to Growth: Firm Level Evidence", Journal of Development Economics, 83: 63-75:

Gandelman, N. and Alejandro, R. (2013), "Credit Constraints, Sector Informality and Firm Investments: Evidence from a Panel of Uruguayan Firms", Working Paper Series No. 392, Washington DC: Inter-American Development Bank.

Gatti, R. and Honorati, M. (2008), "Informality among formal firms: Firm-level, cross-country evidence on tax compliance and access to credit", Working Paper No. 4476, Washington DC: World Bank.

Ghamire, B. and Abo, R. (2013), "An Empirical Investigation of Ivorian SMEs Access to Bank Finance: Constraining Factors at Demand-Level", Journal of Finance and Investment Analysis, Vol. 2, No.4: 29-55.

Government of Kenya (2013), Second Medium Term Plan (2013-2017), Nairobi: Ministry of Devolution and Planning.

Government of Kenya (2012), The Micro and Small Enterprise Act, 2012, Nairobi: Government Printer.

Government of Kenya (2007), Kenya Vision 2030, Nairobi: Ministry of Devolution and Planning.

Government of Kenya (2006), Statistical Abstract, Nairobi: Kenya National Bureau of Statistics.

Heilbrunn, J. R. (2004), "Anti-Corruption Commissions: Panacea or Real Medicine to Fight Corruption?" WBI Working Paper, Washington DC: World Bank.

Hoff, K. and Stiglitz J. E. (1990), "Imperfect Information and Rural Credit Markets: Puzzles and Policy Perspectives", World Bank Economic Review, Vol. 4, No. 3: 235-250.

International Finance Corporation – IFC (2013), "Access to Credit among Micro, Small and Medium Enterprises", IFC Advisory Services.

International Finance Corporation – IFC (2011), IFC Enterprise Finance Gap Database, available at https://finances.worldbank.org/Enterprise-Finance/IFC-Enterprise-Finance-Gap-Database-Summary-Data/b4d6-42j9? Accessed on October, 2014.

Julia, F. and Wacker, K. (2013), "Do Financially Constrained Firms Suffer from More Intense Competition by the Informal Sector: Firm-Level Evidence from the World Bank Enterprise Surveys", Discussion Papers No. 139, Gottingen: Courant Research Centre.

Julien, L. (2009), "Financing SMEs in a context of strong Information Asymmetry", OHADA: France.

Kenya National Bureau of Statistics (2014), Economic Survey, Nairobi: Kenya National Bureau of Statistics.

Kermani, M. and Afandi, E. (2014), "What Prevents Firms from Access to Finance: A Case Study of OIC Countries", Journal of Economic Cooperation and Development, Vol. 35(1): 103-132.

Kimuyu, P. K. and Omiti, J. (2000), "Institutional Impediments to Access to Credit by Micro and Small Scale Enterprises in Kenya", IPAR Discussion Paper No. 26.

Kira, A. R. and He, Z. (2012), "The Impact of Firm Characteristics in Access of Financing by Small and Medium-sized Enterprises in Tanzania", International Journal of Business and Management, Vol. 7(24): 108-119.

Kira, R. A. (2013), "Determinants of Financing Constraints in East African Countries' SMEs", International Journal of Business and Management, Vol. 8(8): 49-68.

Lopez-Garcia, J. and Sogorb-Mira, F. (2008) "Testing Tradeoff and Pecking Order Theories Financing SMEs", Small Business Economics, Vol. 31 (2): 117-136.

McKenzie, D. and Sakho, Y. S. (2010), "Does it Pay Firms to Register for Taxes? The Impact of Formality on Firm Profitability", Journal of Development Economics 91(1): 15-24.

McKenzie, D., Cull, R. and Woodruff, C. (2007), "Experimental Evidence on Returns to Capital and Access to Finance in Mexico," World Bank Working Paper, Vol 22, No. 3: 457-482.

Medevdev, D. and Oviedo, A. M. (2013), "Informality and Profitability: Evidence from a New Firm Survey in Ecuador", Working Paper No. 6431, Washington DC: World Bank.

Modigliani, F. and Miller, M. H. (1958), "The Cost of Capital, Corporation Finance and the Theory of Investment", American Economic Review, Vol. 48(3): 261-295.

Myers, S. C. and Majluf, N. S. (1984), "Corporate Financial and Investment Decisions when Firms have Information Investors do not Have", Journal of Financial Economics, 13: 187-221.

Nancy, B. C. and Mbaye, A. (2014), "Informality, Growth, and development in Africa", WIDER Working Paper 2014/52, United Nations University.

Nkurunziza, J. D. (2010), "The Effect of Credit on Growth and Convergence of Firm Size in Kenyan Manufacturing", The Journal of International Trade & Economic Development: An International and Comparative Review, 19: 465-494.

OECD (2009), "Global Forum on Competition: Roundtables on Competition Policy and Informal Economy", DAF/COMP/GF (2009) 10, OECD: United Kingdom.

Ojah, K., Gwatidzo, T. and Kaniki, S. (2010), "Legal Environment, Finance Channels and Investment: The East African example", Journal of Development Studies, 46: 724-744.

Ong'olo, D. and Awino, S. (2013), "SMEs and Devolved Government System: An Assessment of the Regulatory and Institutional Challenges Affecting SMEs Development in Kenya", ICBE-RF Research Report No. 71/13, CUTZ CITEE, Nairobi, Kenya.

Perry, G. E., Maloney, F. W., Omar, S. A., Fajnzyblber, P., Mason, A. and Saavedra-Chanduvi, J. (2007), "Informal Sector: Exit and Inclusion", Washington DC: World Bank.

Sarapaivanich, N. and Kotey, B. (2006), "The Effect of Financial Information Quality on Ability to Access External Finance and Performance of SMEs in Thailand", Journal of Enterprising Culture, Vol. 14(3): 219-239.

Silva, F. and Carreira, C. (2010), "No Deep Pockets: Some Stylized Empirical Results on Firms' Financial Constraints", Journal of Economic Surveys, 24: 731-753.

Sheng, Y. T., Rani, N. and Shaikh, J. M. (2011), "Impact of SMEs Character in the Loan Approval Stage", Kuala Lumpur, Malaysia: IACSIT Press.

Stein, P., Goland, T. and Schiff, R. (2010), "Two Trillion and Count¬ing: Assessing the Credit Gap for Micro, Small, and Medium-size Enterprises in the Developing World". International Finance Corporation, Washington DC.

Stiglitz, J. and Weiss, A. (1981), "Credit Rationing in Markets with Imperfect Information", American Economic Review, Vol. 71(3): 393-410.

Straub, S. (2005), "Informal Sector: The Credit Market Channel", *Journal of Development Economics*, p1-20, Vol. 78, No. 2: 299-321.

World Bank (2013), "Enterprise Surveys: Kenya dataset", Available after having permitted access to the World Bank Enterprise Survey Portal https://www.enterprisesurveys.org/portal/ on September, 2014.

World Bank (2012), "Egypt Investment Climate Assessment 2009: Accelerating Private Enterprise-Led Growth – Policy Brief", Washington DC: World Bank.

World Bank (2007), "Enterprise Survey: Understanding the Questionnaire", Available after having permitted access to the World Bank Enterprise Survey Portal https://www.enterprisesurveys.org/portal/ on September, 2014.

Appendices

Appendix Table 1: Correlation matrix

Observations: 388						
	access	firmsize	f_reg	informal	corrupt	Manager
access	1.0000					
firmsize	0.0922	1.0000				
f_reg	-0.1484	-0.1024	1.0000			
informal	0.2370	0.0608	-0.0566	1.0000		
corrupt	0.2031	0.0929	0.0315	0.2208	1.0000	
Manager	-0.1542	-0.0214	0.1450	-0.0863	0.0529	1.0000

Source: Author's computation using the WBES 2013 data

Appendix Table 2: Average marginal effects after Probit regression

Average marginal effects						
Model VCE: OIM						
Expression: Pr (access), predict ( )						
Number of obs = 388						
dy/dx w.r.t.: Manager 2. firmsize 3. firmsize f_reg 2. corrupt 3. corrupt 2. informal 3. informal						
	dy/dx	Delta - method Std. Err.	z	P>|z|	[95% Conf. Interval	
Manager	-0.0061502	0.0021959	-2.80	0.005	-0.0104542	-0.0018463
firmsize						
Small firm	0.0650867	0.0607401	1.07	0.284	-0.0539617	0.184135
Medium firm	0.0620314	0.0602954	1.03	0.304	-0.0561454	0.1802082
f_reg	-0.2209731	0.0907221	-2.44	0.015	-0.3987852	-0.043161
corrupt						
Moderate obstacle	0.1955819	0.058246	3.36	0.001	0.0814218	0.3097419
Major obstacle	0.1866319	0.0605822	3.08	0.002	0.067893	0.3053709
informal						
Moderate obstacle	0.1017851	0.0591559	1.72	0.085	-0.0141585	0.2177286
Major obstacle	0.219658	0.0605397	3.63	0.000	0.1010024	0.3383136

Note: dy/dx for factor levels is the discrete change from the base level.

Source: Author's computation using the WBES 2013 data

Appendix Table 3: Measures of Fit for Probit of access to financing constraint

Log-Lik Intercept Only: -267.620		Log-Lik Full Model: -241.289	
D(379): 482.578		LR (8): 52.662	
		Prob > LR: 0.000	
McFadden's R²:	0.098	McFadden's Adj R²:	0.065
ML (Cox-Snell) R²:	0.127	Cragg-Uhler (Nagel kerke) R²:	0.170
McKelvey & Zavoina's R²:	0.198	Efron's R²:	0.127
Variance of y*:	1.247	Variance of Error:	1.000
Count R²:	0.639	Adj Count R²:	0.213
AIC:	1.290	AIC*n:	500.578
BIC:	-1776.643	BIC':	-4.974
BIC used by Stata:	536.227	AIC used by Stata:	500.578

Source: Author's computation using the WBES 2013 data