

Determinants of Financing Constraints in East African Countries' SMEs

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Abstract

Small and Medium-sized Enterprises (SMEs) are the main player in developing and strengthening zonal integration. This study used a sample of 1933 firms located within 5 East African countries with economic integration known as East Africa Community (EAC). Data was extracted from World Bank Business Enterprises Survey to evaluate determinants of financing obstacles of firms. Analysis of data was conducted by running ordered probit model and multivariate regression model to determine which firms' industry or country's characteristics explain and experienced financial constraints in their operations. The study found out that financing constraints in East African firms broadly based across firms but SMEs are mostly affected.

Keywords: East African countries, financing constraint, SMEs, ordered probit model

1. Introduction

Globally SME sector has been reporting difficulties in access to finance (Bebczuk, 2004; Slotty, 2009; Balling et al., 2009; Irwing & Scott, 2010; Yongqian et al., 2012). Access to external finance to SMEs has become more costly and troublesome while their accessibility has done sharply declined. SMEs' financing constraints limit their investment opportunities and stagnant growth. Access to finance is widely perceived to be an essential factor for firms, and especially SMEs, to maintain their daily business operation as well as to achieve long-term investment opportunities and development targets. Presence of general limitations on access to capital markets, many East African firms heavily rely on the banking sector for credit. Therefore, a well-functioning banking sector plays an important role in channeling resources to the best firms and investment ventures. Financing constraints crucially limit firm's growth, availability of productive resources resulting to sluggish of a sector which might pose threat to the sector's contribution to the economy.

Recently SMEs financing has raised interest in policymakers, researchers and practitioners as an agenda of interest on how to encounter the problem. The purpose of this study is to evaluate the nature of the financial difficulties encountered by East African area firms in their operations and to draw a portrait of East African area firms under financing constraints. The study uses survey data from the World Bank Business Enterprises Survey to establish how East African firms face difficulties with access to finance. The aim is to provide an extensive understanding on how East African firms assessed their access external finances to invest in different business opportunities. The study evaluates the problem by analyzing country characteristics and individual firm financing constraints actual experiences on the problem. Particularly, two indicators were developed for evaluation of attributes impact financing constraints in East African SMEs'. The first indicator is based on the country's factors such classification of industrial sector (i.e. manufacturing, service, construction) and ownership (i.e. locally owned, foreign ownership or state ownership) ranking of problems faced by firms; the second one is based on firms' individual characteristics in getting access to external finance.

The study found out that financial constraints were broadly based across firms than country wise. The financial constraint tends severely to harm more small and young. The study suggest that the strategic interest of East African banks in the SME segment can make an important contribution to closing the "SME financing gap" in the region compared to other developing countries. He study concludes that this trend should be supported and encouraged through reforms to soften the negative impact of those obstacles which are hindering the further involvement of banks with SMEs. This paper is organized as follows: section 2 briefly reviews the related literature on SMEs' access to finance; section 3 provides a description of the data and introduces the empirical

methodology then section 4 which describes study results and the final section is a conclusion of the study.

2. Literature Review

2.1 SMEs Overview and Its Contributions

SMEs play a significant part in economic growth worldwide including in African countries (Note 1). Studies point out that in developed and developing economies SMEs contribute on average 60% of formal employment in the manufacturing sector (Ayyagari et al., 2007). In Africa, SME sector’s total contribution in job creation in manufacturing is about three-quarters (Ayyagari et al., 2007). An important aspect for SME sector development is access to finance particularly from financial institutions. Le, Venkatesh and Nguyen (2006) pointed out that the achievement stage for any particular SME is to have adequate access to external sources of finance. Firm-level data collected by the World Bank show that shortage on access to finance perceived to be one of the main obstacles to doing business (Note 2). Several studies have revealed that financing is a major constraint for SMEs to grow than for larger firms, mainly in the developing world (Beck et al., 2005; Beck et al., 2006; Fatoki & Assah, 2011, Kira & He, 2012).

SMEs thought to have a financial growth cycle in which financial needs and options change as the business grows, gains further experience, and become less informational opaque. Figure 1 shows this in a stylized fashion in which firms’ trend on size/age/information availability in access to financing sources. Smaller/younger/more opaque firms lie near the left end of the growth trend line indicating that they must rely on initial insider finance, trade credit, and/or angel finance (Note 3). Initial financing include funds provided by the owner(s), family members and friends prior to and at the time of the firm’s commencement of operation. As firms grow, they gain access to intermediate finance on the equity side [*venture capital* (Note 5)] and on the debt side (banks, finance companies, etc.). In the long run, if the firm remain in operation and continue to grow might gain access to debt markets and stock market. Firm’s growth cycle model might not become applicable to all small businesses since firm size, age, and information availability are far from perfectly correlated. The model also demonstrates some features at different points which stimulate funding to firm occasionally. Figure 1 explain the general idea on how sources of finance become important in the financing growth cycle as well as the points in the cycle at which different types of financing are attained as the firm grow. For example, even the very largest firms obtain funding through bank loans or private placements, but this is not shown in the figure.



Figure 1. Firm growth and access to financing

Conservative viewers argue that bank or commercial finance company lending would typically not be available to SMEs until they achieve a level of production where their balance sheets reflect substantial tangible business assets that might be pledged as collateral such as inventory, equipments and accounts receivable (Note 6). This sequencing of funding over the growth cycle of a firm can be viewed in the context of the modern information-based theory of security design and the notion of a financial pecking order. Costly state verification (Townsend 1979, Diamond 1984) and adverse selection (Myers 1984, Myers and Majluf 1984, Nachman & Noe, 1994) arguments suggest the optimality of debt contracts after insider finance has been exhausted that firm has to

search for external sources such as debt and equity to enjoy the benefits on utilization of external debt (Modigliani & Miller, 1963). These debt contracts could include trade credit, loans from commercial bank and finance companies. Conversely, moral hazard can make debt contracts quite problematic. Moral hazard problems are likely to occur when the amount of external finance needed is large relative to the amount of insider finance (inclusive of any personal wealth at risk via pledges of personal collateral or guarantees). This suggests that external equity finance specifically angel and venture capital may be particularly important when these conditions hold and the moral hazard problem is acute. The fact that high-growth, high-risk new ventures often obtain angel finance and/or venture capital before they obtain significant amounts of external debt finance suggests that the moral hazard problem may be particularly acute for these firms (Note 7).

Most of international development communities have programmed SME access to finance as an important policy priority (Note 8). Global economic integration is changing the competitive paradigm in which all businesses operation requiring a competitive strategy to positively impact long-term growth and survival. The small business sector has become more important as they emerge as a dominant force impacting the growth of national economies (Shridhar, 2006). Recently, SMEs empowerment takes a prominent position in the development agenda of most countries this is due to their contribution to a vibrant and growing industrial sector. Most countries create appropriate institutional environment that recognizes SMEs to take advantages attached in employment creation, poverty alleviation as well as facilitating economic growth.

In Tanzania, SMEs contributions to GDP estimated to be ranked about one third (Note 9). It is also estimated about 20% of the labor force in Tanzania which is almost 3 million people are employed in small businesses, in which of these are micro enterprises consisted of 1.7 million businesses operating in the informal sector alone. SME sector play a major role in economic development of Tanzanian economy. The International Finance Company (Note 10) of the World Bank estimates that there are approximately 2.7 million enterprises in exist in Tanzania whereby over 98% are SMEs.

In Burundi, Most Burundian businesses admitted that access to credit is a serious constraint (Note 11). However, while the demand for credit is real and pervasive, there are constraints on it. Most small businesses (especially individual entrepreneurs) finance their initial operations primarily with their own funds and capital. Many of these entrepreneurs are suspicious of formal credit and would rather rely solely on their own resources and those of family and friends. Small Burundian businesses often have a foot in the informal economy and are usually trying to minimize their exposure to scrutiny from the state.

In the case of Kenya, the SME sector plays a crucial role to the Kenyan economy. SMEs employed about 5.1 million people representing 74% of the total national employment and also contribute about 88% of the total job creation at any one time; they also contribute in the Gross Domestic Product of the country, whereby they contribute about 24.5% to the GDP (Maina, 2006). Atieno (2009) pointed out that the development of SMEs has been identified as one of the strategies for generating industrialization, employment generation and poverty reduction in Kenya. Atieno (2009) reported governments' objective has been outlined in Kenya's major policy documents such as the Sessional Paper Number 2 of 1996 on Industrial Transformation to the year 2020, and Sessional Paper Number 2 of 2005 on the Development of MSEs for Employment and Wealth Creation.

In Rwanda, over 90.8% of Rwanda's workforce is employed in the private sector (Note 12) which makes it a catalytic sector in terms of reforms to ensure inclusive growth. Over 123,000 SMEs operate in the private sector, accounting for 98% of all businesses and 84% of private sector employment. However, 88% of these SMEs are informal and as such, their contribution to total tax revenues, estimated at less than 2% in Financial Year 2009/10, remains insufficient. Moreover, improvements in investment climate are yet to translate into private sector development (Note 13).

In Uganda; the SMEs represent a significant part of the economy. There are special linkages promotion programs that are used to promote SMEs sector to keep a fast-track vehicle for creating a dynamic SME sector. SMEs comprise over 90% of the private sector in Uganda representing a very significant role in stimulating the economic growth of the country (Kuzilwa, 2005). Ugandan SMEs create productive employment; provide a good source of the tax revenues for social as well as economic development and they also increase the export revenues vis-à-vis import substitution and thus balancing the terms of trade. SMEs contribute about 75% of the GDP and employment of approximately 2.5 million people in Uganda. SMEs contribute about 75% of the GDP and employment of approximately 2.5 million people in Uganda (African Development Bank, 2011). MMA consulting company operating in East African countries revealed the following information relating to investment opportunities in East African countries by 2010.

Figure 2 extracted from Match Maker Associates Ltd (MMA) investment focus reviews is a region, MMA is

Tanzania-based consulting company. Through their work in the East African agribusiness sector they identified attractive investment opportunities with high social and environmental impact they revealed that lack of finance is one of constraint limiting business operations in the region even though business opportunities exist. The consulting company revealed that the majority of the East African population is growing and depends on the SME sector. Today, SMEs operate in every corner of the East Africa and have great potential in job creation as well as generation of a widespread economic benefit.

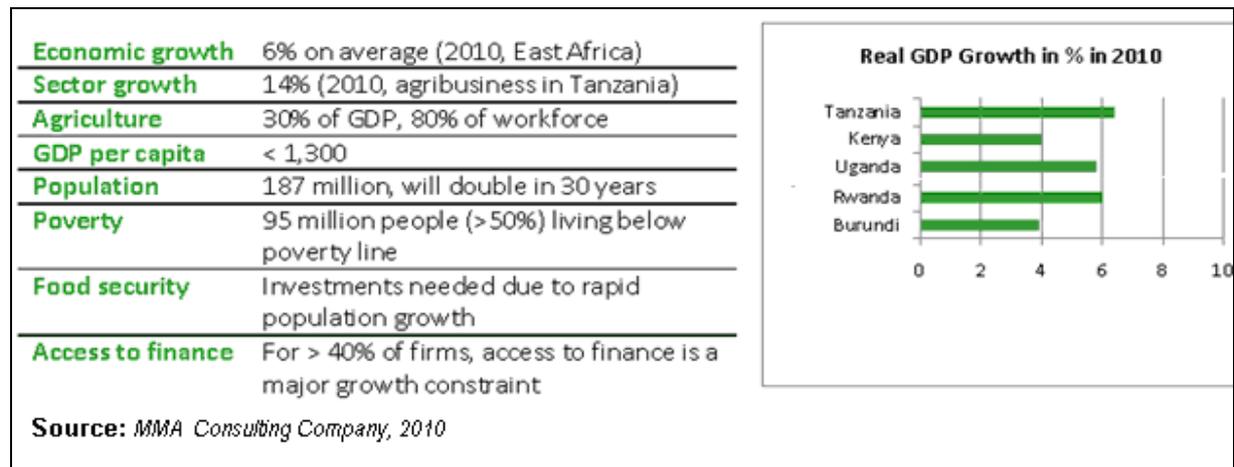


Figure 2. East African countries GDP, growth, agriculture; population, & access to finance

2.2 SMEs Access to External Financing

Access to finance is reported to be a severe problem for SMEs in Africa. Unavailability of finance to SME sector has been viewed as a critical element for the development of SMEs. Levy (1993) highlighted the consequences of limited access to financial resources by SMEs. Normally SMEs face higher transaction costs than larger enterprises in obtaining credit (Saito and Villanueva, 1981) and availability of funds to finance working capital (Peel and Wilson, 1996). In addition, information asymmetries associated with lending to small scale borrowers have continued to restrict the flow of finance to SMEs.

Regardless of SMEs being considered as a major driver of innovation and employment, as well as their potentiality in a country's economic development; recent empirical studies have refined this view, suggesting that the future of SME sector might be jeopardized due financial constraints (Beck *et al.*, 2005; Aghion *et al.*, 2007, Fatoki & Assah, 2011). SME sector are commonly more being financially constrained and experience financial difficulties in access to external finance. Literature has revealed an existence and the determinants of financing constraints being extensive very large based on two major hypothetical thoughts: asymmetric information and agency costs. Fazzari *et al.*, (1988) pointed out that the existence of financial constraints is due to the presence of asymmetric information while internal and external capitals are not perfect substitutes (Note 14). Consequently, firms' investment opportunities might depend on financial aspects such as the availability of internal financing, access to new debt or equity finance or the functioning of particular credit markets.

Empirical literature strengthens that external financing is more costly to SMEs which led them to rely on internal sources of finance to fund their investments because of asymmetric information problem and the agency costs existence which cement their financing constraint problem. These problems are believed to be severely impacted SMEs because of the following reasons: *one*, Size, SMEs size is small compared to large firms which might influence the quality and the quantity of information available on their records as well as collateral. Smaller firms are often perceived to be more informational opaque than larger firms and monitoring cost weight more heavily on smaller-scale projects (Devereux & Schiantarelli, 1989; Gilchrist & Himmelberg, 1991; Berger & Udell, 1988; Beck *et al.*, 2005). Furthermore, most of SMEs during start-up are observed to encounter more informational opaque problem and agency costs because they are new as well as time limits their track record and reputation to access external finance (European Communities, 2009; Irwin & Scot, 2010; Oreoluwa, 2011). Finally, because of the prevailing problems led SMEs to depend more on bank financing than larger enterprises as they cannot raise funds from stock markets since stock market require more relevant and transparent

information to attract investors. Whited and Wu (2006) study found out that mostly financially constrained firms are small because they have low analyst coverage which affect their bond rating. Whited and Wu (2006) evidenced that small firms are more financially constrained since they lack bond rating and also possess low analyst coverage in the US.

Several related recent studies have acknowledged a number of determinants of access to finance: Fatoki and Assah (2011) suggested SMEs have to own tangible assets, maintain proper business information and improve their management skills to accelerate access of debt financing from lenders. Colluzi *et al.* (2009) found out that young and small firms are significantly facing financial constraints in their study on the significance of firm characteristics on access to external finance. Atanasova and Wilson (2004) proposed that firm's total asset collateral is an essential determinant to access credit. Beck *et al.* (2006) uncover that countries with higher levels of financial intermediary development, more efficient legal systems, higher GDP-per-capita and more liquid stock market report lower financing obstacles. The study which was conducted UK manufacturing firm between 1989 and 1999 by Bougheas *et al.* (2006), noticed several firm characteristics including collateral, age, profitability, riskiness and size do influence accessibility of debt financing. Harrison and McMillan (2003) evidenced that listed firms and foreign owned firms encounter financial constraints compared to unlisted and locally firms. An industrial sector in which a firm conducts business does play an influential role in determining accessibility to external capital markets (Hall *et al.*, 2000). Sectors which require huge capital intensive to operate such as manufacturing and construction seems to attract investors/lenders to extend capital financing. Canton *et al.*, (2010) found out that firm's age, firm-bank relationship, and banking sector degree of competition are the determinants of firm's perceived financial constraints in banking industry at the European Union level. The survey study of determinants of finance access to SMEs in ECB and the European Commission resulted that firm's ownership structure and age are vital determinants of the perceived financial constraints regardless in which industry firm operate or the firm size Ferrando and Griesshaber (2011).

This study intends to provide relevant determinants of SMEs financial constraints by evaluating the firm's characteristic and the country's characteristics. Additionally, econometric model using multivariate and ordered probit models will be consolidated to establish the financial constraint relationship between firm and country levels to unveil the underlying assumption is that countries and firms facing better financial services accelerate their growth and contribution to the country's economic development.

3. Research Methodology

3.1 Source of Data

This study uses the World Bank's Business Enterprise Survey (Note 15) data to evaluate SMEs financial constraint in the East African Countries (i.e., Burundi, Kenya, Rwanda, Tanzania, and Uganda). The five countries belong to the East African Community with a long term objective of forming a federation. The sample is consistently defined in all countries and includes the entire manufacturing sector, construction sectors and the services sector. This study excludes public utilities, government services, health care and financial services sectors from the sample. The surveys collect a wide array of qualitative and quantitative information through face-to-face interviews with firm managers and owners regarding the business environment in their countries and the productivity of their firms. Several topics are covered during the survey and include: the obstacles to doing business, infrastructure, labor, corruption, law and order, regulation, finance, innovation and technology, trade, and firm productivity which in totality effect business environment. The qualitative and quantitative data collected through the surveys connect a country's business environment characteristic with firm productivity and performance. The study uses the data collected between 2002 and 2007 by World Bank whereby over 10,000 firms around the world were surveyed including Burundi, Kenya, Rwanda, Tanzania and Uganda data. The definition of indicators can be found on the database website. The sample constitutes 242 firms from Burundi, 657 firms from Kenya, 158 firms from Rwanda, 368 firms from Tanzania, and 508 firms from Uganda declared they have financial constraint. This study evaluated the financial constraints existence in East African countries' business environments which impacts on the availability of financial resources to SMEs. The study suggests policies to improve availability of financial resources to SMEs in East Africa. The study uses both cross tabular analysis and multivariate analysis of variance to achieve the study objectives.

3.2 Data Characteristics and Methodological Approach

The main purpose of the survey is to qualify firms' access to finance in the East African Countries. The survey covered a wide area of East African business environment traits but for this study focus is only firms' attributes and country's characteristics on the financing constraints. It contains some information on firms' and country's characteristics such firm size (small, medium, large); Ownership (local private owned, foreign private owned, or

state owned); Age (in years of operation); industrial type (Manufacturing, Service, Construction), and form of business organization (Public limited company, private held company, sole proprietorship, partnership or other forms of incorporation). The sampling method was performed as the resulting sample is representative across several dimensions, i.e. for each of the East African countries (i.e. Burundi, Kenya, Rwanda, Tanzania and Uganda), across firm size [i.e. micro, small, medium and large firms] and their main industrial sector.

Table 1. Composition of sample report

	Variables	No. of Observations	Percent
Industrial Sector	Manufacturing	1025	53.00
	Service	454	23.47
	Construction	454	23.47
Size	Small	1213	62.75
	Medium	555	28.70
	Large	165	8.53
Incorporation	Public Ltd Company	12	0.62
	Private Ltd Company	701	36.26
	Sole Proprietorship	920	47.57
	Partnership	278	14.37
	Other	21	1.09
Age	Less than 5 yrs	377	19.49
	From 5 to 9 yrs	608	31.45
	From 10 to 19 yrs	580	29.99
	From 20 to 49 yrs	336	17.37
	Above 50 yrs	32	1.65
Ownership	Private (Local)	1687	87.23
	Private (Foreign)	219	11.32
	State/Government	16	0.83
	Other	11	0.57

Source: Author's calculations based on WBES data.

Table 1 report the composition of the study's sample according to country, size, legal status, (incorporation), industrial type, ownership and age as the firms' characteristics selected for the 1933 firms responding to the survey questionnaire that they have financial constraint. Small firms employ less than 19 employees, Medium firms employ 20 to 99 employees and large firms employ over 100 employees. Legal status represents incorporation of a firm: Publicly listed companies are those firms listed in stock markets; Private held limited companies are those companies which are legal and separate entities but are not listed at stock market. Sole proprietorship and partnership are forms of business organizations without separate legal entity. Other legal entities represent all other forms of business organization which not fit in public listed company, privately held company, sole proprietorship or partnership such as cooperatives, non governmental organizations (NGO), religious business operations etc. Industry type classifies business operation as either manufacturing, service or construction sector. Ownership defines modal of ownership within a firm: Foreign or Local ownership demonstrates that firm owners are foreigners or locals respectively. Firms were interviewed whether they face financial constraints. Management of surveyed firms was asked to rate the financial constraints encountered by their firms during their daily operations by quantifying financial obstacle ranging from 1, minor obstacle and 5, very severe obstacle. Surveyed questions rate the impact of financial constraints on their firms' growth. The questionnaires narrate the financial constraints firms encounter from financial institutions included are: collateral requirements, application procedures and complexity, high interest rates, credit availability or accessibility, need for special connection or corruption to access credit and the size of the credit and maturity insufficiency.

Table 2. Summary statistics

	Variables	Observation	Mean	Std. Deviation	Minimum	Maximum
Industrial Sector	Manufacturing	1933	0.5303	0.49921	0.00	1.00
	Service	1933	0.2349	0.42403	0.00	1.00
	Construction	1933	0.2349	0.42403	0.00	1.00
Size	Small	1933	0.6275	0.48359	0.00	1.00
	Medium	1933	0.2871	0.45253	0.00	1.00
	Large	1933	0.0854	0.27949	0.00	1.00
Incorporation	Public Ltd Company	1933	0.0062	0.07857	0.00	1.00
	Private Ltd Company	1933	0.3626	0.48089	0.00	1.00
	Sole Proprietorship	1933	0.4759	0.49955	0.00	1.00
Age	Partnership	1933	0.1438	0.35100	0.00	1.00
	Other	1933	0.0109	0.10369	0.00	1.00
	Less than 5 yrs	1933	0.1950	0.39633	0.00	1.00
	From 5 to 9 yrs	1933	0.3145	0.46445	0.00	1.00
	From 10 to 19 yrs	1933	0.3001	0.45840	0.00	1.00
	From 20 to 49 yrs	1933	0.1738	0.37906	0.00	1.00
	Above 50 yrs	1933	0.0166	0.12763	0.00	1.00
Ownership	Private (Local)	1933	0.8727	0.33335	0.00	1.00
	Private (Foreign)	1933	0.1133	0.31704	0.00	1.00
	State/Government	1933	0.0083	0.09063	0.00	1.00
	Other	1933	0.0057	0.07524	0.00	1.00
Financing Constraints	General	1700	3.4149	1.33422	1.00	5.00
	Collateral	1834	4.2742	1.19538	1.00	5.00
	Application Procedures	1473	2.9881	1.51813	1.00	5.00
	High Interest rates	1253	2.0817	1.34308	1.00	5.00
	Credit	1798	4.0253	1.27440	1.00	5.00
	Corruption & Special Connections	1503	2.7807	1.33534	1.00	5.00
	Loan Size & Maturity	1506	2.2711	1.37674	1.00	5.00

Source: Author's calculations based on WBES data.

Table 3a. Correlation matrix

	Gcfin	Manuf	Service	Const	Small	Medium	Large	Plc	Pltdcoy
Gcfin	1.000								
Manuf	0.064** (0.005)	1.000							
Service	0.032 (0.164)	-0.589** (0.000)	1.000						
Const	-0.106** (0.000)	-0.589** (0.000)	-0.307** (0.000)	1.000					
Small	0.243 (0.058)	-0.251** (0.000)	0.230** (0.000)	0.066** (0.004)	1.000				

Medium	0.302 (0.002)	0.144** (0.000)	0.149** (0.000)	-0.020 (0.384)	-0.824** 0.000	1.000			
Large	-0.071** (0.002)	0.202** (0.000)	0.156** (0.000)	0.082** (0.000)	-0.397** (0.000)	-0.194** (0.000)	1.000		
Plc	-0.049* (0.030)	0.048* (0.035)	-0.028 (0.214)	-0.028 (0.214)	-0.075** (0.001)	0.008 (0.723)	0.117** (0.000)	1.000	
Pltdcoy	-0.115** (0.000)	0.259** (0.000)	-0.179** (0.000)	-0.126** (0.000)	-0.394** (0.000)	0.240** (0.000)	0.293** (0.000)	-0.060** (0.009)	1.000
Solepro	0.071** (0.002)	-0.288** (0.000)	0.183** (0.000)	0.156** (0.000)	0.359** (0.000)	-0.236** (0.000)	-0.239** (0.000)	-0.075** (0.001)	-0.719** (0.000)
Partnerp	0.069** (0.002)	0.031 (0.169)	-0.001 (0.964)	-0.036 (0.116)	0.060** (0.009)	-0.003 (0.907)	-0.099** (0.000)	-0.032 (0.155)	-0.309** (0.000)
Other	0.001 (0.962)	0.039 (0.089)	-0.023 (0.318)	-0.023 (0.318)	-0.053* (0.019)	0.033 (0.150)	0.039 (0.083)	-0.008 (0.716)	-0.079** (0.001)
Age 1- 4 years	0.235 (0.025)	-0.204** (0.000)	0.137** (0.000)	0.103** (0.000)	0.217** (0.000)	-0.159** (0.000)	-0.118** (0.000)	-0.039 (0.087)	-0.195** (0.000)
Age 5- 9 years	0.137 (0.010)	-0.050* (0.028)	0.058* (0.010)	0.001 (0.982)	0.093** (0.000)	-0.041 (0.073)	-0.095** (0.000)	-0.025 (0.269)	-0.112** (0.000)
Age 10-19 years	-0.020 (0.379)	0.028 (0.216)	-0.072** (0.001)	0.039 (0.084)	-0.037 (0.101)	0.049* (0.033)	-0.014 (0.533)	-0.009 (0.704)	0.037 (0.106)
Age 20 – 49 years	-0.035 (0.122)	0.210** (0.000)	-0.109** (0.000)	-0.138** (0.000)	-0.271** (0.000)	0.155** (0.000)	0.217** (0.000)	0.051* (0.026)	0.259** (0.000)
Age above 50 years	-0.043 (0.056)	0.090** (0.000)	-0.053* (0.020)	-0.053* (0.020)	-0.076** (0.001)	0.007 (0.749)	0.120** (0.000)	0.093** (0.000)	0.113** (0.000)
PvtLC	0.054* (0.018)	-0.067** (0.003)	0.061** (0.007)	0.017 (0.442)	0.194** (0.000)	-0.118** (0.000)	-0.144** (0.000)	-0.167** (0.000)	-0.193** (0.000)
PvtFG	-0.044 (0.054)	0.058* (0.010)	-0.056* (0.015)	-0.013 (0.561)	-0.177** (0.000)	0.116** (0.000)	0.119** (0.000)	0.117** (0.000)	0.209** (0.000)
State	-0.028 (0.212)	0.052* (0.023)	-0.037 (0.103)	-0.024 (0.298)	-0.107** (0.000)	0.030 (0.182)	0.136** (0.000)	0.211** (0.000)	-0.010 (0.675)
Other1	-0.018 (0.419)	-0.011 (0.614)	0.007 (0.767)	0.007 (0.767)	0.016 (0.493)	-0.002 (0.916)	-0.023 (0.310)	-0.006 (0.793)	-0.014 (0.534)
FcColl	0.199** (0.000)	0.232** (0.000)	-0.143** (0.000)	-0.129** (0.000)	-0.064** (0.005)	0.112 (0.036)	0.052* (0.021)	-0.018 (0.426)	0.087** (0.000)
FcApp	0.072** (0.001)	0.114** (0.000)	-0.078** (0.001)	-0.056* (0.014)	-0.062** (0.007)	0.560 (0.013)	0.085** (0.000)	0.549 (0.014)	0.329 (0.022)
FcHInte	0.123** (0.000)	0.090** (0.000)	-0.073** (0.001)	-0.033 (0.149)	-0.014 (0.525)	-0.018 (0.424)	0.054* (0.017)	-0.015 (0.521)	-0.003 (0.908)
FcCredit	0.342 (0.007)	-0.054* (0.017)	0.043 (0.061)	0.022 (0.344)	-0.018 (0.422)	0.025 (0.271)	-0.009 (0.693)	0.009 (0.700)	0.068** (0.003)
FcConr	0.057* (0.012)	0.062** (0.006)	0.084** (0.000)	0.010 (0.647)	0.066** (0.003)	0.043 (0.061)	0.046* (0.043)	-0.007 (0.767)	0.055* (0.015)
FcSizMat	0.634 (0.011)	0.018 (0.424)	0.058* (0.011)	-0.079** (0.001)	-0.155** (0.000)	0.107** (0.000)	0.096** (0.000)	-0.001 (0.958)	0.127** (0.000)

Source: Author's calculations based on WBES data.

Table 3b. Correlation matrix

	Solepro	Partnerp	Other	Age_5to9	Age_5	Age_10to19	Age_20to49	Age_50
Solepro	1.000							
Partnerp	-0.391** (0.000)	1.000						
Other	-0.100** (0.000)	-0.043 (0.059)	1.000					
Age_5to9	0.097** (0.000)	0.037 (0.107)	-0.049* (0.030)	1.000				
Age_5	0.190** (0.000)	0.018 (0.434)	-0.039 (0.087)	-0.333** (0.000)	1.000			
Age_10to19	-0.039 (0.090)	-0.005 (0.842)	0.029 (0.196)	-0.444** (0.000)	-0.322** (0.000)	1.000		
Age_20to49	-0.235** (0.000)	-0.048* (0.035)	0.057* (0.012)	-0.311** (0.000)	-0.226** (0.000)	-0.300** (0.000)	1.000	
Age_50	-0.107** (0.000)	-0.030 (0.186)	0.026 (0.262)	-0.088** (0.000)	-0.064** (0.005)	-0.085** (0.000)	-0.060** (0.009)	1.000
PvtLC	0.209** (0.000)	0.055* (0.016)	-0.155** (0.000)	0.035 (0.127)	0.090** (0.000)	-0.011 (0.635)	-0.099** (0.000)	-0.072** (0.002)
PvtFG	-0.190** (0.000)	-0.049* (0.032)	0.026 (0.262)	-0.017 (0.451)	-0.073** (0.001)	0.005 (0.840)	0.069** (0.003)	0.069** (0.002)
State	-0.087** (0.000)	-0.021 (0.352)	0.376** (0.000)	-0.062** (0.006)	-0.045* (0.048)	0.002 (0.913)	0.124** (0.000)	-0.012 (0.602)
Other1	-0.017 (0.455)	-0.011 (0.616)	0.125** (0.000)	-0.007 (0.765)	-0.037 (0.102)	0.026 (0.262)	0.002 (0.944)	0.044 (0.053)
FcColl	0.075** (0.001)	-0.015 (0.508)	0.018 (0.436)	0.000 (0.990)	-.089** (0.000)	.049* (0.031)	0.034 (0.134)	-0.003 (0.908)
FcApp	0.322 (0.002)	0.011 (0.629)	-0.042 (0.065)	-0.027 (0.236)	0.006 (0.806)	-0.039 (0.083)	0.067** (0.003)	0.025 (0.271)
FcHInte	0.546 (0.036)	-0.002 (0.934)	-0.032 (0.155)	-0.028 (0.219)	0.046* (0.044)	-0.033 (0.145)	0.019 (0.408)	0.022 (0.327)
FcCredit	0.095** (0.000)	0.044 (0.054)	-0.010 (0.663)	-0.018 (0.433)	-0.008 (0.734)	-0.020 (0.377)	0.047* (0.041)	0.023 (0.315)
FcConr	0.086** (0.000)	0.062** (0.007)	-0.046* (0.042)	-0.045* (0.049)	0.021 (0.351)	-0.034 (0.139)	0.059** (0.009)	0.043 (0.061)
FcSizMat	0.149** (0.000)	0.052* (0.022)	-0.046* (0.043)	-0.066** (0.004)	-0.001 (0.960)	-0.046* (0.043)	0.122** (0.000)	0.048* (0.034)

Source: Author's calculations based on WBES data.

Table 3c. Correlation matrix

	PvtLC	PvtFG	State	Other1	FcColl	FcApp	FcHInte	FcCred	FcConr	FcSizMat
PvtLC	1.000									
PvtFG	0.636** (0.000)	1.000								
State	-0.239** (0.000)	-0.033 (0.151)	1.000							
Other1	-0.198** (0.000)	-0.027 (0.235)	-0.007 (0.761)	1.000						
FcColl	0.547 (0.014)	0.007 (0.766)	0.003 (0.898)	0.029 (0.207)	1.000					
FcApp	0.164 (0.032)	0.048* (0.035)	-0.041 (0.074)	-0.013 (0.568)	-0.027 (0.235)	1.000				
FcHInte	0.413 (0.019)	-0.017 (0.458)	-0.018 (0.421)	0.011 (0.636)	0.113** (0.000)	0.158** (0.000)	1.000			
FcCredit	0.369 (0.020)	0.033 (0.152)	-0.051* (0.025)	0.015 (0.519)	-0.131** (0.000)	-0.097** (0.000)	0.037 (0.102)	1.000		
FcConr	0.048* (0.036)	0.064** (0.005)	-0.053* (0.019)	0.007 (0.749)	-0.038 (0.099)	0.203** (0.000)	0.102** (0.000)	0.266** (0.000)	1.000	
FcSizMat	0.095** (0.000)	0.111** (0.000)	-0.030 (0.181)	-0.010 (0.663)	-0.041 (0.073)	0.141** (0.000)	0.032 (0.160)	0.149** (0.000)	0.440** (0.000)	1.000

Notes: **. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Author's calculations based on WBES data.

Table 3a-c shows the correlation coefficients or matrix between the general financial obstacle and different firm characteristics. SMEs report significantly higher financing obstacles than large firms. The correlation coefficients show the non existence of high correlation among the variables. The multicollinearity problem was also evaluated among variable and since no correlation coefficient is greater than 0.90, therefore the problem none exist as per the Field (2005) theory ($r > 0.90$).

4. Multivariate Analysis and Results

The simple statistics presented in table 2 demonstrates that there are significant relationship between firm characteristics and financing obstacles. A multivariate analysis was adopted to analyze the relationship exist between firm financing obstacles and firm characteristics within East African countries through the following equation:

$$GFCons_{i,k} = f(FC, C) + E_{i,k} = \beta FirmCharactreristics_{i,k} + \gamma Country_k + \varepsilon_{i,k} \quad (1)$$

Where: *GFCons* (General Financing Constraint); Firm financing obstacle is either general financing obstacle or one of the specific obstacles encountered by firm *i* in country *k*. *FC* (Firm Characteristics) is a vector of firm's features which include the firm size dummies, incorporation dummies, industrial sector dummy variables, ownership dummy variables (locally, foreign or government/state ownership) and firm age dummies. Country (*C*) is a vector of country dummies that influence undetected country's specific factors that might influence firm's response on financing constraints.

Probit model and multivariate regressions were used to estimate regression (1) to establish which firms' or country's characteristics have influence financing constraints on their operations. The study assumes the disturbance parameter ε has a normal distribution and use standard maximum likelihood estimation. In applying the model clustered error terms is tolerable since omitted country specific characteristics might cause error terms to be correlated to firms within countries.

The study also evaluates whether other institutional factors, financial factors as well as economic development factors help to alleviate financing obstacles. Country dummies were replaced with country-level variables. The regression estimated to evaluate the situation is:

$$\text{General Financing Constraint} = \alpha + \text{Industrial sector} + \text{Size} + \text{Ownership} + \text{Age} + \text{Incorporation} + \varepsilon \quad (2)$$

$$\text{General Financing Constraint} = \alpha + \beta_1 \text{Manufacturing} + \beta_2 \text{Services} + \beta_3 \text{Private Local Ownership} + \beta_4 \text{Small} + \beta_5 \text{Medium} + \beta_6 \text{Sole proprietorship} + \beta_7 \text{Partnership} + \beta_8 \text{Age}(1-4) + \beta_9 \text{Age}(5-9) + \varepsilon \quad (3)$$

Table 4. Regression on financing constraints and firm characteristics results

Variables	General Financing Constraint (1)	General Financing Constraint (2)
Manufacturing	0.272 (0.000)	0.366 (0.000)
Service	0.233 (0.001)	0.211 (0.003)
Construction	-0.259 (0.000)	-0.254 (0.000)
Private Local Ownership	0.186 (0.010)	0.186 (0.010)
Private Foreign Ownership	-0.176 (0.021)	-0.176 (0.021)
Small		0.311 (0.000)
Medium		0.234 (0.012)
Large		-0.282 (0.001)
Public Ltd Company		-0.632 (0.040)
Private Ltd Company		-0.269 (0.000)
Sole Proprietorship		0.170 (0.001)
Partnership		0.200 (0.004)
Age 0 - 4 years		0.425 (0.029)
Age 5 - 9 years		0.413 (0.032)
Age 10 - 19 years		-0.114 (0.041)
Age 20 - 49 years		-0.154 (0.022)
Age 50 and above years		-0.417 (0.028)
Cut 1	0.991	1.186
Constant	(0.000)	(0.000)
Cut 2	0.728	0.835
Constant	(0.000)	(0.000)
Cut 3	0.717	0.904
Constant	(0.000)	(0.000)
Log-likelihood	678.576	1380.829
LR-Chi-square	78.097	117.058
R ² - P-value	0.040	0.059

Source: Author's calculations based on WBES data.

4.1 Research Results and Analysis

The General financing constraint is the response from firms on how financing constraint affects their firm's operations and growth. Responses vary from 1 (No obstacle), 2 (Minor obstacle), 3 (moderate obstacle), 4 (Major obstacle) and 5 (very severe obstacle). The regressions are estimated with ordered probit model. The results evidently show that there is a linear relationship existence between financing constraints and firms' characteristics. Firm's industrial sector, size, incorporation, age and ownership are likely to experience financing constraints however; all categories are not always significantly different from each another.

The industrial sector result implies that financing constraint is positively significantly related. Manufacturing and service sector are the one demonstrated financing constraints. The regressions in column (1) and (2) in Table 4 indicate that manufacturing and services are the strongest predictors of financing constraints. The study includes country and sectoral dummies in all regressions to evaluate how country's and firm's specific characteristics might influence firms' response in the study. Manufacturing sector comprises agriculture and natural resources including Food, Wood, Wood Products and Furniture; Nonmetallic minerals; Manufacturing Industries such as Textile; Machinery and equipments; Chemicals; Metal and Metal Products; and Other Manufacturing. Service sector comprises Services and Retail business including Garments; Retail; Transport, Knowledge Based Industries such as Electronics and Information Technology while Construction Sector stand itself.

Firm size influence firm's financing constraint whereby small and medium firms are more affected. This study used the dummy variables for small, medium and large as indicators of firm size. The results supported Kira and He (2012), Artola and Genre (2011), Fatoki and Assah (2011) that significantly financing constraints suffered severely to younger firms than large firms. The study concluded that SMEs are more likely to experience financial constraints than large firms.

The study finds out that local privately owned firms report higher financing obstacles than firm privately foreign owned. Under incorporation, firms which operate as a sole proprietorship or partnership are mostly to experience financing obstacles than Private Limited firms or Public Listed firms (PLC). The form of business organization (incorporation) does influence financing access to finance, access to capital in which has an impact in financing obstacle of the firm (Cassar, 2004; Abor, 2008, Kira & He, 2012). This study concluded that the form of business organization has an effect on equity – debt decisions which impact financing constraints on SMEs.

Firm aged less than 10 years (1 to 4 years and 5 to 9 years) were resulted to experience financing constraints in East African countries. Firms aged less than 10 years are significantly more prone to financing constraints than mature firms (i.e. more than 10 years old), but, according to this study, the model reveal that very young firms (i.e. less than five years old) are not significantly different from firms aged 5 to 9. Cassar (2004) supported the results that younger firm face heavily financial problem associated with information asymmetry and informational opaque (Devereux & Schiantarelli, 1989; Gilchrist & Himmelberg, 1991; Berger & Udell, 1988; Beck et al., 2005, Artola & Genre, 2011).

Table 5. Quantifying the effect of financing constraints and firm characteristics

Variables	General Financing Constraint (1)	General Financing Constraint (2)
Manufacturing	0.5303	0.5600
	0.4697	0.4400
	0.0605	0.1200
Service	0.7651	0.5573
	0.2349	0.4427
	0.5303	0.1145
Construction	0.2349	0.4824
	0.7651	0.5176
	-0.5303	-0.0352
Private Local Ownership	0.8727	0.5507
	0.1273	0.4493
	0.7455	0.1014

Private Foreign Ownership	0.1133	0.4840
	0.8867	0.5160
	-0.7734	-0.0320
Small		0.5631
		0.4369
		0.1261
Medium		0.5351
		0.4649
		0.0703
Large		0.4000
		0.6000
		-0.2000
Public Ltd Company		0.2500
		0.7500
		-0.5000
Private Ltd Company		0.4565
		0.5435
		-0.0870
Sole Proprietorship		0.5783
		0.4217
		0.1565
Partnership		0.6367
		0.3633
		0.2734
0 - 4 years		0.5889
		0.4111
		0.1777
5 - 9 years		0.5543
		0.4457
		0.1086
10 - 19 years		0.5276
		0.4724
		0.0552
20 - 49 years		0.5060
		0.4941
		0.0119
50 and above years		0.3438
		0.6563
		-0.3125

Source: Author's calculations based on WBES data.

Table 5 shows the economic significance of firm characteristics for their financing obstacles, this study report the

estimated probability that a firm describes financing as a major obstacle depending on its characteristics. Based on the regressions in table 4, estimated probabilities of rating financing obstacles as a major obstacle to the operation and growth of the firm (Financing obstacle = 5) are presented to establish the strength of a specific variable. Probability estimations were calculated for each firm's variable at its actual value to quantify the problem's strength. On the case of dummies, the first row reports the probability if the dummy variable takes on the value one while the second row reports the probability if the dummy variable takes on the value zero while the third row reports the difference between the first and second row to quantify the variables' effect. In the overall sample, manufacturing, private local ownership, service, small and medium enterprises, sole proprietorship and partnership, firm aged (1-4) years and (5-9) years each explain more than 5 % difference in the probability that a firm describes financing as a major obstacle. The results show how the problem can be quantified across the firms and evidence the spread of the problem across East African firms.

Table 6. Specific financing obstacles and firm characteristics

Variables	Financing Constraint Collateral	Financing Constraint Application Procedures	Financing Constraint High Interest Rates	Financing Constraint Credit Accessibility	Financing Constraint Special connections & Corruption	Financing Constraint Loan Size & Maturity
Manufacturing	0.582 (0.000)	0.182 (0.000)	0.086 (0.019)	0.731 (0.014)	0.184 (0.000)	0.087 (0.010)
Service	0.383 (0.000)	0.167 (0.000)	0.111 (0.011)	0.623 (0.023)	0.172 (0.000)	0.244 (0.049)
Construction	-0.350 (0.000)	-0.077 (0.042)	-0.008 (0.849)	0.012 (0.791)	0.069 (0.144)	-0.170 (0.000)
Private Local Ownership	0.880 (0.013)	0.226 (0.025)	0.299 (0.046)	0.665 (0.026)	0.657 (0.027)	0.183 (0.001)
Private Foreign Ownership	-0.035 (0.696)	0.092 (0.069)	-0.065 (0.252)	0.055 (0.398)	0.044 (0.501)	0.212 (0.000)
Small	0.334 (0.000)	0.775 (0.027)	0.907 (0.004)	0.877 (0.006)	0.936 (0.003)	0.234 (0.000)
Medium	0.228 (0.000)	0.255 (0.011)	0.260 (0.044)	0.567 (0.025)	0.944 (0.033)	0.174 (0.000)
Large	0.371 (0.092)	0.191 (0.059)	-0.120 (0.082)	-0.051 (0.479)	0.032 (0.673)	0.205 (0.001)
Public Ltd Company	-0.425 (0.201)	0.161 (0.408)	-0.117 (0.625)	0.151 (0.553)	-0.120 (0.621)	-0.026 (0.910)
Private Ltd Company	0.262 (0.000)	0.047 (0.175)	-0.012 (0.742)	0.111 (0.009)	0.004 (0.922)	0.191 (0.000)
Sole Proprietorship	0.201 (0.000)	0.233 (0.039)	0.279 (0.032)	-0.134 (0.001)	0.404 (0.035)	0.205 (0.000)
Partnership	0.363 (0.043)	0.291 (0.005)	0.550 (0.030)	0.069 (0.230)	0.079 (0.172)	0.189 (0.029)
Age 0 - 4 years	0.206 (0.003)	0.228 (0.016)	0.097 (0.012)	0.824 (0.038)	0.037 (0.062)	0.116 (0.018)
Age 5 - 9 years	0.333 (0.038)	0.526 (0.026)	-0.043 (0.256)	0.389 (0.082)	-0.025 (0.560)	0.092 (0.025)

Age 10 - 19 years	0.217 (0.077)	-0.278 (0.074)	-0.050 (0.199)	-0.015 (0.725)	0.005 (0.912)	-0.060 (0.146)
Age 20 - 49 years	0.212 (0.108)	0.110 (0.061)	0.010 (0.825)	0.093 (0.088)	-0.014 (0.795)	0.208 (0.000)
Age 50 and above years	0.065 (0.767)	0.087 (0.497)	0.105 (0.430)	0.076 (0.656)	0.154 (0.335)	0.149 (0.275)
Burundi	-0.209 (0.016)	0.413 (0.000)	0.389 (0.000)	0.401 (0.000)	0.411 (0.000)	0.405 (0.000)
Kenya	0.553 (0.000)	0.368 (0.000)	0.423 (0.000)	0.377 (0.000)	0.639 (0.000)	0.391 (0.000)
Rwanda	0.305 (0.002)	0.437 (0.000)	-0.416 (0.000)	0.437 (0.000)	-0.425 (0.000)	0.416 (0.000)
Tanzania	0.662 (0.008)	0.350 (0.000)	0.370 (0.000)	0.384 (0.000)	0.634 (0.000)	0.360 (0.000)
Uganda	0.335 (0.000)	0.376 (0.000)	0.384 (0.000)	0.384 (0.000)	0.382 (0.000)	0.377 (0.000)
Cut 1	0.479	0.523	-0.630	0.969	0.439	0.602
Constant	0.000	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cut 2	0.815	0.898	0.515	0.585	0.823	0.978
Constant	0.000	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log-likelihood	508.875	538.662	565.186	488.721	538.617	533.228
LR Chi-Square	139.630	74.607	59.284	59.007	58.669	52.214
R ² - P-value	0.023	0.038	0.030	0.030	0.030	0.027

Source: Author's calculations based on WBES data.

Table 6 confirms the findings that larger firms, foreign owned firms, publicly listed companies, and firms aged more than 10 years report lower financing obstacles as according to the regression results for specific financing obstacles on firm characteristics. The study report results using size dummies as size indicators and country dummies as country indicators. SMEs operates in both manufacturing and service sectors; operate locally; unincorporated [operate as family owned business (sole proprietorship) or partnership]; their growth are in early stage (less than 10 years) because most of they fail before 5 years and even if succeeded above 5 years they are stagnant because of shortage of finance to support profitable investment opportunities and growth.

Overall, the results in Table 4-6 consistently point the small and domestically owned firms are facing higher obstacles than other firms. The results show that domestic firms face higher obstacles than foreign firms is consistent with Harrison and McMillan (2003) who find that the investment-cash flow sensitivity is higher for domestic firms than foreign firms. Study findings demonstrate sorting firms according to their size and ownership structure (foreign vs. domestic ownership) in order to test the effect of financing obstacles leads to a reasonable classifications. This also suggests that classification criteria based on size and ownership are most useful in testing the presence of financing constraints and identifying financing constrained firms.

5. Conclusion

SMEs are the core to solve unemployment problem which is growing in East African countries. However, SMEs still have reported acute problems of access to external finance. This study explores the firm characteristics that predict best firms' financing obstacles. Survey on access to finance by World Bank survey, this study was conducted to assess indicators of financing constraints to SMEs. The study explores what can determine financing constraint to a firm by assessing firm characteristics: firm age, firm size, incorporation, type of ownership, sector of economic activity or country. The study find out that most of the firms experiencing financing obstacles tended to possess SMEs' features i.e. small and medium, young, sole proprietorship and

partnership mostly operating in manufacturing and service industrial sectors. More studies might be conducted in this field as a panel structure of the survey where individual firms can be followed over time to provide a new dimension for research to improve SMEs financing obstacles.

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Appendix

Appendix 1. Number of firms by country

Country	No. of Firms	Percent
1. Burundi	242	12.5
2. Kenya	657	34.0
3. Rwanda	158	8.2
4. Tanzania	368	19.0
5. Uganda	508	26.3
Total	1933	100

Source: Author's calculations based on WBES data

Appendix 2. Variables definitions and source

Variables	Abbreviation of Variables	Definition	Source
Manufacturing	Manuf	Dummy variable that takes on value 1 if a firm operates in Manufacturing sector, otherwise 0.	The World Bank Enterprise Survey
Service	Serv	Dummy variable that takes on value 1 if a firm operates in Service sector, otherwise 0.	The World Bank Enterprise Survey
Construction	Const	Dummy variable that takes on value 1 if a firm operates in Construction sector, otherwise 0.	The World Bank Enterprise Survey
Small	Small	Dummy variable that takes on value 1 if a firm is Small enterprise, otherwise 0.	The World Bank Enterprise Survey
Medium	Medium	Dummy variable that takes on value 1 if a firm is Medium enterprise, otherwise 0.	The World Bank Enterprise Survey
Large	Large	Dummy variable that takes on value 1 if a firm is Large enterprise, otherwise 0.	The World Bank Enterprise Survey
Public Ltd Company	Plc	Dummy variable that takes on value 1 if a firm is Public Limited Company, otherwise 0.	The World Bank Enterprise Survey
Private Ltd Company	Pltdcoy	Dummy variable that takes on value 1 if a firm is Private held Limited Company, otherwise 0.	The World Bank Enterprise Survey
Sole Proprietorship	Solepro	Dummy variable that takes on value 1 if a firm is a Sole proprietorship, otherwise 0.	The World Bank Enterprise Survey

Partnership	Partnerp	Dummy variable that takes on value 1 if a firm is Partnership, otherwise 0.	The World Bank Enterprise Survey
Less than 5 yrs	Age_5	Dummy variable that takes on value 1 if a firm is Less than 5 years, otherwise 0.	The World Bank Enterprise Survey
From 5 to 9 yrs	Age_5to9	Dummy variable that takes on value 1 if a firm is from 5 years to 9 years, otherwise 0.	The World Bank Enterprise Survey
From 10 to 19 yrs	Age_10to19	Dummy variable that takes on value 1 if a firm is from 10 years to 19 years, otherwise 0.	The World Bank Enterprise Survey
From 20 to 49 yrs	Age_20to49	Dummy variable that takes on value 1 if a firm is from 20 years to 49 years, otherwise 0.	The World Bank Enterprise Survey
Above 50 yrs	Age_50	Dummy variable that takes on value 1 if a firm is above 50 years and above, otherwise 0.	The World Bank Enterprise Survey
Private (Local)	PvtLC	Dummy variable that takes on value 1 if a firm is private locally owned, otherwise 0.	The World Bank Enterprise Survey
Private (Foreign)	PvtFG	Dummy variable that takes on value 1 if a firm is private foreign owned , otherwise 0.	The World Bank Enterprise Survey
State/Government	State	Dummy variable that takes on value 1 if a firm is state/government owned , otherwise 0.	The World Bank Enterprise Survey
General	Gcfin	How financing obstacle affect your business operations and firm growth: (1) No obstacle (2) Minor obstacle (3) Moderate Obstacle (4) Major obstacle (5) Very severe obstacle	The World Bank Enterprise Survey
Collateral	FcColl	Financing constraint collateral: (1) No obstacle (2) Minor obstacle (3) Moderate Obstacle (4) Major obstacle (5) Very severe obstacle	The World Bank Enterprise Survey
Application Procedures	FcApp	Financing constraint application procedures (1) No obstacle (2) Minor obstacle (3) Moderate Obstacle (4) Major obstacle (5) Very severe obstacle	The World Bank Enterprise Survey
High Interest rates	FcHInte	Financing constraint high interest rate (1) No obstacle (2) Minor obstacle (3) Moderate Obstacle (4) Major obstacle (5) Very severe obstacle	The World Bank Enterprise Survey
Credit	FcCredit	Financing constraint credit accessibility (1) No obstacle (2) Minor obstacle (3) Moderate Obstacle (4) Major obstacle (5) Very severe obstacle	The World Bank Enterprise Survey
Corruption& Special Connections	FcConr	Financing constraint special connections and corruption (1) No obstacle (2) Minor obstacle (3) Moderate Obstacle (4) Major obstacle (5) Very severe obstacle	The World Bank Enterprise Survey
Loan Size & Maturity	FcSizMat	Financing constraint Loan size and time Maturity (1) No obstacle (2) Minor obstacle (3) Moderate Obstacle (4) Major obstacle (5) Very severe obstacle	The World Bank Enterprise Survey

Notes

Note 1. East African Countries comprise Burundi, Kenya, Rwanda, Tanzania and Uganda.

Note 2. World Bank Enterprises Survey web: www.enterprisesurveys.org

Note 3. Figure 1 is adapted and updated from Carey et al. (1993, Figure 10) and Berger & Udell (1998, Figure 1)

Note 4. See Brewer and Genay (1994) and Brewer et al. (1997) for empirical evidence that external equity in the

form venture capital is more likely to be used to finance intangible assets and activities that generate little collateral while external private debt is more likely to be used to finance tangible assets.

Note 5. Venture capital is a broad term used to describe funding acquired in the earlier stages of a firm's economic life. This type of funding is usually acquired during the period which the company is growing faster than its ability to generate internal financing and before the company has achieved the size needed to be efficient.

Note 6. See Brewer and Genay (1994) and Brewer et al. (1997) for empirical evidence that external equity in the form venture capital is more likely to be used to finance intangible assets and activities that generate little collateral while external private debt is more likely to be used to finance tangible assets.

Note 7. This is not the only argument that has been suggested as the driving optimality of the type of equity contracts we observe in the venture capital, Garmaise (1997) argued that the normal pecking order in which external debt precedes external equity can be reserved if it is assumed that venture capitalists have superior information to entrepreneurs. While it seems plausible to argue that entrepreneurs have a superior informational advantage over a certain aspects of their project such as the feasibility of their project's technology, it may be reasonable to assume that venture capitalists have superior information over a project's marketability and its operational implementation..

Note 8. For example, in 2009 G-20 countries committed to identifying lessons learned on innovative approaches to providing financial services to SMEs and to promoting successful regulatory and policy approaches (Pittsburgh G-20 Summit, 2009). Also see OECD, 2004 & 2008.

Note 9. The SMEs nomenclature in Tanzania is used to mean micro, small and medium enterprises. Micro enterprises are those engaging up to 4 people or employing capital of up to US\$ 5,000. Small enterprises have between 5 and 49 employees or capital of US\$ 5,000 to US\$ 200,000. Medium enterprises employ between 50 and 99 people or use capital investment from US\$ 200,000 to US\$ 800,000.

Note 10. International Finance Company (IFC. 2005) - Tanzania MSMEs Access to Finance Assessment.

Note 11. This is especially true for businesses outside of the import/export sectors. A World Bank report in June 2008 noted that 64% of businesses in trade reported that credit was a significant constraint on their business. For manufacturing and agriculture, the corresponding figures were 86% and 88%.

Note 12. See Rwanda Establishments Census, June 2011 Gross enrolment rate for secondary education increased from 20.7% in 2008 to 31.5% in 2010 with the share of higher education students in science and technology increasing from 21% to 41.4% during the same period. Access to Technical and Vocational Education and Training (TVET) has increased only marginally from 8,250 students in 2006 to 15,354 in 2010, and remains well below the 2012 target of 135,000 students.

Note 13. African Development Bank; African Development Fund: Rwanda Bank Group Country Strategy Paper 2012-2016; Regional Department East A (OREA); October 2011: *Task team*: E. B. Sennoga (RWFO); N. Makonnen (RWFO); C. Baumont (OREA); S. Turay (OREA); O. Amu (RWFO); E. Ferreras Carreras (ORQR.4); M. Mdachi (OSHD.2); G. Ajumbo (ONRI.2); C. Mollinedo (OSGE.2); E. Ngode (ORPF.2); J.P. Kayobotsi (RWFO); J. Karimba (RWFO); J. Nyirimana (RWFO); S. Okeke (OSAN.1); E. Zeleke (ORQR.3); E. Rutaboba (RWFO); P. Munyaruzenzi (RWFO); and B. Byamukama (RWFO) ; *Peer Reviewers*: R. Walker (KEFO); P. Kariuki (UGFO); J.C. Anyanwu (EDRE.1); S. Ijeh (ORWA); K. Mbekeani (ONRI.2); and S. Jean (OPSM).

Note 14. Kaplan and Zingales (1997, 2000) questioned the validity of Fazzary et al.'s findings that financially constrained firms tend to have high investment-cash flow sensitivity arguing that Fazzari et al. tends to classify firms incorrectly. This stream of the literature, using balance sheet information, needs to a priori classify firms between financially constrained and unconstrained firms (using proxies such as the size or the age of the firm) in order to check whether the sensitivity of investment/growth to cash-flow is higher for constrained than for unconstrained firms Kaplan and Zingales, after re-classification, find substantial differences in the degree of investment sensitivity to financial constraints between firms.

Note 15. The data source is the Enterprise Surveys database maintained by World Bank and freely available at www.enterprisesurveys.org