

**ACCESS TO FINANCE AND FINANCING PATTERNS OF FIRMS IN
GHANA**

**A THESIS SUBMITTED TO THE DEPARTMENT OF ECONOMICS,
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BY

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AWARD OF THE MASTER OF PHILOSOPHY (MPHIL) DEGREE IN
ECONOMICS**

DECLARATION

This is to certify that this thesis is the result of research undertaken by **Kwaku Amakye** towards the award of the Master of Philosophy (MPhil) degree at the Department of Economics, University of Ghana.

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ABSTRACT

Access to external sources of financing for firms has been and continues to be an obstacle to the operations and growth of firms. Firms have used diverse means to finance their operations, especially internally generated funds. The purpose of the study was to investigate the determinants of the key external sources of financing working capital and new fixed investments by firms in Ghana.

The main source of data for this study is the World Bank Enterprise Survey on Ghana; a firm level survey conducted in the year 2007. The Tobit estimation technique was used to investigate the determinants of the external sources of financing while analysis of variance was used to determine the variability in sources of finance according to firm size.

The results of the study show that access to finance is perceived by firms as the second most serious obstacle to their operations. Secondly firms tend to rely more on internal sources of financing than external sources of financing. In the use of external sources of financing working capital, trade credit is more important than bank financing. However, firms finance a higher proportion of their new fixed investments from banks as compared to other sources of financing. The factors which influence the use of external sources of financing are firm size, audited financial statements, sector, educational level of the manager, ownership and location.

The study recommends that firms, especially small firms, keep quality financial information on their operations. As firms put in place measures to improve on the needed financial information to external finance providers, financial intermediaries should also be encouraged to introduce more relationship lending products, if they are to meet the financing needs of Small and Medium Enterprises.

DEDICATION

This work is dedicated to my parents, Mr. Kwadwo Amakye and Madam Comfort Boahen, my siblings and all those who have contributed in diverse ways to the success of the current study.

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Filled with joy for the completion of this work I thank the Most High God for the power and strength to accomplish the task. I am also grateful to my supervisors Dr. Augustine F. Gockel and Dr. William Bekoe for their unflinching support and useful comments throughout the period of my study.

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I am also thankful to the World Bank Enterprise Survey Department for the provision of the data set used in this study. It would have been time consuming, costly and perhaps impossible to collect such data on my own. The African Economic Research consortium deserves recognition for their financial support and three months of academic training as part of my graduate studies.

Though I have received support from my supervisors and colleagues, I claim sole responsibility for any errors, omissions and misrepresentations which may be found in this work.

Kwaku Amakye

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LIST OF ABBREVIATIONS

GLSS	Ghana Living Standards Survey
PAMSCAD	Programme of Action to Mitigate the Social Costs of Adjustment and Development
SMEs	Small and Medium Enterprises
G-7	Group of seven Industrialized nations
GDP	Gross Domestic Product
TOR	Tema Oil Refinery
ARB	Association of Rural Banks
FINSAP	Financial Sector Adjustment Programme
ERP	Economic Recovery Programme
NPART	Non Performing Assets Recovery Trust
ISSER	Institute of Statistical, Social and Economic Research
GSE	Ghana Stock Exchange
IDA	International Development Association
VCTF	Venture Capital Trust Fund
PNDC	Provisional National Defence Council
PSC	Private Sector Credit
DMBs	Deposit Monetary Banks
EMPRETEC	Empresas Tecnologia
GRATIS	Ghana Regional Appropriate Technology Industrial Services
OECD	Organization for Economic Co-operation and Development
FUSMED	Fund for Small and Medium scale Enterprise Development
EBIT	Earnings Before Interest and Tax
WBES	World Bank Enterprise Survey
UNIDO	United Nations Industrial Development Organization
GSS	Ghana Statistical Service

CHAPTER ONE

INTRODUCTION

1.1 Background

Firms finance their operations and growth in many different ways. Their financing choices are influenced by the preferences of each firm's entrepreneurs and, more importantly, by the financing sources – both internal and external – that are available to them. In what form, from whom, how successfully, and at what cost firms are financed thus depends on a wide range of factors, both internal and external, to the firm (World Bank, 2008).

In Ghana the most widely used source of credit by households is credit from relatives/friends/neighbours. The proportion of households using this source is 53.35 percent. Traders serve as the second major source of credit (15.3 percent), with state banks serving as the third major source (8.3percent) while private banks provide 6.5 percent¹ with credit (GLSS 5). Thus at the household level, informal financing is the key source used to finance capital and current expenditure needs with institutional financing being the second. Loans secured by households were principally for business (28.8 percent) and the purchase of other consumer goods (18.2 percent).

At the firm level, studies have shown that internal funds (retained earnings and owner's personal savings) either finance a higher proportion of the operations of firms or are used by more firms. According to Aryeetey et al. (1994), retained earnings

¹ These percentages are the average number of households who received loans from the various sources specified.

were used by 70 percent² of the firms surveyed and own savings by 26 percent of the firms to finance working capital³. Baah-Nuakoh (2003)⁴ showed that 63.8 percent of the total expenditure on equipment was financed from profits and 23.1 percent from personal savings. Apart from the use of internal funds which is common to the analysis of these researchers, the other sources following internal source vary per each author. According to Aryeetey et al., (1994) the other sources are advances from customers (29 percent of firms), overdraft (16 percent), supplier's credit (15 percent), PAMSCAD (10.6 percent) and bank loans (9.8 percent). For Baah-Nuakoh (2003) the other sources used and their relative contributions to financing equipment are banks (10.4 percent), friends (9.5 percent), supplier (3.7percent) and money lender (0.0 percent).

Some studies have identified access to finance (external finance) as a serious or at least a major obstacle to the operations of firms. Such studies include, Thomi and Yankson (1985), Anheir and Seibel (1987), Webster and Steel (1991), Sowa et al. (1992), Baah-Nuakoh (1993), Baah-Nuakoh and Steel (1993) and Baah-Nuakoh (2003). Mensah (2004) also claims that the single most important factor constraining the small and medium sector's growth is the lack of finance. He attributed this lack of finance to a relatively undeveloped financial sector with low levels of intermediation, lack of institutional and legal structures that facilitate the management of SMEs risks and high cost of borrowing and rigidities in interest rates.

² Percentage of firms indicating any given source as among the first three

³ The pattern for financing additional fixed investments was similar to that for working capital except that the use of overdraft was absent in the financing of additional fixed investments.

⁴ The sources of financing working capital were not specified in this work.

1.2 Statement of the Research Problem

Access to finance has been found to be one of the most important factors that aid the growth of firms; with inadequate access constraining firm growth. Beck et al. (2005) found that financial constraints have a significant negative impact on the growth of firms. According to their study, the impact does vary with firm size. Limited access to financial services hinders the emergence and growth of SMEs (Levy, 1993). Biekpe (2004) argued that most small businesses, especially in Sub-Saharan Africa, fail in their first year due to lack of support from government and traditional banks.

Despite the importance of access to finance in the growth of firms, previous surveys have identified access to finance as an important obstacle faced by firms, especially SMEs, in Ghana. Aryeetey et al. (1994) argued that the most significant institutional weakness faced by dynamic SMEs is their lack of access to external finance. Baah-Nuakoh (2003) confirms this finding from his study of the Ghanaian manufacturing sector that irrespective of size, age and sector, the problem of credit has been identified as the major obstacle.

There have been interventions by successive governments and financial regulators to make finance accessible to firms in Ghana. The development of Ghana's financial system, after independence, was in response to the perceived shortage of credit to indigenous enterprises (Gockel and Akoena, 2002). The Ghana Commercial Bank and other investment banks, for example, were established in an attempt to solve the limited access to finance by firms⁵. However these institutions favoured large indigenous firms, compared to small and medium enterprises. The inability of

⁵ Gockel and Akoena (2002) give a good account of the various interventions in the financial system in an attempt to ensure the flow of resources to the various sectors of the economy.

commercial banks to satisfy the financing needs of the micro, small and medium enterprises led to the establishment of rural and community banks. The rural and community banks were established to mobilize the financial resources of surplus spending units channelling such resources into the economic activities of deficit spending units, especially micro and small enterprises.

After the establishment of the financial institutions as mentioned above, the flow of financial resources to the priority sectors in the economy were still viewed to be inadequate. The government of Ghana through the central bank introduced interest rate controls and sectoral credit allocation into the banking system. Such controls led to distortions on the financial market, calling for a reform of the financial sector in 1988⁶.

Though such interventions have had differential impact on the economy, they have not yet been able to solve completely the problems they were meant to solve. Gockel and Akoena (2002) found that financial liberalization, for example, is yet to make an appreciable impact on the accessibility of financial service by micro, small and medium enterprises, adding that rural enterprises and urban micro and small-scale enterprises have been severely marginalized from credit markets.

These developments mean that there may be some elements inherent in firms that make them have less access to external sources of financing. There is the need to understand how firms in Ghana finance their investments. Attempts to understand the financing of the operations of firms calls for an examination of the factors that

⁶ The objectives and other details about the financial sector reforms have been provided in chapter two under section 2.2.1

determine the financial structure decisions of firms. The financing decisions of firms at the macro level have implications for capital market development, interest rate and security price determination, and regulation (Abor, 2008). At the firm level, the decision of firms on their financial structure affects corporate governance and the development of the firm (Green et al., 2002). Thus an evaluation of the capital structure of firms through their determinants is essential and will help firms work on factors within their capacity to enhance their access to external sources of financing.

1.3 Research Questions

Arising from the problem statement, the following questions are worth evaluating. How are firms, especially SMEs utilizing the existing financial intermediaries in financing their operations, per their financing patterns? What are the factors that determine the source of finance used by firms to finance new fixed investments and working capital?

1.4 Objectives of the study

The broad objective of this study is to analyze the determinants of the key external sources of financing used by firms to finance their working capital and new fixed investments.

Specifically this work seeks to find out:

- i. the pattern of finance used by firms for working capital and new fixed investment financing;
- ii. if the proportion of working capital and new fixed investments financed from a given source vary with firm size;

- iii. if the availability of credible information for financial analysis affects firms' use of external sources of financing.

1.5 Justification of the study

The financial system of the Ghanaian Economy has not been stagnant over time. Various financial sector policies and adjustments have been implemented to affect Ghana's financial system over the years. Despite the reforms implemented in previous years, survey of firms shows that firms rank access to finance as a major obstacle to their operations and growth. Previous studies have come to the conclusion that financial liberalization in Ghana has had little effect on SMEs access to external financing and that it is yet to make an appreciable impact on these firms (Aryeetey et al. 1994, Gockel and Akoena, 2002 and Baah-Nuakoh, 2003).

There is therefore the need for further studies to assess how firms, especially SMEs, finance their operations in Ghana. The determinants of the important external sources of finance used by firms will be investigated in this study using a new data set; the World Bank Enterprise Survey conducted in Ghana in the year 2007. This data set unlike the previous ones does not only include manufacturing firms but those in the service business as well.

Knowledge about capital structures has been derived with data from developed economies (Both et al., 2001). Studies which have concentrated on developing countries, apart from coming out with contrasting results (Abor, 2008) have also concentrated on large enterprises⁷. Singh and Hamid (1992) and Singh (1995)

⁷ A known exception however in Ghana is the study by Abor, 2008

research on developing countries showed that developing countries use external financing for growth to a higher extent as compared to firms in developed countries and also firms in developing countries use more of equity finance than debt finance. Cobham and Subrahmaniam (1998), using a sample of large firms in India, however found that firms use substantially lower external and equity financing. Booth et al. (2001) found that though debt ratios vary across developing countries, apart from South Korea all the other developing countries in the sample⁸ have debt ratios lower than that of the G-7 countries.

Most of these studies do not only concentrate on large firms but also the definition of external finance used focuses on equity and external debt without taking into account the possibility that in some countries, firms may substitute other forms of financing, for example trade credit (Aryeetey, 1994 and Beck et al., 2004). This study therefore seeks to examine the pattern of finance used by firms in Ghana for working capital and new fixed investment financing as well as the factors that determine the important sources of finance used by firms, making room for other external sources such as trade credit.

There have been other studies on the sources of finance for firms in Ghana. Key among such studies are Aryeetey et al. (1994), Baah-Nuakoh (2003), Abor (2005) Abor and Biekpe (2007) and Abor (2008). Aryeetey et al. (1994) studied the supply and demand of finance by small enterprises in Ghana but focused on the manufacturing sector in urban areas that had some contact with assistance institutions. Baah-Nuakoh (2003) also assessed the constraints of the manufacturing sector in

⁸ The sample was made up of 10 developing countries including one African country - Zimbabwe

Ghana and gave the sources through which firms finance their start-up and equipments. Though our study will concentrate on firms in urban centres as well, it includes firms in the services sector in addition those in the manufacturing sector.

Abor and Biekpe (2007) studied the determinants of bank finance in Ghana. Though they were able to find some factors that determine bank financing, banks may not be the only key external source from which firms, especially SMEs, obtain finance. There are other forms of financing, such as customers' advances and suppliers' credit, that are as equally important as bank credit (Aryeetey et al., 1994). Abor (2008) examined the determinants of debt financing without exploring the various components of debt financing. This study will not only consider the determinants of bank financing neither will it narrowly define the sources of financing into debt and equity. It will however, explore other key sources of external financing for firms, especially small and medium enterprises, in Ghana.

The current study will also examine new fixed investment and working capital separately to know the factors that determine the key sources of financing used by firms. Though attention has been on financing fixed capital, working capital financing is equally important; Economists have recognized this since the time of Adam Smith (Fazzari and Peterson, 1993). The study will also help to analyze why firms that do not apply for any line of credit from financial institutions tend to do so. Thus the study will add to the existing literature on firms' access to external finance and their financing patterns. The results of this study will be of importance for firms to work on the factors which are internal to them. It will also help to shape the policies of policy makers aimed at making finance available to firms in Ghana.

1.6 Scope of the study

The study will cover the non-financial and non-agricultural firms. These firms are in the following industrial classification (based on the International Industrial Classification); all manufacturing sectors, construction, retail and wholesale services, hotels and restaurants, transport, storage and communications, and computer and related activities.

Specifically the areas of focus in this study are Accra-Tema, Kumasi, Takoradi and Tamale. These areas have been chosen over the others principally due to availability of data. The data for this study was obtained from a secondary source and the above mentioned cities were the ones included in the data collection process. The study will also concentrate on small and medium scale enterprises with large enterprises as the reference point; given that little is known about the determinants of the financing patterns of SMEs in Ghana.

1.7 Organization of the study

The study is organized into six chapters. The current chapter covers an introduction to the study. Chapter two reviews the financial sector of the Ghanaian economy bringing into focus the availability and cost of finance to firms. Chapter three concentrates on a review of the relevant literature for this study, with chapter four taking into account the methodology for the research. The results of the study are presented and discussed in chapter five and the last chapter concludes the study giving policy recommendations and the limitations of the study.

CHAPTER TWO

OVERVIEW OF THE FINANCIAL SYSTEM OF GHANA

2.0 Introduction

This chapter provides an overview of the Ghanaian economy, with particular emphasis on the financial sector. It is organized into three sections; section one presents a quick overview of the Ghanaian Economy while section two considers some key developments in Ghana's financial system. The last section will consider the characteristics of SMEs in Ghana.

2.1 Overview of the Ghanaian Economy

The Ghanaian economy has seen improvement in the macroeconomic environment with reference to the Gross Domestic Product (GDP) growth rate and the rate of inflation. For the ten year period 1990 – 1999, real GDP growth was between 3.3 percent and 5.3 percent with an average rate of 4.1 percent (Table 2.1). In this same decade inflation rate was high and on the average the annual rate was 27.6 percent. It can broadly be said that in these periods, the economy was recovering from the economic decline as a result of severe drought, worsening terms of trade and so forth in the 1980s and responding to the economic recovery programme of the Government of Ghana with support from the World Bank.

The second ten years period 2000 – 2009, saw GDP growth increasing steadily from 3.7 percent in the year 2000 to 7.3 percent in 2008. In 2009 however, the rate dropped to 3.5 percent – the lowest rate for the period (2000-2009). The effect of the global economic downturn and austere measures implemented by the government can be

cited as reasons for the drop in the real GDP growth rate, in the year 2009. For the period 2000 – 2009 average GDP growth rate was 5.2 percent, which is approximately 1.0 percent higher than that of the first ten years (1990 – 1999).

Table 2.1: Real GDP growth and Annual inflation rates (1990-2009)

Year	Real GDP Growth	Inflation (Annual %)	Year	Real GDP Growth	Inflation (Annual %)
1990	3.3	37.3	2000	3.7	25.2
1991	5.3	18.0	2001	4.0	32.9
1992	3.9	10.1	2002	4.5	14.8
1993	4.8	25.0	2003	5.2	26.7
1994	3.3	24.9	2004	5.6	12.6
1995	4.1	59.5	2005	5.9	15.1
1996	4.6	46.6	2006	6.4	10.9
1997	4.2	27.9	2007	5.7	10.7
1998	4.7	14.6	2008	7.3	16.5
1999	4.4	12.4	2009	3.5	19.3
<i>Average</i>	<i>4.3</i>	<i>27.6</i>	<i>Average</i>	<i>5.2</i>	<i>18.5</i>

Source: World Bank (2011), World Development Indicators

Changes in the consumer price index were more favourable in the second period (2000-2009), with an average rate of inflation of 18.5 percent – which is 9.1 percent lower than that of the first decade. This can be explained by the change in the direction of policy making and how the Bank of Ghana carried out its primary object of ensuring price stability. The Bank of Ghana adopted the inflation targeting system. This new system makes the central bank more transparent in carrying out its mandate.

It also increases the credibility of the central bank, which is recognized as an essential factor in building trust in an economy.

In terms of sectoral contribution to GDP, the Agricultural sector can generally be classified as the sector that drives the economy. It has contributed the highest rate to national output; at least within the period evaluated (1995 – 2009). Its lowest share of national output in the years 1995 – 2009 has been 33.9 percent in the year 2008. The highest contribution to GDP by the agricultural sector (37 percent) was recorded in the year 2005 (Figure 2.1). The Services sector has been the second largest contributor to Ghana's GDP for the period, 1995-2009. Its highest contribution to national output (32.3 percent) was recorded in the year 2009. The lowest contribution made by the services sector (28 percent) was made in the year 1996. The industrial sector's contribution to GDP has been below that of the agricultural and services sector. Its highest contribution (26.1 percent) was in the year 2007. On the average the Agricultural sector has contributed 35.6percent, the services sector 29.7 percent and the industrial sector, 25.1 percent.

Some of the challenges to the performance of the economy are persistent volatile and high world oil prices, subsidisation of the prices of petroleum products and the huge Tema Oil Refinery (TOR) debt. Apart from these persistent challenges to the performance of the economy, the global economic crisis which heightened in 2009 can be cited as a factor that resulted in the poor performance of the economy in that same year.

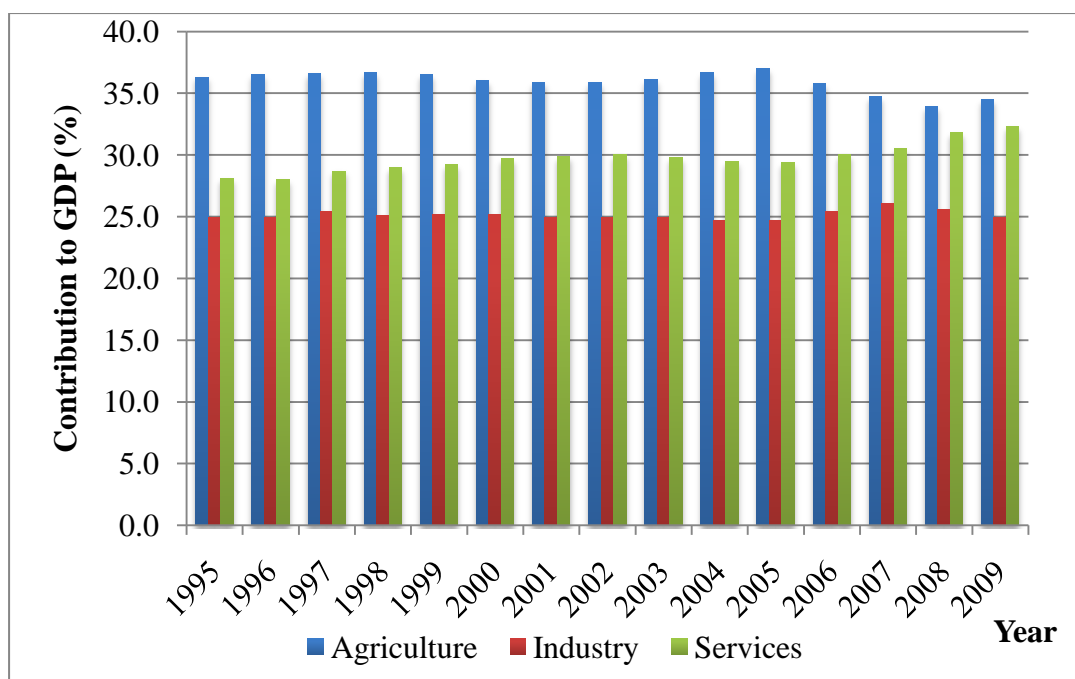


Figure 2.1: Sectoral Contribution to GDP 1995-2009, in 1993 constant prices**

** Excludes Indirect Taxes

Source: ISSER, Various Issues and Ministry of Finance and Economic Planning, Budget statement, 2011

2.2 The Financial Sector

The financial sector of the Ghanaian economy can broadly be categorized into formal and informal financial institutions.

Formal financial institutions are those institutions incorporated under the Companies Code 1963 (Act 179), which gives them legal identities as limited liability companies, and subsequently regulated by the Bank of Ghana and or any other institution the central bank authorises to do so, under the various Banking and Financial Institutions laws. The laws which govern banks and non-bank financial institutions are; the Banking (Amendment) Act, 2007, Act 738 and the Non-bank Financial Institutions Act, 2008, Act 774. The Banking (Amendment) Act, 2007, Act 738 classifies banks

as Class I, Class II and General banks⁹ (Bank of Ghana, 2009). Rural banks are also considered to be part of the banking system but have a lower minimum capital requirement compared to other banks.

The second sub-sector of the formal financial system is made up of non-bank financial institutions. The various services classified as non-bank financial services under the Non-bank Financial Institutions Act, 2008, Act 774 are; leasing, mortgage finance, money lending, money transfer services, non-deposit-taking microfinance services, credit union operations and any other services or operations the Bank of Ghana may from time to time by notice designate as such. In addition to the institutions providing the above services, other institutions which were previously regulated under the Financial Institutions (Non-Banking) Law, 1993 (P.N.D.C.L. 328) immediately before the coming into force of this Act 774 are to be converted into other licensed non-bank financial services under Act 774. This new class of institutions are acceptance houses, building societies and discount houses.

There are also some institutions which were previously regulated under the Financial Institutions (Non-Banking) Law, 1993 (P.N.D.C.L. 328) before the enactment of the Non-Bank Financial Institutions Act, 2008, Act 774. These institutions are savings

⁹ Class I banking licence allows the holder to transact domestic banking business, previously classified as Universal Banking License;

Class II banking licence allows the holder to conduct banking business or investment banking business with non-residents and other Class II banking licence holders in currencies other than the Ghanaian currency, except to the extent permitted by the Bank of Ghana for trading on the foreign exchange market of Ghana and investment in money market instruments. Foreign banks can now establish branches in Ghana to undertake Class II banking business;

General Banking licence allows both Class I and Class II banking business in and from within Ghana (Bank of Ghana, 2007).

and loans companies, finance houses and deposit taking microfinance institutions. The non-bank financial institutions Act, 2008 specifies that such institutions are to be regulated under the Banking Act, 2004, Act 673 as amended.

The final sector of Ghana's financial system is the informal financial sector. This sector covers financial service providers whose activities may not be legally registered at the national level but may belong to a registered association (Aryeetey, 2008). Financial services classified as informal include *susu* operations such as, individual savings collectors, rotating savings and credit associations and savings and credit clubs run by an operator. Financial services by trade creditors, self help groups and friends/relatives can also be classified as informal financial services (Steel and Ander, 2003).

2.2.1 Developments in the financial sector

There have been changes in the financial system of the Ghanaian Economy. Before the financial sector liberalization in 1988, the government intervened in the financial system through the Bank of Ghana by introducing interest rate controls and the allocation of credit to priority sectors of the economy. Such policies were based on the desire to raise the level of investment, change the sectoral pattern of investment and to keep interest rates low. The existence of controls in the financial sector led to the lack of competitiveness and innovation in the system.

Following the poor performance of Ghana's financial system after the interventions by the government of Ghana, the Financial Sector Adjustment Programme¹⁰ (FINSAP) was introduced in the year 1988 as part of the economic recovery programme (ERP). The objectives of the programme were: to restructure financially distressed banks, improve savings mobilization and enhance the efficiency of credit allocation through interest rate liberalization, enhance the soundness of the banking system through an improved regulatory and supervisory framework and establish a non-performing assets recovery trust (NPART).

The monetary authorities introduced policies to affect the availability and cost of credit in the economy, through the use of some monetary measures. Monetary measures introduced included a revision of the reserve requirements for commercial banks and a complete deregulation of interest rates. The interest rate policy introduced was aimed at deregulating the banking sector, to make the sector competitive. Commercial banks were therefore free to determine their own lending and borrowing rates. There was also the abolishing of sectoral credit ceilings¹¹ prescribed by the Bank of Ghana before 1988 to be applied by all banks in lending to the various sectors of the economy. Sectoral credit allocation was abolished because the macroeconomic objectives of the government which underlined such an allocation did not coincide with the economic considerations of the banking sector (ISSER, 1991).

¹⁰ A good source of information on the impact of FINSAP on SMEs access to credit in Ghana is Gockel and Akoena (2002). The study draws on the financial sector liberalization in Ghana to investigate how access to finance by micro, small and medium enterprises has been affected by the Financial Sector Adjustment Programme.

¹¹ The last direct control measure for sectoral credit allocation – 20% mandatory agricultural lending requirement of all banks – was removed in April 1991. Gockel and Akoena (2002) makes it clear that sectoral credit targets of lending for all banks were aimed at making credit available to the designated poor normally defined as micro, small and medium scale enterprises.

The second phase of the Financial Sector Adjustment Programme (FINSAP II) was introduced in the year 1990. This was aimed at reducing state shareholding in Ghanaian banks, continue the bank restructuring programme which was launched under FINSAP I, intensify the recovery of non-performing assets by NPART, and enhance the effectiveness of a broad range of non-bank financial institutions. A key institution that came into existence was the Ghana Stock Exchange (GSE).

The Ghana Stock Exchange was incorporated under Ghana's Companies Code, 1963 on November 12, 1990. It was incorporated to be one of the tools to mobilize capital for development. The Exchange, in addition to the 20 organizations involved, raised an amount of GH¢ 1700.00 required as capital. On the opening day, 10,700 shares of 11 companies who were listed were sold (ISSER, 1991). By the year 1992 the number of listed companies had increased to 15. To promote the development of the capital market, the government reduced the dividend tax from 30 percent to 10 percent during the year 1992. In addition to this a 5 year capital gain tax holiday for companies listed on the exchange was instituted. These measures were aimed at boosting the demand for shares in companies so as to promote the development of the market. Market capitalization stood at GH¢ 4.38 million. The volume of shares traded showed an increase of 12 percent from the previous year's level of 1,825,800 to 2,039,000 (Bank of Ghana, 1992).

The Non-Bank financial institutions project was launched in the year 1995 with the financial support of the International Development Association (IDA). This project aimed at improving domestic savings mobilization through strengthening of non-bank

institutions and the National Payments and Settlements systems (Bank of Ghana, 1995).

In the year 2004 the Venture Capital Trust Fund (VCTF) was established by an Act of Parliament, Venture Capital Trust Fund Act, 2004, Act 680. The objective of the Trust Fund is to provide financial resources to Small and Medium Enterprises¹² in specified sectors of the economy and also to initiate relevant activities for the development and promotion of the venture capital industry in Ghana (Bank of Ghana, 2007 and Venture Capital Trust Fund, 2008). The main source of funding for the Trust Fund is 25 percent of the proceeds from the National Reconstruction Levy (a levy on the financial sector), starting from the financial year 2003. A blow however to the fund was the repealing of the National Reconstruction levy in December 2006. As a result the Trust Fund has received no additional major funding beginning from the year 2007 to enhance its operations (Venture Capital Trust Fund, 2006 and 2008).

To enhance the environment for financial intermediation there was a review and passage of the Home Mortgage Finance Act, 2008 (Act 770), Borrowers and Lenders Act, 2008 (Act 773) and the Non-Bank Financial Institutions Act, 2008 (Act 774) in the year 2008. The Home Mortgage Finance Act, 2008 (Act 770) is to regulate home mortgage financing and applies to transactions between financial institutions and their customers for the provision of finance for the, construction or purchase of residential property, completion of residential property, extension to or renovation of residential property, improvement to residential property for ownership, sale or rental, construction of residential property for sale or rental and the purchase of fixtures and chattels related to residential properties. The Borrowers

¹² The Definition of SMEs by the Venture Capital Trust Fund is based on the Asset value of firms, such that SMEs are those firms with total asset base, excluding land and buildings not exceeding the cedi equivalence of US\$ 1 million.

and Lenders Act, 2008 (Act 773) is to provide the legal framework for credit, improve standards of disclosure of information by borrowers and lenders, prohibit certain credit practices, promote a consistent enforcement framework related to credit and to provide for related matters. The Non-Bank Financial Institutions Act, 2008 (Act 774) aims at providing for the regulation of non-bank financial institutions and for related purposes. It replaces the Financial Institutions (Non-Banking) Law, 1993 – PNDC Law 328 (Bank of Ghana, 2008).

The first credit referencing bureaux in Ghana, XDS Data Limited, was issued with a provisional licence under the Credit Reporting Act (Act 726) to provide credible information on prospective borrowers and reduce the information asymmetry that had characterised the lending function. In April 2009 the XDS Data Limited received its final licence. There was also the establishment of a collateral registry by the Bank of Ghana following the enactment of the Borrowers and Lenders Act, to register charges and collaterals created by borrowers to secure credit facilities provided by lenders.

Many financial institutions have been established through the policies implemented over the years. As at the end of the year 2009 there were 26 deposit monetary banks (with 13 being foreign owned and 13 being Ghanaian owned) with 706 branches, 134 Rural and Community Banks, 47 Non Bank Financial Institutions and 3 branchless banking companies – mobile phone banking (Bank of Ghana, 2009).

The next two sub-sections review the performance of Ghana's formal financial sector following the above developments in the financial system.

2.2.2 Financial deepening

Financial deepening is a measure of the extent to which institutions that provide financing through intermediation are able to meet the financial needs of different users of finance in a given country. There are various indicators used to measure how deep the financial system is and the most common indicators used include the ratio of private sector credit to Gross Domestic Product (PSC/GDP), the ratio of money supply to GDP (M2/GDP or M2+/GDP) and the ratio of currency to money supply (Cu/M2+). These ratios indicating the degree of financial deepening in Ghana are shown on Table 2.2 below.

The financial deepening indicators show that on the whole there have been improvements in the performance of the financial institutions in Ghana. The ratio of private sector credit to GDP (PSC/GDP) for example has been increasing over time. From a low rate of 0.05 in 1995, private sector credit to GDP ratio has gradually improved reaching 0.1 in 1998, hovering around 0.12 and 0.18 in the years 1999 and 2006. The ratio crossed the 0.1 mark to the 0.2 range reaching 0.27 in 2007 and again crossing the 0.2 line to 0.34 in 2009. These positive changes indicate that credit is being channelled into private businesses with time.

Currency in circulation to broad money supply (Cu/M2+) has also been declining with time. In the year 1995 the ratio of total money supply held by the public as currency was 0.41. This means that for any one Ghana cedi of new money supplied, the public held on to forty-one pesewas while the remaining fifty-nine pesewas was held in various forms of deposits. This was a high rate, indicating that the public was keeping almost the same fraction of money saved as currency outside the financial

institutions. The currency/money supply ratio declined steadily to 0.26 in the year 1999 but increased to 0.36 a year later. It began to decline in the year 2004 after stagnating at a rate of 0.3 in the years 2001 to 2003. By the year 2009 the ratio had declined to 0.20. This trend indicates that a higher proportion of the money that is supplied are with the financial institutions and holding all other things constant it is expected to aid financial intermediation, specifically the further creation of money through credit allocation. The M2+/GDP is used as an indicator of growth in financial savings. Financial savings has increased steadily from a low rate of 0.23 to 0.47 in the year 2009.

Table 2.2: Financial Deepening (1995 – 2009)

Year	M2+/GDP	Cu/GDP	Cu/M2+	PSC/GDP
1995	0.18	0.07	0.41	0.05
1996	0.20	0.08	0.41	0.07
1997	0.18	0.07	0.39	0.08
1998	0.23	0.06	0.28	0.10
1999	0.24	0.06	0.26	0.12
2000	0.27	0.10	0.36	0.14
2001	0.27	0.08	0.30	0.12
2002	0.32	0.10	0.30	0.12
2003	0.32	0.10	0.30	0.12
2004	0.34	0.09	0.27	0.13
2005	0.32	0.08	0.26	0.15
2006	0.37	0.09	0.24	0.18
2007	0.41	0.09	0.23	0.27
2008	0.47	0.10	0.21	0.28
2009	0.47	0.10	0.20	0.34

Source: ISSER, 2009: The state of the Ghanaian Economy in 2009

2.2.3 Availability and Cost of Credit

The cost of credit to firms can be measured by the lending rates of commercial banks though this may not reflect all the cost of obtaining credit and also that commercial banks may not be the only source from which firms obtain credit. Other cost elements such as the commission fees can add up to the cost of obtaining credit. It is also recognized that firms may obtain credit from other sources such as rural banks, microfinance institutions and other informal sources. However availability of data limits the analysis to the rate that commercial banks charge.

The lending rates for the various sectors of the economy, as shown on Table 2.3, do not show much variation. The rate for the export, manufacturing, mining and quarrying and the construction sectors are the same for each time period. Variation in rates occurred in the years 2001, 2007 and 2008. The rates for the column labelled other sectors on Table 2.3 were in the years 2001 and 2008 below that for the remaining sectors. It can then be deduced that on the whole the cost of credit to the various sectors does not give any indication of preferential treatment for some sectors of the economy starting from the year 2000.

The interest cost of credit to firms has been on the decline though the rates are still high. Starting from a rate of 47 percent in the year 2000, it fell to 23.75 percent in the year 2007. The rate however increased in the years 2008 and 2009; this may not be surprising because in these same years the rate of inflation also increased from 10.7 percent in 2007 to 16.5 percent in 2008 and 19.3 percent in 2009. The global financial crisis hitting the world economy in the latter months of the year 2008, extending to

the year 2009 can also explain the developments in the lending rates which prevailed in the years 2008 and 2009.

Table 2.3: Lending Rates¹³ of Commercial Banks to the Sectors of the Economy, 2000-2009

Year	Agriculture	Export Trade	Manufacturing	Mining and Quarrying	Construction	Other Sectors
2000	47.00	47.00	47.00	47.00	47.00	47.00
2001	44.00	44.00	44.00	44.00	44.00	42.50
2002	38.50	38.50	38.50	38.50	38.50	38.50
2003	32.75	32.75	32.75	32.75	32.75	32.75
2004	28.75	28.75	28.75	28.75	28.75	28.75
2005	26.00	26.00	26.00	26.00	26.00	26.00
2006	24.25	24.25	24.25	24.25	24.25	24.25
2007	23.75	24.25	24.25	24.25	24.25	24.25
2008	27.25	27.25	27.25	27.25	27.25	25.38
2009	32.75	32.75	32.75	32.75	32.75	32.75

Source: Bank of Ghana's website: www.bog.gov.gh

The distribution of domestic credit to the central government, public enterprises and private enterprises shows that private enterprises are now the principal recipients of total domestic credit (Table 2.4). In the early part of the years (1992-1995) the central government received the largest share of domestic credit. In the years 1996 and 1997 however private enterprises received more than half of the domestic credit leading to a fall in the share of the central government. Then the central government began to take a major share of domestic credit again in 1998 until 2002. In the year 2002

¹³ The lending rates are end period rates that is, December of each year.

private enterprises took the lead by receiving 46.1 percent of domestic credit and by the end of the year 2009, private enterprises were receiving approximately 61 percent of total domestic credit. Private enterprises have continued to receive a higher proportion of domestic credit. Credit can now be said to be directed towards the private sector than the public sector as it used to be.

Table 2.4: Distribution of Domestic credit (1992 – 2009)

Year	Central Government GH¢ 'mn	Percentage (%)	Public Enterprises GH¢ 'mn	Percentage (%)	Private Enterprises GH¢ 'mn	Percentage (%)
1992	45.50	68.30	7.90	10.80	13.90	20.70
1993	74.00	72.80	8.90	8.80	18.70	18.40
1994	75.90	62.70	17.80	14.70	27.40	22.60
1995	83.50	60.60	18.80	12.80	39.30	26.60
1996	10.70	10.80	20.00	29.00	68.00	68.80
1997	77.70	39.30	12.80	6.50	107.00	54.20
1998	242.00	56.90	19.40	4.60	163.90	38.50
1999	346.30	54.50	42.40	6.70	246.60	38.80
2000	583.90	53.70	121.30	11.20	382.60	35.20
2001	598.90	49.00	176.20	14.40	447.20	36.60
2002	579.70	45.60	105.00	8.30	586.40	46.10
2003	508.46	32.60	244.08	16.70	805.20	51.70
2004	657.19	33.00	290.16	14.60	1041.72	52.40
2005	897.97	33.40	348.33	12.90	1445.48	53.70
2006	1045.91	29.30	464.48	13.00	2064.03	57.70
2007	1196.00	23.80	786.80	15.60	3047.70	60.60
2008	1299.10	17.78	1106.90	15.18	4884.30	67.00
2009	2266.70	24.62	1296.30	14.08	5645.00	61.31

Source: ISSER, The State of the Ghanaian Economy, Various Issues

Sectoral distribution of outstanding Deposit Monetary Banks (DMBs) credit to the sectors of the economy is presented in Table 2.5.

Table 2.5: Sectoral Distribution of Outstanding Deposit Monetary Banks Credit, 1990-2009 (Millions of Ghana Cedis)

Year	Manufac- turing	Mining & Quarrying	Elect., Gas & Water	Construc- tion	Transp., Stor. & Comm.	Commerce & Finance	Services	Agric., Forestry & Fish.
1992	3.79	0.25	0.34	2.70	0.56	2.04	1.10	1.47
1993	5.12	0.32	0.58	3.28	0.69	3.20	1.38	1.73
1994	8.66	0.54	0.62	4.36	0.83	4.27	1.86	2.44
1995	12.93	0.65	0.63	5.08	0.80	6.19	3.32	4.21
1996	23.04	3.14	1.43	7.66	1.37	9.70	6.38	7.97
1997	29.58	6.63	2.08	13.10	2.15	23.51	12.12	15.42
1998	44.51	9.07	7.55	20.23	3.76	28.06	15.59	22.12
1999	71.71	16.70	12.20	25.72	7.65	45.14	26.86	34.01
2000	141.70	27.93	23.02	34.08	15.46	84.94	45.82	48.65
2001	118.57	24.85	24.37	41.99	21.62	174.71	57.97	58.78
2002	144.40	25.70	33.70	53.30	27.50	87.70	77.50	64.10
2003	212.10	23.50	29.40	48.10	44.90	208.70	90.50	96.90
2004	274.40	27.70	35.80	77.30	26.20	199.80	144.10	97.90
2005	343.10	66.60	32.60	101.50	72.30	401.50	264.10	120.30
2006	466.80	96.80	90.70	198.60	76.90	570.50	463.30	135.40
2007	528.30	131.10	136.50	315.40	163.10	1045.10	917.70	182.80
2008	709.30	172.70	237.90	404.70	176.00	1560.80	1425.20	255.20
2009	805.80	190.40	437.30	543.10	276.50	1669.70	1452.60	328.30

Source: Bank of Ghana Statistical and Quarterly Bulletin, Various Issues

It is evident from Table 2.5 that though the manufacturing sector in the year 1992 had GH¢ 3.79 million, the largest share of the outstanding credit, and the services sector was the fifth with a credit of GH¢ 1.10 million, by the end of the year 2009 the services sector had overtaken the manufacturing sector with a total outstanding credit

of GH¢ 1452.60 million. As at the end of the year 2009, the manufacturing sector became the third largest sector from its initial first position. Though policy makers have identified the industrial sector to be the engine of growth for the economy, its share of outstanding credit has been declining over the years. This may indicate that the perception of deposit monetary banks on risk is still in force.

It can be argued from the above developments that credit now goes to the sectors evaluated by financial institutions to have the capacity to repay credit granted to them. There is therefore the need to address some of the inherent problems in the priority sectors of the government so that they can have access to the needed resources for their growth. This is of importance because unlike the early years where banks were to give preference to some sectors determined by the government, the current policy direction is market driven and that credit will not be given unless the sector is able to meet the price vector¹⁴ of the financial institutions of which risk is no exception.

2.2.4 Small and Medium Enterprises in Ghana

Small and Medium enterprises in Ghana constitute about 90 percent of all registered companies in Ghana (Venture Capital Trust Fund, 2007). They are believed to contribute about 70 percent to Ghana's GDP and account for about 92 percent of businesses in Ghana (Abor and Quartey, 2010). Small enterprises in Ghana are said to be a characteristic feature of the production landscape, providing about 85percent of

¹⁴ The price vector as explained by Gockel and Akoena (2002) does not only include the rate of interest but also other factors. These factors are the entrepreneur's debt capacity, experienced entrepreneur that has or an entrepreneur that has demonstrated his qualities as a borrower, a discounted cash flow that will cover expected claim within a defined period, a loan purpose related to a technology and economic activity, a commodity or industry that would perform satisfactorily in a competitive environment and measures to contain the effects of probable risks that are exogenous but most threatening to the efficacy of the enterprise

the manufacturing employment of Ghana (Steel and Webster, 1991; Aryeetey, 2001). A 1963 survey of firms showed that about 17 percent of non-agricultural employment in Ghana was provided by small scale manufacturing firms compared to 3 percent by large scale manufacturing firms (Steel and Webster, 1991).

In Ghana, SMEs can be categorized into two; urban and rural enterprises. The urban enterprises can be sub-divided into “organized” and “unorganized” enterprises. The former sub-division mostly has paid employees with a registered office. However the latter sub-category is largely made up of artisans who work in open spaces, temporary wooden structures, or at home, and employ either few salaried workers or no salaried workers (Kayanula and Quartey, 2000). They rely mostly on family members or apprentices. Rural enterprises are largely made up of family groups, individual artisans, women engaged in food production from local crops. The major activities within this sector includes: soap and detergents, fabrics, clothing and tailoring, textile and leather, village blacksmiths, tin-smithing, ceramics, timber and mining, bricks and cement, beverages, food processing, bakeries, wood furniture, electronic assembly, agro processing, chemical-based products and mechanics (Osei *et al.*, 1993; Kayanula and Quartey, 2000).

In terms of the ownership of SMEs, female ownership dominates. Female owned SMEs are mostly home-based compared to those owned by males; they are operated from home and are mostly not considered in official statistics. Females are mostly involved in sole-proprietorship businesses which are mainly microenterprises (Aryeetey *et al.*, 1994; Abor and Biekpe, 2006).

Generally, SMEs are known to lack access to adequate information about markets and technology, which larger firms may be able to develop on their own, and to business services and training needed to solve problems and raise productivity. The services of the Ghana Regional Appropriate Technology Industrial Services (GRATIS) and Empresas Tecnologia (EMPRETEC) to SMEs are helping to fill these gaps. External support for such programs can be justified in terms of expected longer-term gains in productivity and competitiveness that will enable SMEs to play a more dynamic role in growth (Aryeetey et al., 1994). Aryeetey et al. (1994) argued that the most significant institutional weakness faced by SMEs is their lack of access to external finance.

Conclusion

This chapter reviewed the developments in the financial system of Ghana. From the review it was evident that the financial system of Ghana has undergone various reforms. The reforms have also led to increases in credit to firms. There has also been the introduction of new sources of financing for firms. Added to these, it was also found that though the cost of credit has been reducing, it is still high.

CHAPTER THREE

LITERATURE REVIEW

3.0 Introduction

This chapter reviews literature on access to finance and financing patterns of firms. The review is done in two main sections with focus on the theoretical and empirical literature essential for this study.

3.1 Theoretical literature

3.1.1 Access to Finance

Though access to finance may be difficult to define, in general terms, it can be said to be the supply of quality financial services at realistic costs. The best indicators of access to finance will include the numbers of people, households and firms saving, receiving credit, making payments and using other financial products from both formal and informal sources (World Bank, 2009). Difficulties in measuring access to finance by researchers have made them resort to firms or households use of finance as an approximation for access to finance (World Bank, 2009). The use of financial services is determined by the forces of demand and supply. There is thus a difference between access to and use of financial services. The difference between access and use of formal financial services for example is explained using Figure 3.1.

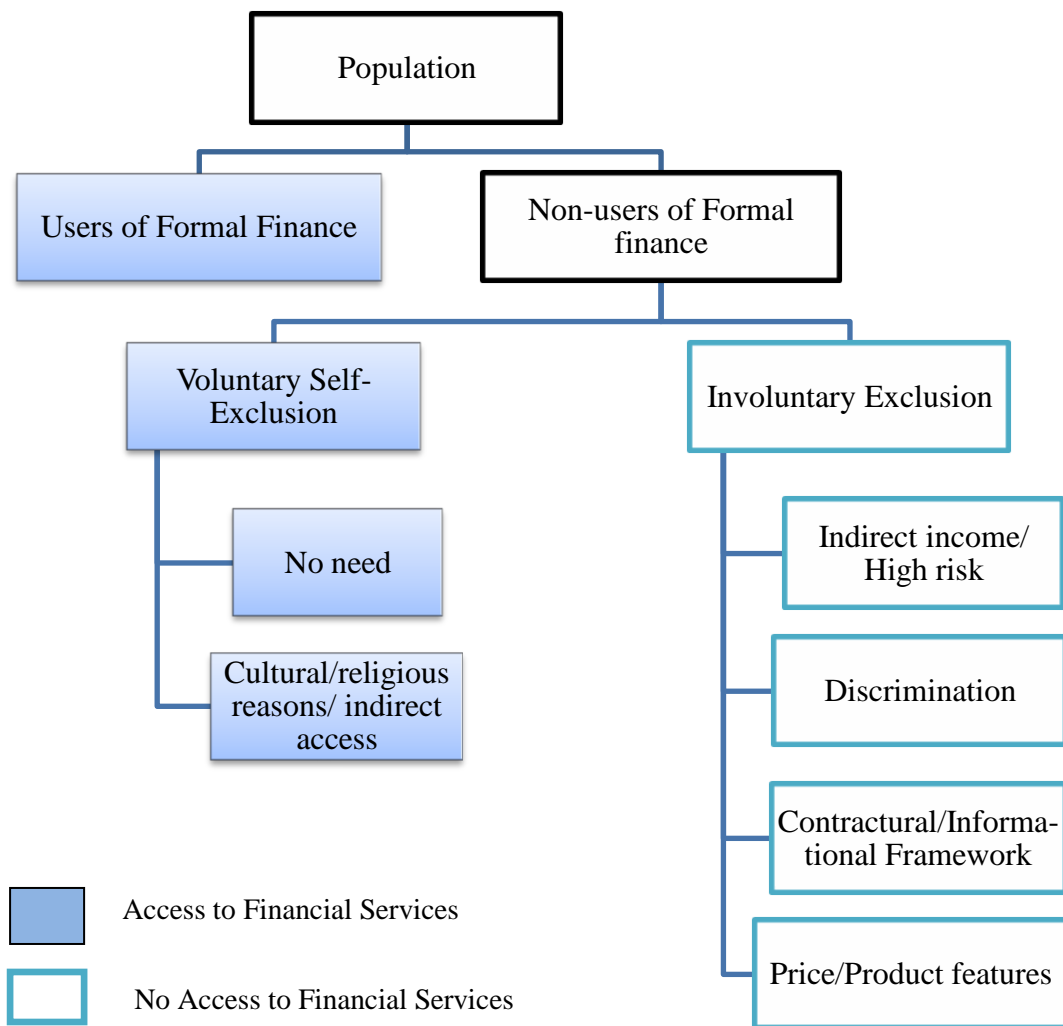


Figure 3.1 Distinguishing between access and use of finance

Source: World Bank, 2008

As evident from Figure 3.1, users and nonusers of financial services can be distinguished; even for non-users there are important distinctions among them. There are those that do not use financial services because they need not such services or may be due to religious reasons. Such users can be classified as having access but at their own discretion decides not to use it. Such groups of people or organizations do not constitute a problem for policy making.

There are those who are involuntarily excluded even though there is demand. The first class of such groups is those classified as unbankable by financial institutions and markets due to inadequate income or that they present too high a lending risk to be granted credit. The second group may be discriminated against based on religious, social or ethnic reasons. Contractual and informational framework might make financial institutions unwilling to reach out to certain population groups since outreach to such groups may be too costly to make such an arrangement viable. What more the price of the financial services might not be appropriate for certain population groups (World Bank, 2008).

Even in measuring access to finance using financial services utilization, such data may not readily be available and hence access to credit by firms, which is one of the indicators of access to finance can be a good approximation. Studies which have evaluated the financing constraints of firms have relied more on firms' access to credit than access to savings products. This might be because of the relative importance of access to financing in the growth of firms. This is not to discount the importance of other financial services provided by intermediaries to firms.

3.1.2 Investment financing

There are two types of investments that are financed by firms. These are short-term and long-term/fixed investments; based on the types of assets involved. There is no universally accepted definition of short term finance; the important issue however is the timing of cash flow (Ross et al., 2002). Some of the terms that have been used to refer to short-term financing include working capital, net working capital and net

operating capital. While working capital refers to current assets used in the operations of firms, net working capital comprises the difference between current assets and current liabilities. Net operating working capital is the summation of cash and accounts receivable less accounts payable and accruals. In this study, working capital refers to current assets such as inventory, accounts receivables and cash accounts. Long-term investments are investments in long term (fixed) assets such as equipment, vehicles, machinery, buildings or land. As used in this study, new fixed investments refer to investments in new fixed assets.

The way by which short-term and long-term assets are financed forms the financial (capital) structure of firms. The sources can be broadly categorized into two; internal and external sources. While internal sources are made up of retained earnings and other internally generated funds such as owners' savings, external sources are made up of debt and equity financing. According to Myers (2002), there is no universal theory of capital structure and one does not have to expect one. However there are some useful theories. The important theories that have been used to explain the capital structure of firms include the pecking order theory, the static trade-off theory, agency cost theory and recently the financial growth cycle paradigm. These theories are explained below.

The Pecking Order theory

The pecking order theory developed by Myers¹⁵ (1984) is frequently used as the basis for explaining the financing preferences of firms. The pecking order theory is based on the existence of asymmetric information – a term that shows that managers know

¹⁵ Myers acknowledges that though the pecking order theory is not new, he makes the point that he has however not seen the term used before (Myers, 1984)

more about their companies' prospects, risks and values than outside investors. Asymmetric information therefore affects the choice between internal and external financing and between the issue of debt and equity. In this theory the decision to use either debt or equity is not based on achieving an optimal leverage ratio.

The order of finance that results due to the presence of asymmetric information is the pecking order in which investment is first financed with internal funds, reinvested earnings primarily; then by new issues of debt and lastly with new issues of equity. New issues of equity becomes a last resort if the firm runs out of debt capacity – where financial distress becomes a threat to the firm generating more concern among creditors and even the financial manager (Brealey and Myers, 2003).

An implication of the pecking order theory is that firms prefer internal finance to external finance. In cases where external finance is of importance, firms issue first the safest securities with equity issue being the last on the list of preference; that is if they issue securities. As per the pecking order theory profitable firms will borrow less because they don't need external funds but less profitable firms will issue debt because they don't have enough internal funds and the next option which is external finance have debt issue preferred to the others. It can also be deduced from the pecking order theory that firms with informational opacity will use more internal finance than firms with more publicly available information.

Though the pecking order theory developed by Myers was developed based on large corporations some researchers do agree that it also applies to small firms. Holmes and Kent (1991) argue that although the theory is related to large listed corporations, the

reasoning is applicable to small firms as well. These authors find evidence for the pecking order theory for small firms and make the claim that with internal funds serving as a way of maintaining control over the business' operations and assets, owner-managers prefer it. In times when it even becomes necessary to use external funds, managers prefer short-term finance because the source does not intend to demand collateral as security.

Static trade-off theory

According to the static trade-off theory tax shield (tax advantages) and financial distress costs determine the optimal capital structure of firms. Tax shields are the benefits that are derived by deducting interest cost from the earnings of the firm before charging tax. Financial distress¹⁶ occurs when the promise to creditors are broken or honoured with difficulty (Brealey and Myers, 2003). Firms are viewed as balancing the value of interest tax shields and the costs of financial distress. The theory posits that managers choose the debt ratio¹⁷ that maximizes the value of the firm. At lower debt levels the firm's value increases due to the benefits derived from reduced tax payment with low financial distress cost – resulting from low probability of default. The value of the firm gets to a maximum point as the firm continues to issue debt and later begins to fall as more debt is used and financial distress costs increase.

An implication of the static trade-off theory is that there is a limit on the value of debt a firm can issue and hence beyond that optimal level, it will not be prudent to issue

¹⁶ Financial distress costs are the legal and administrative costs of bankruptcy, as well as the agency, moral hazard, monitoring and contracting costs. Financial distress costs depend on the probability of default and the magnitude of cost incurred if distress occurs.

¹⁷ In general terms debt ratio is defined as the total debt divided by total assets.

more debt since that will lead to the dwindling of the value of the firm. Firms will therefore be substituting one of the external forms of financing – debt and equity – for the other until that optimal level which maximizes the value of the firm is achieved. Beattie et al. (2004) argue that firms therefore operate with a target debt/equity ratio which balances tax shields and financial distress costs. The target debt ratio however varies from firm to firm. According to Brealey and Myers (2003) companies with safe, tangible assets and large taxable income to shield ought to have high debt ratios while unprofitable firms with risky, intangible assets ought to rely primarily on equity finance.

Agency cost

Jensen and Meckling (1976) pioneered the agency cost model which is seen as an extension to the static trade-off model. According to this model there is the existence of the principal-agent problem. The principal-agent problem arises when there is asymmetry of information between the principals and the agents such that there results a conflict of interest between the principals and the agents. The principals are the owners of the firm and the agents are the management team members. There is also the agency costs associated with lenders and shareholders. Capital budgeting decisions should therefore consider both the agency costs and the benefits of financial leverage. Firms will have to set their capital structure such that the potential conflict between managers, shareholders and debt holders is minimized.

The conflict between managers and shareholders result because it is the shareholders who claim the residual earnings of the firm. In this way managers though may be bearing the entire cost of their decisions do not claim the entire benefits from their

profit enhancing activities. Managers therefore will be more interested in activities which maximizes corporate wealth – such as flashy cars, expensive office furniture and so forth – over which they have effective control than engaging in activities that maximize the value of the firm. To reduce the tendency for managers to engage in such activities, the use of debt will be preferred by shareholders to the use of equity. The rationale behind such reasoning is that as more debt is used, the share of managers in the firm increases, given the value of their initial holdings in the firm. Grossman and Hart (1982) argue that if bankruptcy is costly to managers the incentive for managers to work harder is increased because increases in debt increase the probability of bankruptcy, and bankruptcy would mean interference in the operations of the firm which managers also do abhor.

The tendency for equity holders to invest sub-optimally is the basis for the conflict of interest between equity-holders and debt-holders. For limited liability companies the maximum that equity holders lose in case of firm failure is their investment in the firm while any debt which remains, because the assets of the company was not able to cater for, becomes a cost to debt-holders. In cases where the firm succeeds in its investments it is equity-holders who hold the residual claim; debt holders will only be paid a fixed amount. Based on this equity holders may have the incentive to invest in risky ventures in cases where the anticipated cost of investment is less than the anticipated benefits to equity holders.

This theory may be more suitable for firms that have separate legal entity status. The conflict of interest which may result under conditions of limited liability giving the incentive for equity holders to sub-optimally invest will possibly be nonexistent if the

firm has its owners as managers and or that the liabilities of the firm extends to the private properties of the owners. The owner-manager will be cautious because should investments produce unfavourable returns the owner will have to use his or her resources to settle the creditors of the firm.

The financial Growth cycle paradigm

Berger and Udell (1998) considered a financial growth cycle paradigm, in which different capital structures are optimal at different points in the cycle, for small enterprises. According to these authors, the financial needs and the options available to small enterprises change as the business grows, become more experienced and less informationally opaque. Figure 3.2 shows this in a stylized way in which firms lie on size/age/information scale. Smaller/younger/more opaque firms lie near the left end of the figure and this indicates that they must rely on initial insider finance, trade credit, and/or angel¹⁸ finances. As firms grow, they gain access to intermediated finance sources such as venture capital¹⁹, banks, finance companies and the likes. If firms remain in existence and continue to grow, they may gain access to public equity and debt markets (Berger and Udell, 1998). This model is the most widely accepted model of small business capital structure (Gregory et al., 2005).

Berger and Udell, 1998 emphasized that the growth cycle paradigm is not intended to fit all small businesses, and that firm size, age, and information availability are far from being perfectly correlated. The rationale behind Figure 3.2 as explained by the authors is to give a general idea of the sources of finance that become important at

¹⁸ Angels are high net worth individuals who provide direct funding to early stage new businesses. Berger and Udell (1998), classifies this source as more informal than formal

¹⁹ Venture capital are intermediated funds, provided in a more formal market than Angel finance (Berger and Udell, 1998)

different points in the cycle. They again make it clear that the point at which different sources of finance are shown to start and end, as indicated on Figure 3.2, are not intended to be definitive.

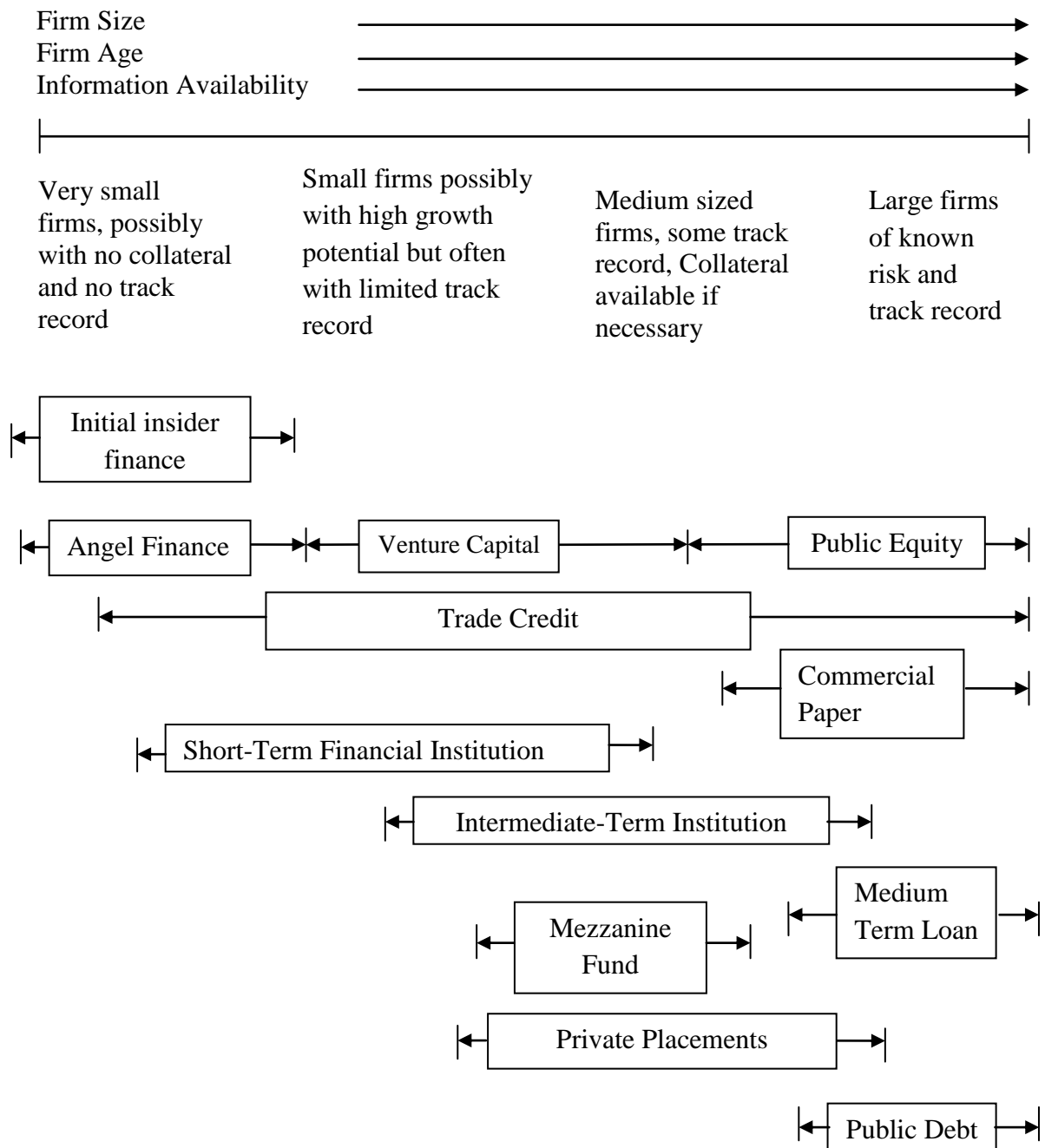


Figure 3.2: Firm continuum and sources of finance

Source: Berger and Udell, 1998

The financial growth model seems more appealing for explaining the capital structure of small firms. This is because there are various financing sources which may not be available to certain types of firms at some point in time, especially when these firms were established not quite long ago or that they don't make their activities more public. The Ghana stock exchange for example excludes firms that are not public limited liability companies from listing on the exchange. A Company that can issue securities must be a public limited liability company duly incorporated under the Companies Code, 1963 (Act 173). Thus small non-public firms, sole proprietorship and partnership firms will have to resort to other sources that are at their disposal than merely taking a decision not to use some sources of financing.

3.2 Empirical Literature

3.2.1 Access to finance

In accessing financial services especially credit, smaller firms have been at a disadvantage as compared to larger firms. Access to finance by SMEs however is not only an African problem²⁰ but also a worldwide phenomenon. This can be compared to the problems that the British economy was facing as noted in the Macmillan report issued in July, 1931. The committee noted that the problems that the British economy was facing were not wholly domestic (Thomas, 1960). Schiffer and Weder (2001) in presenting the worldwide firm size and business survey results, made it evident that SMEs find access to finance more difficult than larger firms. Of all the obstacles that firms face in doing business, firms rank financing as the top problem; SMEs rate this obstacle even higher than large firms. Having access to external finance is a problem

²⁰ The Propaco's Magazine (May, 2009) however recognizes that SMEs access to financing is more problematic in Africa than elsewhere in the world.

for most firms especially SMEs; but the extent to which it becomes a problem may be changing with time as policies are introduced to affect the financial systems of countries and regions.

There is evidence by various studies showing that firms, especially smaller ones, face challenges in raising funds to finance their activities. Padachi et al. (2010) in their study of Mauritian SMEs note that despite their numbers and importance in job creation, SMEs have faced difficulties in obtaining formal credit. Aryeetey et al. (1994) makes it clear that from the viewpoint of the private sector, problems related to finance dominates all other constraints to expansion. Baah-Nuakoh (2003) confirms this from his study of the Ghanaian manufacturing sector that irrespective of size, age and sector, the problem of credit has been identified as the major obstacle.

The reasons given for the identification of lack of access to finance with emphasis on credit, as one of the major obstacles to investment and growth of SMEs include: financial sector policy distortions, lack of know-how on the part of banks, information asymmetries, for example lack of audited financial statements, and high risks inherent in SMEs (Malhotra et al., 2006). According to the Organization for Economic Cooperation and Development (OECD) 2005, the limited access to formal finance is due to high risk of default among SMEs and inadequate financial facilities. Gockel and Akoena (2002) make the case that out of 102 firms that benefited from the Fund for Small and Medium scale Enterprise Development (FUSMED) in Ghana, 45 percent defaulted in repaying the loan. Following this evidence, the two authors cast doubt on the widely held notion that credit is the single most important constraint on local enterprise development in Ghana. They add that:

the fact that managerial deficiencies and lack of demand for product are a more significant constraint on enterprise development meant that availability of funds ..., may not have much positive impact on enterprise development unless measures are taken to correct the defects in credit demand and enterprises weaknesses.

The reasons given for the high rate of default by firms in the work of Gockel and Akoena (2002) include: late disbursement of loans, late arrival of equipment, high interest rates, inadequate capitalization, lack of working capital, lack of appropriate marketing strategies, limited cooperation between administering bank and beneficiary enterprises, lack of effective monitoring and several other reasons which are also outside the control of the banks and the enterprises. This means that both the receiving enterprises and the granting banks contributed to the high rate of default.

Firms were defaulting not only because of their own inefficiencies but also because of some problems caused by the banks. It is also clear from the work of Gockel and Akoena (2002) that as pointed out earlier, there are other factors that may affect the growth of firms and that credit is not the only important constraint. What is of importance is for financial intermediaries to put in place measures to ensure high repayment rates through effective monitoring of the activities of credit recipients, with credit been disbursed on time. Notwithstanding the high rates of default however, for SMEs to be successful in their attempt to build productive capacity, compete, create jobs and contribute to poverty alleviation in developing countries, access to finance has been identified as an important element.

3.2.1 Financial structure of firms

There have been a number of studies that have found firm-level characteristics which influence the capital structure decisions of firms. The characteristics which are mostly

found to be of importance include firm size, age, growth, profitability, tangibility of assets, risk, tax and other factors – such as sectoral orientation, the level of education of managers, export status and location – which are not usually included in traditional financial models of corporations but are believed to affect the financial structure decision of SMEs.

Firm Size

The size of the firm is one of the most common explanatory variables in the determination of the capital structure of firms. Size can be positively related to debt ratios because larger firms are more diversified, having more reliable cash flows. This makes the probability of default, and hence the financial distress costs, for large firms lesser than that for small firms. The degree of informational opacity for smaller firms is also higher than for large firms (Myers and Majluf, 1984 and Berger and Udell, 1998). Providers of external finance may therefore be more reluctant to provide funding to small firms as compared to large firms. Informational opacity can also make it costly for smaller firms to obtain external sources of funding.

Empirical evidence suggests that there is a positive relationship between firm size and capital structure. Studies indicating that the size of the firm has a positive relationship with its use of debt include: Rajan and Zingales (1995), Schulman et al. (1996), Wiwattanakantang (1999), Padron et al. (2005), Gaud et al. (2005). Other studies such as Kester (1986), Titman and Wessels (1988), Ooi (1999) and Chen (2003) however, found a weak and insignificant negative relationship between firm size and capital structure.

Age

The age of the firm has been found to have a positive relationship with the use of debt. The age of the firm is one of the factors used in explaining whether a firm is more likely to operate as a going concern; that is to operate into the foreseeable future or not. There is the evidence to show that small firms' closure occur in the first three years of operations (Bank of England, 1994). Kumar and Francisco (2005) argue that the age of the firm can determine how competitive the firm is. Younger firms may be less competitive than older ones. Thus younger firms are viewed to be more risky than older firms. Peterson and Rajan (1994) argue that older firms are expected to be high quality firms hence, should have higher debt ratios.

Growth potential of the firm

Growth potential of the firm can be said to be a factor that adds to the value of the firm and hence has been found to be a determinant of the capital structure of firms. The pecking order theory suggests that the growth potential of a firm is negatively related to capital structure (Nguyen and Neelakantan, 2006). Myers (1977) suggests that high growth firms might have more options for future investments than low growth firms. The agency theory also implies a negative relationship between growth opportunities and the leverage ratio (Nguyen and Neelakantan, 2006). Others have also argued that there is a positive relationship between growth opportunities and the use of debt or external financing. Justification for such a view is based on the argument that because growth has the likelihood of placing a higher demand on internal resources, it pushes the firm into borrowing (Hall et al., 2004). Aryeetey et al. (1994) argue that growing SMEs appear more likely to use external finance; these

authors however do not make any claim about whether finance induces growth or growth induces finance or both.

Empirical literature on the relationship between the growth potential of firms and their capital structure does not point to one direction. Kester (1986) and Titman and Wessels (1988) found a positive relationship while studies such as Stulz (1990) and Rajan and Zingales (1995) found a negative relationship between growth potential and the leverage ratio.

Profitability

The pecking order theory again can be used to explain the relationship between profitability and the capital structure of firms. According to the pecking order theory, as explained above, firms prefer internal sources to external sources of financing. This explanation is based on the existence of information asymmetry between the providers of finance and the receivers. The presence of information asymmetry therefore makes firms that are more profitable to rely on such funds than on outside funds. There is also the argument that excessive debt creates agency problems between shareholders and creditors and hence to prevent these problems firms that are more profitable will use internal funds leading to a negative relationship between leverage and profitability (Fama and French, 1998). The existence of interest tax shields also makes it likely for more profitable firms to use more debt than less profitable ones; an extension from the work of Modigliani and Miller (1958).

There are mixed results on the relationship between profitability and capital structure especially the debt ratio of firms. Peterson and Rajan (1994) found a positive

relationship between capital structure and the profitability of firms. Roden and Lewellen (1995) found a positive relationship between profitability and total debt. Studies which have however found a negative relationship between profitability and capital structure of firms include Hammes (1998) and Majumdar and Chhibber (1999).

Tangibility

The granting of credit by most financial institutions requires collateral. From the theoretical point of view tangible assets can serve as collateral to secure credit from financial intermediaries. Firms with more or higher values of tangible assets are seen to be low risk firms and creditors may be more secured granting credit to such firms than those with low value tangible assets. The use of assets as collateral reduces the costs associated with adverse selection and moral hazards. Empirical studies show that there is a positive relationship between asset tangibility and leverage. These include; Friend and Lang, 1988; Titman and Wessels (1988) and Rajan and Zingales (1995). There are other studies such as Kim and Sorensen (1986), Booth et al. (2001) and Huang and Song (2002) that have come out with a negative relationship between tangibility and leverage.

Tax rate

Taxation has implication on the decision to either use debt or equity. As per the static trade-off theory if the marginal tax rate applicable to the earnings of firms is high then firms will use more debt, so as to take advantage of the tax shields arising from the use of debt. MacKie-Mason, 1990; Huang and Song (2006) have found positive relationship between debt and marginal tax rates. Petit and Singer (1985) have pointed

out that tax considerations are of little attention to SMEs because such firms are less likely to generate high profits and therefore are less likely to use debt for tax shield purposes.

Firm Risk

The level of risk within the firm is viewed as the financial distress cost or simply the probability of bankruptcy. The determination of optimal capital structure through the static trade-off theory depends on the use of income tax-shield and the financial distress cost. The existence of financial distress cost makes it non-optimal for firms to fully finance their investments with debt, though there are interest benefits to be derived from the use of debt. Theoretically the higher the risk of financial distress, the lower the use of debt by firms. Empirical studies supporting this theoretical prediction include Bradley et al. (1984), Titman and Wessels (1988) and Wald (1999).

Other factors

These other factors are the factors which are not normally included in studies on the capital structure studies on large firms or corporations are essential when studying the financial structure of small firms. Such factors include sectoral, the level of education of managers, export status, ownership and location. These factors are explained below.

The sectoral effect makes some sectors more likely to use external finance than others. This may result depending on cash flows, initial project scale and requirements for continued investments (Rajan and Zingales, 1998). What more the intensity of factors of production can also determine whether the firm will use external sources or

not (Kumar and Francisco, 2005). Firms that are more capital intensive will have higher financing needs and are likely to rely on external sources of financing. Manufacturing firms are more likely to be capital intensive than service firms. Riding et al. (1999) argued that service businesses may not be able to qualify for bank loans because they often lack assets that can be used as collateral. This implies that service businesses may have to resort to internal financing than manufacturing firms. Contrary to this view, Abor (2008) argued that businesses engaged in services are able to return profits faster than manufacturing firms making them better placed to repay their debt on time to take on more debt.

The level of education of the manager is believed to have a positive relationship with the use of external sources of financing (Abor, 2008). Managers with higher levels of education are more likely to prepare and present winning proposals for a loan than their other counterparts. According to Green et al. (2002) the level of education seems to have a positive impact on micro and small enterprises' ability to raise debt. Firms that export are known to be more diversified and hence are capable of accommodating more debt capital (Abor, 2008). The diversification achieved by firms which export reduces the bankruptcy costs of firms, allowing for increasing debt capacity.

Domestic private firms may have less access to finance which may make them rank credit as a constraint higher than foreign private firms. There is the notion that foreign firms perform better than domestic ones and as such firms with foreign ownership will have and urge over domestic firms, in their quest for external financing. In his single country regression for China, Haung (2006) reports that firms with foreign ownership reports to be less credit constrained as compared to those without any

foreign ownership. State firms' access to credit may not have any specific direction because if access to credit is perceived to be based on performance then private firms – whether domestic or foreign – will have higher access to finance than state firms. However if access is based on transparency then state firms will have a higher access to credit than private firms since state enterprises are generally required to make their financial stance public (Kumar and Francisco, 2007).

Location of firms can also affect the capital structure of firms. Andrea (1981) found that regional differences affect SMEs access to funding. Though there is no clear exposition on the effect of location on the use of a given source of finance form works in corporate finance, it is expected that firms that are located in areas with a host of financial institutions are more likely to use external sources of financing than areas with a limited number of such institutions. Abor (2008) studying capital structure of firms in Ghana found that for SMEs location is an important factor in explaining capital structure.

Summary

This chapter has reviewed works on access to finance and financing patterns of firms. It was made evident that though there are a host of factors which affect the performance of firms, finance is one of the important factors. Though traditional theory on access to credit would suggest that in well functioning credit markets, the decision to grant or not to grant credit will be based on the financial soundness of firms, the expected performance and projected cash flows adjusted for risks and transaction costs, it is also known that there are some other factors which affect firms

access to and use of finance. These factors include the size, age, sector, ownership, management and location of firms.

The financing patterns of firms in most of the studies follow the pecking order theory, where internal finance is the most widely used source, followed by the use of debt and lastly equity. The growth cycle paradigm is also used to explain the sources of finance used by firms with the size, age and informational availability of firms determining the source of finance available to firms. The source of finance chosen by a given firm is dependent upon cost, nature and availability of alternatives. The characteristics of the firm and its managers, transparency of firms will all affect the source of finance used by firms.

CHAPTER FOUR

METHODOLOGY

4.0 Introduction

This section sets out the framework within which the research operates. It has five sections with the first section defining the size categorization of firms. Section two considers the theoretical framework of the study, with section three making the empirical specification of the model. Section four considers the use of analysis of variance and the last section discusses the data and sampling techniques used in this study.

4.1 Defining the size of firms

The size categorizations of firms differ across regions as well as authors. Even with the World Bank Enterprise Survey (WBES), the definition for firms in the survey conducted around the year 1999 is not the same as the one used for developing countries between 2006 and 2007.

In the World business enterprise survey's 1999 categorization of firms, small, medium and large firms were defined to be those with 5-50, 51-500 and above 500 employees respectively. The 2006/2007 WBES used in this study, defines a small firm as a firm that employs between 5 and 19 employees. A firm with between 20 and 99 employees is classified as a medium sized firm and that which employs more than 99 employees is labelled as a large firm. This study will adopt the second categorization procedure because the source of data is the WBES. The two classifications are in line with the UNIDO classification (Elaiian, 1996) of firms in developed and developing countries respectively. Despite this classification by

UNIDO, there seems to be no coherence on the definition of SMEs by some researchers and even the Ghana Statistical Service (GSS) (Abor and Quartey, 2010).

Though the unit of analysis is the firm, firms with less than five (5) employees (micro enterprises) are not part of this unit of analysis. This is due to the fact that some of the data points for this enterprise group, which are essential to this work are missing and hence the decision to leave them out of the analysis.

4.2 Theoretical Specification of the Model

The study adopts and modifies the model by Beck et al. (2004) to assess the factors that determine financing patterns of firms. Beck et al. (2004) in their study of 48 countries on their financing patterns specified their model as:

$$Financing_{ik} = \alpha + \beta FirmCharacteristics_i + \gamma Macroeconomicfactors_k + \delta Institutional factors + \mu_k + \varepsilon_{i,k}$$

Where the dependent variable, financing, is the proportion of investment financed by firm i in country k through external finance or through the various external sources.

The independent variables are broadly grouped into firm level variables (firm characteristics) and country level variables (macroeconomic factors and institutional factors). The firm level variables include firm size, ownership, type of business, industry and sales growth. In addition to these variables firms' ranking of financing as an obstacle was used as a control variable for the financing constraints of firms.

The macroeconomic variables are GDP per capita, GDP growth rate and the rate of inflation while the institutional factors are private credit, value traded, and property rights. These institutional factors are to capture the extent of financial development and the protection of property rights in a given country.

Comparing their variables in the model to previous studies, Beck, Demirgüç-Kunt and Maksimovic (2004) note that the country level variables used in their model are standard in previous studies. However on the firm level variables they make the claim that the “*variables do not correspond one-to-one to more conventional firm level controls used by earlier papers*”. An example given by these authors is the use of firms operating characteristics, or asset tangibility, such as net fixed assets to total assets and net sales to net fixed asset ratio as determinants of capital structure. To capture, at least partially, the differences in the operating characteristics of firms, they used indicators of firms’ industry and type of business.

On the inclusion of indicators of firms’ growth opportunities the authors noted that papers in the literature use variables such as firms’ market to book ratio of equity. In the absence of such data they used sales growth rate as an indicator of future growth opportunities. Added to the sales growth variable they include dummy variables indicating whether the firm is owned by government or foreigners, whether the firm is an exporter or not and whether the firm is a subsidy receiver. These variables are also expected to control for differences in growth opportunities.

The authors also note that capital structure studies include indicators of firm profitability such as return on assets, dividend payments to total assets to capture cash

constraints of firms. It is expected that firms that have higher dividend payout ratios, may be having cash surpluses relative to their investments needs, making such firms less likely to finance from external sources.

Lacking information on the indicators of profitability, such as return on assets and dividend payout ratio, the financial access ranking variable is used as a proxy for the cash needs of firms; such that firms that report higher financing obstacles are more likely to have greater need for external finance and hence more cash constrained than the others.

4.3 Empirical Specification of the Model

The Beck et al. (2004) model is used taking into consideration the single country nature of the current study. The macroeconomic factors and the institutional factors may not be suited for a single country. This is because such data are usually reported on country basis; with regional or city data not readily available. This therefore justifies why the macroeconomic and institutional factors are dropped from this single country study. To control for the possibility of firm location on differences in the sources of external finance, this study includes location/city dummies.

Other variables such as age, the level of education of managers and the availability of financial information – using external audit of financial statements – are added to the model used by Beck et al. (2004). These variables have been added due to their relevance to the study of SMEs in various countries, especially developing ones, as observed under the literature review.

Thus the model to be estimated in this study is specified as equation two (2).

$$\text{extfin} = \beta_0 + \beta_1 \text{salesgrowth} + \beta_2 \text{exporter} + \beta_3 \text{manuf} + \beta_4 \text{age} + \beta_5 \text{small} + \beta_6 \text{medium} + \beta_7 \text{beduc} + \beta_8 \text{seduc} + \beta_9 \text{tertiary} + \beta_{10} \text{finacc} + \beta_{11} \text{extaudit} + \beta_{12} \text{pfor} + \beta_{13} \text{pdom} + \beta_{14} \text{kumasi} + \beta_{15} \text{takoradi} + \beta_{16} \text{tamale} + \varepsilon \dots \dots \dots (2)$$

Where:

extfin represents the external source of financing used, expressed as a proportion of total financing, in financing either working capital or new fixed investment. It is expressed as a percentage, falling within the range 0 – 100;

salesgrowth represents the growth in the sales of the firm for the three year period, 2003 – 2006;

exporter shows the exporting status of the firm; that is whether the firm exports its products or sell the product on the local market (Ghana);

manuf represents manufacturing firms;

age represents the age of the firm;

beduc, seduc and teduc represent managers with basic education, secondary education and tertiary education respectively;

finacc represents the ranking of the firm on how problematic access to finance is to the operations of firms;

extaudit represents external audit of firms' financial statements;

pfor and pdom indicate private foreign and private domestic ownership of firms respectively;

kumasi, takoradi and tamale represent firms located in Kumasi, Takoradi and Tamale in that order and

ε is the error term.

Further details about the independent variables specified in the model are shown in Table 4.1.

4.3.1 Independent Variables and expected signs

Firm Size: It is expected that there will be a positive relationship between firm size and external financing. As evident from the empirical literature, firm size does affect access to external financing. Small firms traditionally are known to be more credit constrained than medium and large firms. Informational opacity, high risk and probability of default are more likely to be associated with small firms than large firms. Small firms are thus, less likely to use external finance as compared to medium and large firms. Kumar and Francisco (2005) found that large firms use more external sources to finance both their working capital and new fixed investments. Given the categorical nature of the size variable (small, medium and large with large firms being the reference point), it is expected that the small and medium firm dummy variables will have negative signs. It is expected that there will be a positive relationship between firm size and the use of external financing.

Salesgrowth: Sales growth is used as an indicator of a firm's future growth opportunities. Frank and Goyal (2003) used change in the natural log of sales as a

proxy for growth. Firms with higher future growth opportunities are more likely to have a higher need for financing than those who have lower prospects of growth in the future. With high growth opportunities it is expected that such firms will require more external financing than firms with low rates of future growth opportunities. This is because growth has the likelihood of placing a higher demand on internal resources, pushing the firm into borrowing (Hall et al., 2004). Aryeetey et al. (1994) argue that growing SMEs appear more likely to use external finance; these authors however do not make any claim about whether finance induces growth or growth induces finance or both. The agency theory however suggests a negative relationship between firm growth and capital structure. Myers (1977) suggests that high growth firms may have more options for future investments than low growth firms. Firms with high growth opportunities are less likely to issue debts and leverage is expected to be negatively related to growth opportunities. On the whole the growth variable can have either a negative or positive sign.

Exporting Status: The exporting status of a firm is used to control for differences in the growth opportunities of firms. Abor and Biekpe (2007) used the exporting status of the firm to indicate the growth of firms. The use of the exporting status of firms to control for differences in growth opportunities is based on the notion that firms that export may have an urge in terms of growth opportunities than firms which do not. Since the growth opportunity of a firm is captured by the growth of sales, as a proxy, differences in such growth opportunities as a result of a given firm exporting while the other is not will have to be controlled for.

Manufacturing: The manufacturing firm dummy variable is expected to have either a positive or a negative sign. The sectoral effect may result depending on cash flows, initial project scale, requirements for continued investments and the degree of capital intensity (Rajan and Zingales, 1998 and Kumar and Francisco, 2005). Manufacturing firms are more likely to be capital intensive, making them rely on external finance than service businesses. However, Abor (2008) argued that businesses engaged in services are able to return profits faster than manufacturing firms making them better placed to repay their debt on time to take on more debt.

Age: It is expected that with death rate of firms being high among younger firms making them more risky than old firms, they will rely more on internal finance than older firms. Kumar and Francisco (2005) liken age to competitiveness of firms. They explain that a firm's survival indicates that it is at least as competitive on average, as other existing firms. To Frazer (2004), being older should lower informational opacity. Berger and Udell's (1994) growth cycle paradigm postulates that younger firms are more likely to rely on internal finance than on external finance. This implies that younger firms will use less external finance than older firms. A positive relationship therefore should exist between a firm's age and its use of external financing.

Education: The level of education of managers is expected to vary either positively or negatively with the use of external sources of financing. Firms with managers who have higher levels of education are expected to have the capacity to draw up winning proposals when applying for external financing for example bank loans. This implies that such firms are more likely to use external sources of financing than firms with

managers having no education. This means that education varies positively with external financing, as found by Abor (2008).

Nevertheless, firms who have managers with higher levels of education are more likely to manage their firms efficiently and hence may be less cash constrained making them resort to internal financing more than external financing. If this is the case then education will vary negatively with external financing. Taking into account the categorical nature of the education variable, with no education as the reference point, it is expected that all the other levels of education are more likely to use external financing than firms with managers who have no education.

External audit: External audit is used as a proxy for the availability of quality financial information on the firm. Berger and Udell (1998) argued that informational opacity limits the ability of firms to use certain sources of funding as explained in chapter three under the growth cycle paradigm. Firms with audited financial statements can credibly convey their quality to external finance providers. A firm's capacity, risk level and credibility are of importance to external finance providers. The risk and the debt capacity levels of firms are normally obtained from their financial statements. It is expected that firms with audited financial statements are more likely to have access to and subsequently use more external finance than firms with unaudited or no financial statements. Thus the external audit variable is expected to have a positive sign.

Location: The location of firms is also likely to influence the source of finance used. Though all the firms involved in the survey are located in urban Ghana, it is still

possible that some regional specific factors may affect the financing sources used by firms. With Accra-Tema as the reference point for the location dummy variables, traditional thinking will suggest that firms in the other localities will use less external sources to finance their operations than firms in Accra. This thinking is based on the notion that bank density is high in Accra-Tema than in the other localities.

Financing constraint: It is expected that firms that report more access to finance as a constraint will use more external financing because they are more cash constrained. This is in line with Myers and Majluf (1984), firms that are more cash constrained are more likely to finance externally, preferring to use debt financing more heavily before they use equity finance due to higher adverse selection costs in equity markets. A positive relationship is therefore expected.

Ownership: The degree to which a firm is owned by either private individuals or the state and even as to whether the private individuals are of a local origin or foreign origin will affect the firm's access to external finance and hence the degree to which it will finance its operations from external sources. Kumar and Francisco (2005) argue that foreign firms are 'highly visible, well known and publicly traded' making them more likely to have access to external financing. Added to this there is the general perception that private firms perform better than state owned enterprises. Vinning and Boardman (1992) found that private firms perform better than state firms. Willmore (1986) also found that foreign firms outperform domestic firms in Brazil. It is thus expected that private foreign firms will have easy access to external sources of financing than private domestic firms and private domestic firms will also have relatively higher access to external finance than state owned enterprises.

Table 4.1: Independent variables and their interpretation for sources of finance

Variable	Interpretation
salesgrowth	The growth in sales from the year 2003 to 2006. It is calculated as the log difference in sales. This is included as an indicator for the growth opportunities of firms
exporter	A dummy variable that takes on the value 1 if the firm exports and zero if otherwise. This is also included as a control variable for growth opportunities of firms
manuf,	Manufacturing firm dummy variable, takes a value of 1 if the firm is a manufacturing firm and zero if otherwise.
age	Age represents how old the firm was in the year 2006. The year 2006 was the reference point on which firms specified their financing proportion.
small, medium	dummy variables and they each take a value equal to 1 if the firm is in the services sector or it is a small size firm or a medium size firm respectively but their values equal zero (0) if the condition for taking on a value of 1 does not hold.
beduc*, seduc*, teduc*	Beduc (basic education), seduc (secondary education and some university training), teduc (Tertiary education) are dummy variables with value 1 if the firm's manager has basic, secondary or tertiary respectively and 0 if otherwise.
extaudit	Shows whether a firm's financial statement was audited and certified by an external auditor. This is a dummy variable with its value being equal to 1 if there was an external auditor to audit the account of the company but value 0 if financial statements were not audited by an external auditor.
kumasi, takoradi, tamale	Regional dummies representing firms located in Kumasi, Tamale and Takoradi respectively. kumasi (=1) if located in Kumasi, (=0) if otherwise. takoradi (=1) if located in Takoradi, (=0) if otherwise. tamale (=1) if located in Tamale, (=0) if otherwise
finacc	It is an index and measures how problematic finance is to the current operation of firms. It is on a scale of 1 to 5 where 1 means no obstacle, 2 implies minor obstacle, 3 is where access to finance is a moderate obstacle, with 4 being a major obstacle and 5 for very severe obstacle.
Pdom[#], pfor[#]	This represents the ownership status of the firm. Each of these has a value of one (1) if the firm is a private domestic or Private foreign and zero (0) otherwise.

* These are classes of education where (i) beduc comprises: those with primary education as well as those who started but did not complete secondary school. (ii) seduc comprises those who attended secondary schools or vocational schools (iii) teduc represents those with some university training and or university degree (B.A, BSc, MBA, other masters degree or PhD) .

The definition of ownership follows the World Bank's classification: (1) Private Domestic – firm with private domestic capital share that is (i) higher than the foreign capital share, and (ii) the government share, and the foreign share if applicable, is less than 10%; (2) Private Foreign – firm with a foreign capital share that is (i) 10% or more and (ii) higher than the government capital share; and (3) State – firm with a government capital share that is (i) 10% or more and (ii) higher than the foreign capital share. (Source: World Bank, Investment Climate Survey, 2003)

4.4 Estimation Techniques

4.4.1 The Tobit Model

The study uses the tobit model as one of the estimation technique because of the nature of the dependent variable used. The dependent variable, external financing source, though continuous has been expressed in proportions of the total (falling within 0 percent and 100 percent).

The tobit model is a censored regression model, as traditionally called. Censored regression models apply when the variable to be explained is partly continuous but has positive probability mass at one or more points. Censored regression applications are put into two general classifications. The first case is where there is a variable with a quantitative meaning but that the variable is censored below or above a certain value; which is not observable for some part of the population. An example is a top coding data survey, where the maximum value will not exceed a given value. The second case is the '*corner solution outcome*' which uses corner solution models; censored regression model has been the traditional name for this model in econometrics but this new terminology is suggested by Wooldridge (1999). It is in this second category that the proportion of firms investment financed by a given financing source falls (Wooldridge, 1999).

In explaining the situation let y be an observable choice or outcome describing an economic agent such as a firm, with y taking on the value 0 with positive probability and also been a continuous random variable over strictly positive values. Family expenditure to an individual retirement account, household expenditure to various commodity groups (Jarque, 1987) and a firm's expenditure on research and

development are some examples. Here economic agents are seen as solving an optimization problem and for some agents the optimal solution will be the corner solution, $y=0$. According to Wooldridge, 1999:

...we must understand that the issue is not about data observability: we are interested in features of the distribution of y given x such as $E(y | \mathbf{x})$ and $P(y = 0 | \mathbf{x})$

Let y be a variable which is continuous over strictly positive values and also takes on zero with positive probability. A linear model for y when used might be a good approximation especially the independent variables near the mean values. The problem however will be that there will be negative fitted values, which leads to negative predictions for y .

Given that y has a corner solution at zero, the starting point will be $y = \max(0, \mathbf{x}\beta + e)$

Where $\mathbf{x} = (1, x_2, \dots, x_k)$, β is $K \times 1$, and e is an unobserved error with continuous distribution. With the range of e been unrestricted, this set up generates a pile up at zero and then continuous strictly positive outcomes. This approach is therefore important because it keeps the focus on y . Assuming normality of the latent error term,

$$y = \max(0, \mathbf{x}\beta + e) \qquad e | \mathbf{x} \sim \text{Normal}(0, \sigma^2) \qquad \dots \dots \dots (4)$$

To estimate the partial effects it would be helpful if a latent variable formulation is used. The latent variable formulation then is specified, given the normality assumption as:

$$y^* = \mathbf{x}\beta + e \qquad e | \mathbf{x} \sim \text{Normal}(0, \sigma^2) \qquad \dots \dots \dots (5)$$

$$y = \max(0, y^*)$$

In corner solution applications interest is on the probabilities or expectations involving y . The focus in most of the time is on $E(y|\mathbf{x}, y > 0)$ and $E(y|\mathbf{x})$. For a given observation i , the probability that $y_i = 0$ (given $x_i = 0$) is given by

$$P[y_i = 0] = P[y_i^* \leq 0] = P[e_i \leq -x_i'\beta] \dots\dots\dots (6)$$

$$P = \left[\frac{e_i}{\sigma} \leq -\frac{\mathbf{X}_i\beta}{\sigma} \right] = \Phi \left[-\frac{\mathbf{X}_i\beta}{\sigma} \right] = 1 - \Phi \left[\frac{\mathbf{X}_i\beta}{\sigma} \right] \dots\dots\dots (7)$$

The distribution of y_i given that it is positive is a truncated normal distribution with expectation:

$$E[y_i | y_i > 0] = x_i'\beta + E[e_i | e_i > -x_i'\beta] = x_i'\beta + \sigma \frac{\phi(x_i'\beta / \sigma)}{\Phi(x_i'\beta / \sigma)}, \dots\dots (8)$$

Where $\sigma \frac{\phi(x_i'\beta / \sigma)}{\Phi(x_i'\beta / \sigma)}$ in equation 8 represents the conditional expectation of a mean-

zero normal variable given that it is larger than $-x_i'\beta$. The above results as in equation 8 shows why it is inappropriate to restrict attention to the positive observations only and estimate a linear model from this sub-sample: the conditional expectation of y_i no longer equals $x_i'\beta$, but also depends nonlinearly on x_i through

$$\frac{\phi(\cdot)}{\Phi(\cdot)}$$

The marginal effect of a change in x_{ik} upon the value of y_i , given the censoring is given as:

$$E(y_i) = x_i'\beta\Phi(x_i'\beta / \sigma) + \sigma\phi(x_i'\beta / \sigma) \dots\dots\dots (9)$$

The marginal effect on the expected value of y_i of a change in X_{ik} is given by

$$\frac{\partial E(y_i)}{\partial x_{ik}} = \beta_k \Phi(x_i' \beta / \sigma) \dots\dots\dots (10)$$

This implies that the marginal effect of a change in x_{ik} upon the expected outcome y_i is given by the model's coefficient multiplied by the probability of having a positive outcome. If the probability is one for a particular individual, the marginal effect will be the same as that when a linear model is used; β_k .

The marginal effect upon the latent variable is obtained as

$$\frac{\partial E(y_i^*)}{\partial x_{ik}} = \beta_k \dots\dots\dots (11)$$

The probability of a zero outcome for example from the Tobit model is given as

$$P(y_i = 0) = 1 - \Phi(x_i' \beta / \sigma) \dots\dots\dots (12)$$

Where β / σ is the marginal effect of a change in x_{ik} upon the probability of observing a zero outcome which is

$$\frac{\partial P(y_i = 0)}{\partial x_{ik}} = -\Phi(x_i' \beta / \sigma) \frac{\beta_k}{\sigma} \frac{\partial P(y_i = 0)}{\partial x_{ik}} = -\Phi(x_i' \beta / \sigma) \frac{\beta_k}{\sigma} \dots\dots\dots (13)$$

The tobit model so specified is usually done through maximum likelihood. The contribution to the likelihood function of an observation either equals the probability mass (at the observed point $y_i = 0$) or the conditional density of y_i , given that it is positive, the probability mass of observing $y_i > 0$. The log likelihood function is written as

$$\begin{aligned} \log L_1(\beta, \sigma^2) &= \sum_{i \in I_0} \log P(y_i = 0) + \sum_{i \in I_1} [\log f(y_i | y_i > 0) + \log P(y_i > 0)] \\ &= \sum_{i \in I_0} \log P(y_i = 0) + \sum_{i \in I_1} \log f(y_i), \end{aligned} \quad (14)$$

Where $f(\cdot)$ is generic notation for a density function and the last equality follows from the definition of a conditional density. The index sets I_0 and I_1 are defined as the sets of those indices corresponding to the zero and the positive observations respectively. Using the appropriate expressions for the normal distribution the equation below is obtained.

$$\begin{aligned} \log L_1(\beta, \sigma^2) &= \sum_{i \in I_0} \log \left[1 - \Phi \left(\frac{x_i \beta}{\sigma} \right) \right] \\ &+ \sum_{i \in I_1} \log \left[\frac{1}{\sqrt{2\pi\sigma^2}} \exp \left(-\frac{1}{2} \frac{(y_i - x_i' \beta)^2}{\sigma^2} \right) \right]. \end{aligned} \quad (15)$$

Maximization of this equation with respect to β and σ^2 yields the maximum likelihood estimates, as usual. Given that the model is correctly specified, this gives consistent and asymptotically efficient estimators for both β and σ^2 .

4.4.2 Analysis of Variance

Analysis of variance (ANOVA) is a statistical technique developed by R. A. Fisher for the analysis of experimental data. The aim of the method is to split the total variation of a variable – around its mean – into components which can be attributed to specific causes (Koutsoyiannis, 2006). It can also be used to compare the mean values of three or more samples. Bluman (5th ed.) explains that when the F-Test is used to compare three or more means, the technique involved is termed analysis of variance.

The current study therefore, uses the F-test to compare the mean values of the various sources of finance used by the small, medium and large of firms. The sources of finance firms are internal funds/retained earnings, bank finance (private and state-owned), non-bank financial institutions, trade credit (purchases on credit from suppliers and advances from customers), new equity (shares), new debt (including commercial paper and debentures) and other (moneylenders, friends, relatives etc) – which is referred to in this study as informal sources. The hypothesis is that the proportion of working capital or new fixed investment financed from each of these sources by small, medium and large firms is not statistically different from each other.

The assumptions underlying the F-test²¹, used in carrying out difference in means test, are:

- i. the population from which the sample was drawn must be normally or approximately normally distributed,
- ii. the samples are independent of each other and
- iii. the variances of the populations are equal.

The test procedure is summarized below:

Step 1: State the hypotheses – the null (H_0) and the alternate (H_1) – and identify the claim.

$$H_0 : \mu_1 = \mu_2 = \mu_3 = \dots = \mu_n$$

H_1 : At least one mean is different from the others

Where: μ_i represents the mean value of a source of finance for all firms in a given size category.

²¹ Bluman, A. G. (5th Edition)

Step 2: Find the critical value, given the significance level (α)

The level of significance (α) can be 1percent, 5percent or 10percent

Step 3: Compute the test value using the test procedure outlined below:

a) Find the mean (equation) and the variance (equation) of each sample

$$\bar{X}_1 = \sum \frac{X_1}{N_1}, \quad \bar{X}_2 = \sum \frac{X_2}{N_2}, \quad \dots, \quad \bar{X}_j = \sum \frac{X_j}{N_j} \quad \dots\dots\dots (16)$$

$$s_1^2 = \frac{\sum X_1^2 - (\sum X_1)^2 / N_1}{N_1 - 1}, \quad s_2^2 = \frac{\sum X_2^2 - (\sum X_2)^2 / N_2}{N_2 - 1}, \quad \dots,$$

$$s_j^2 = \frac{\sum X_j^2 - (\sum X_j)^2 / N_j}{N_j - 1} \quad \dots\dots\dots (17)$$

Where:

X_1, X_2, \dots, X_j are the individual values in samples 1, 2 and j respectively;

$\bar{X}_1, \bar{X}_2, \dots, \bar{X}_j$ represent the respective mean values of the first, second, and the jth sample;

$s_1^2, s_2^2, \dots, s_j^2$ are the associated sample variances of the various samples and

N_1, N_2, \dots, N_j are the sample sizes of the first, second, and the jth sample respectively.

b) Find the grand mean (GM). The grand mean is the mean of all values in the samples.

$$\bar{X}_{GM} = \frac{\sum X}{N}$$

Where:

$\sum X$ represents the summation of all the observations in all the samples and

N is the number of observations in all the samples.

c) Find the between-group variance, denoted by

$$s_B^2 = \frac{\sum n_i (\bar{X}_i - \bar{X}_{GM})^2}{k - 1} \dots\dots\dots (18)$$

Where:

n_i is the number of observations in sample i and

k is the number of samples;

d) Find the within group variance, denoted by

$$s_W^2 = \frac{\sum (n_i - 1) s_i^2}{\sum (n_i - 1)} \dots\dots\dots (19)$$

Where:

n_i is the number of observations in sample i and

s_i^2 is the sample variance of sample i

e) Find the F-test value

$$F = \frac{s_B^2}{s_W^2} \dots\dots\dots (20)$$

Step 4: Make a decision by comparing the F value calculated in step 3(e) above to the critical value computed in Step 2.

Reject H_0 if F-calculated is greater than F-critical

Do not reject H_0 if F-calculated is less than F-Critical

The use of statistical software packages calculate the probability values associated with the various tests and hence the probability values can be used for this test. Using the p-value to conclude about difference in means, the rules are;

- i. there is a significant difference when the p-value calculated is smaller than the level of significance (α) against which the test is been conducted.
- ii. If the p-value is greater than the level of significance (α) then, one can conclude that there is no significant difference in the mean values.

4.5 Data and Sampling

The data used in this research is from the World Bank Enterprise Survey database. Firm level data especially covering SMEs is hard to come by. Even where such data is available, only firms in the manufacturing sector may be covered. The World Bank through its enterprise survey conducted in the year 2007 has made data on firms in the manufacturing and the services sectors of Ghana available.

The World Bank Enterprise Survey is a firm level data gathered around the globe on various issues concerning firms and the environment within which they operate. In Ghana, the survey targeted establishments in Accra, Tema, Kumasi, Takoradi and Tamale. The list for selecting establishments was sourced from the Ghana Statistical Service and a stratified random sampling technique was used. After making adjustments for new information, regarding establishments that had shut down, a final population size of 22,123 in all strata and locations was chosen. The final sample size for the survey was 616 but for this work, microenterprises have been taken out of the sample due to some missing data points and hence a sample size of 494 will be used in this study. Such a sample size far exceeds the maximum sample size needed to achieve 5 percent or 7.5 percent precision and 90 percent confidence (270 or 120 respectively), when the population size is 100,000 (World Bank Enterprise Survey, 2009).

The financing patterns variables used in this study are different from the ones that have been widely used in determining the financing patterns of firms. Earlier studies which have analyzed the capital structure of firms have used balance sheet and information from other financial statements for their financing pattern variables. Such variables include the debt to assets ratio and the long term debt to total debt ratio. Examples of such studies include Booth et al. (2001), Rajan and Zingales (1995). These information are not usually available for small and medium sized firms. As an alternative therefore this study uses the proportion of working capital and new fixed investments financed from a given sources as the dependent variable in analyzing the financing patterns of firms. A similar approach was used by Beck et al. (2004).

Conclusion

This chapter focused on the methodology for the study. The study uses the model employed by Beck et al. (2004) to analyse the determinants of the financing patterns of firms. In addition to this model the analysis of variance method is used to determine if the sources of finance used by firms vary with firm size. Descriptive statistics is also used to summarize the variables used in the study as well as how firms rank access to finance compared with other obstacles and the reasons behind the non-application for loans by firms.

CHAPTER FIVE

PRESENTATION AND DISCUSSION OF RESULTS

5.0 Introduction

This chapter presents and discusses the results of the study in six sections. Section one presents the summary statistics of the variables used in the study. Section two compares the relative importance of access to finance to other obstacles, in the operations of firms with section three determining whether the sources of finance used by firms vary with firm size – using the analysis of variance technique. Section four employs the tobit estimation technique to explore the determinants of the two key external sources used by firms to finance both working capital and new fixed investments. The reasons behind the non-application for lines of credit by firms are analysed in section five. The last section gives a conclusion to this chapter.

5.1 Summary statistics

Table 5.1 presents the summary statistics for the various variables used in this study. The sample size is 494 firms drawn from five cities in Ghana which are Accra, Tema, Kumasi, Takoradi and Tamale. Firms in Accra and Tema were however classified to form one group, Accra-Tema, making the areas of concentration to be four. Out of the 494 firms approximately 60 percent are in the Accra-Tema category. This is followed by 20 percent from Kumasi and 10 percent each from Takoradi and Tamale (see Table 5.1). Small firms constitute 75 percent with medium sized firms being 19 percent

whiles the remaining 6 percent are large firms. The average age of firms can be approximated to 14 years.

Table 5.1: Summary statistics of variables

Variable	Number of firms	Mean	Standard Deviation	Min	Max
Small	494	0.75	0.43	0	1
Medium	494	0.19	0.39	0	1
Kumasi	494	0.20	0.40	0	1
Takoradi	494	0.10	0.30	0	1
Tamale	494	0.10	0.30	0	1
Private foreign	494	0.05	0.22	0	1
Private domestic	494	0.94	0.23	0	1
External audit	494	0.40	0.49	0	1
Sales growth	437	0.54	0.60	-1.95	7.89
Working capital:					
Internal finance	494	75.10	22.40	0	100
External finance	494	24.90	22.40	0	100
Bank	494	5.35	14.20	0	80
Nonbank financial institution	494	0.90	4.930	0	50
Trade credit	494	18.26	17.02	0	100
Informal	494	0.39	3.60	0	60
New Fixed investments					
Internal	258	85.70	29.71	0	100
External:	258	14.30	29.71	0	100
Bank	258	10.00	26.76	0	100
Nonbank Financial institution	258	0.62	6.62	0	100
Trade credit	258	2.23	8.95	0	100
New equity(shares)	258	0.39	6.23	0	100
New debt	258	0.00	0.00	0	0
Informal	258	1.10	8.47	0	85
Exporter	494	0.06	0.24	0	1
Manufacturing	494	0.59	0.49	0	1
Age	493	13.8	10.9	1	76
Basic education	494	0.17	0.38	0	1
Secondary education	494	0.46	0.50	0	1
Tertiary education	494	0.32	0.47	0	1
Financing constraints	494	3.66	1.41	1	5

Source: Author's compilation with information from World Bank Enterprise Survey, Ghana-2007

Private domestic firms dominate in terms of firm ownership. Overall private domestic firms form 94 percent of all firms with private foreign firms making up 5 percent. The

remaining 1 percent covers state owned firms. These developments can be explained by the requirements for setting up a business and the privatisation of state owned enterprises in Ghana. Individual citizens will not have to satisfy a host of requirements to set up a small business in Ghana. Added to this the privatisation process started by the government of Ghana has reduced the number of state owned enterprises.

The level of education of most managers is secondary education. Out of the 494 firms, managers with secondary education are approximately 46 percent. This is followed by tertiary education (36 percent) and basic education (17 percent). Thus managers with some level of education constitute 96 percent, with those having no education being 4 percent. Firms with audited financial statements constitute 40 percent of all firms. This indicates that majority of firms have unaudited financial statements. This is typical of most SMEs. The average growth rate of firms within the three year period, 2003 – 2006, is 54 percent (Table 5.1).

Internal funds finance a higher proportion of working capital (75.10 percent). This is followed by trade credit (18.26 percent), bank finance (5.35 percent), nonbank financial institutions (0.9 percent) and informal sources (0.39 percent). This is similar to the results of Aryeetey et al. (1994). According to Aryeetey et al. (1994) funds from relatives is irrelevant for working capital financing; the important sources are retained profits, customers' advances and bank overdrafts. What is similar about the data set used in this work and that of Aryeetey et al. (1994) is the location of firms. In both data sets the firms included were firms in urban centres.

The primary source for new fixed investment financing is internal funds. Internal funds are used to finance 85.7 percent of new fixed investments which is about 10 percent higher than the proportion of working capital financed from internal funds. The primary external source for new fixed investments are; bank finance (10 percent), trade credit (2.32 percent), informal finance (1.10 percent), non-bank financial institutions (0.62 percent), new equity (0.39 percent). New debt is not used in financing any proportion of new fixed investments.

In terms of sectoral classification firms are classified into two sectors; the manufacturing and services sector. The survey excluded firms in the agricultural and financial sectors. Manufacturing firms on the whole constitutes 59 percent while the remaining percentage is for firms engaged in the provision of services.

The proportion of firms engaged in export is low; they make up 6 percent of the 494 firms in the survey.

5.2 Access to finance compared to other obstacles

Table 5.2 presents the relative importance of access to finance as a constraint to the operations of firms, relative to other constraints. Firms were asked to indicate among fifteen obstacles, the ones that constitute the first, second and third serious obstacles to their operations. From the rankings, approximately 49 percent of all firms indicated that electricity is the first serious obstacle to their operations (Table 5.2). Access to finance was the second highly ranked obstacle. Of all firms, about 31 percent ranked access to finance as the first serious obstacle. The next obstacle noted by the third

highest number of firms is tax rates and this is given by approximately 7 percent of the 494 firms. These three obstacles were the ones that were indicated by at least 7 percent of all firms in the sample.

By considering the second serious obstacle, access to finance was ranked to be the first. The proportion of firms ranking access to finance as the first among other constraints under the second serious obstacle was around 22 percent. The third serious obstacle is tax rates; indicated by 16.67 percent of firms (Table 5.2).

Table 5.2: Access to finance compared to other obstacles

Factors that constrain firms in their current operations	1 st Serious Obstacle	2 nd Serious Obstacle	3 rd Serious Obstacle
Electricity	49.39	21.46	9.72
Access to finance (availability and cost)	30.97	22.27	15.59
Tax rates	7.09	21.26	16.60
Access to land	4.05	10.93	10.12
Transportation of goods, supplies, and inputs	2.23	9.92	12.15
Practices of competitors in the informal sector	1.42	2.83	11.54
Tax administration	1.21	2.63	7.09
Customs and trade regulations	1.01	1.01	3.04
Business licensing and permits	0.81	2.63	4.05
Crime, theft and disorder	0.81	1.62	2.43
Corruption	0.40	1.21	3.04
Courts	0.20	0.20	1.21
Inadequately educated workforce	0.20	1.01	2.02
Political instability	0.20	0.61	0.61
Labour regulations	0.00	0.40	0.61
Not applicable	0.00	0.00	0.20
Total	100.00	100.00	100.00
Number of firms	494	494	494

Source: Author's compilation with information from the World Bank Enterprise Survey, Ghana-2007

As shown in Table 5.2 access to finance is the second serious obstacle to the operations of firms. This result is different from previous studies, such as Aryeetey et al. (1994) and Baah-Nuakoh (2003) who found access to be the first serious obstacle to the growth of firms. A possible explanation from the change in the rankings can be that there have been improvements in the delivery of financial services. It can also mean that problems associated with electricity have become more pronounced than access to finance. For example, the electricity sub-sector in 2007 recorded a negative growth rate of 17.20 percent due to the severe power outages experienced in the economy (ISSER, 2007). In that same year, the manufacturing sub-sector recorded a negative growth rate of 2.3 percent. The electricity crisis in 2007 started in the second half of 2006 through unstable electricity supply (ISSER, 2006). The results from Table 5.2 also show that there are other major obstacles (tax rates and access to land) to the operations of firms.

5.3 Financing patterns and firm size

Using mean difference test²² – specifically analysis of variance – we investigate whether the sources of financing vary significantly across firm sizes. It is evident from Tables 5.3 and 5.4 below that small firms finance a higher proportion of their investments from internal sources than medium and large firms. This finding is in line with Chittenden's (1996) finding that smaller firms are more likely to rely on internal funds than larger firms. The use of internal financing by small firms is even more pronounced in financing new fixed investments than working capital. This finding is similar to the findings of Kumar and Francisco (2005).

²² Detailed results from the mean difference tests are given at the appendix on Tables A.1I – A.2 VII.

5.3.1 Working Capital Financing

For working capital purposes, small firms finance 77.87 percent from internal sources as compared to 70.37 percent by medium firms and 56.66 percent by large firms (Table 5.3). Thus there is a negative relationship between firm size and the use of internal financing for working capital. The mean difference test from Table 5.3 shows that the use of internal funds for working capital purposes varies with firm size. Berger and Udell (1998) and Hughes (1997) also establish a negative relationship between firm size and the use of internal funds. They argue that small firms prefer to use internal finance more to avoid intrusion into their businesses (Berger and Udell, 1998 and Hughes, 1997). Also Gopinath (1995) explained that the higher use of internal funds by small firms is due to limited access to capital markets.

Table 5.3: Analysis of Variance results on variation in financing working capital by firm size

Source of Financing working capital	Firm size		
	Small	Medium	Large
Internal funds	77.87***	70.37***	56.66***
External funds:	22.13***	29.63***	43.34***
Bank	2.97***	10.55***	17.91***
Nonbank	0.98	0.76	0.31
Trade credit	17.65*	18.32*	25.13*
Informal	0.53	0.00	0.00
<i>Number of firms</i>	<i>370</i>	<i>92</i>	<i>32</i>

*significant at the 10% level **significant at the 5% level ***significant at the 1% level

Source: Author's computation with information from World Bank Enterprise Survey, Ghana - 2007

Trade credit which serves as the second major source for financing working capital, shows a positive relationship with firm size. Small firms finance a smaller proportion of their working capital from trade credit (17.65 percent) as compared to medium sized firms (18.32 percent) and large firms (25.13 percent). Subjecting this result to the mean difference test, it can be concluded that there is a significant difference between firm size and the use of trade credit (Appendix Table A.1V). This result contrasts with Kumar and Francisco, 2005 study on Brazil where trade credit did not vary with firm size in financing working capital.

Bank financing serving as the third source of finance for working capital also varies significantly across firm sizes at the 1 percent level of significance (Table 5.3 and Appendix Table A.1III). Large firms finance relatively, higher proportions of their working capital from banks than small and medium firms. For working capital purposes, large firms finance 17.91 percent from banks with medium and small firms financing 10.55 and 2.97 percent respectively from the same source. This shows that the use of banks to finance working capital varies positively with firm size. Aryeetey et al., 1994 came to a similar conclusion on firms' use of bank loans to finance working capital; they did not however test this result.

Small firms finance a relatively higher proportion of their working capital (0.98 percent) from non-bank financial institutions as compared to medium firms (0.76 percent) and large firms (0.31 percent). However, this source contributes less than 1 percent of working capital financing for firms. The analysis of variance result shows that the mean proportion used by each of the firm size is statistically the same.

The mean value of the proportion of working capital financed from informal sources indicates that it is not a major source of finance for firms. Relative to large and medium firms, small firms finance 0.53 percent of their working capital from informal sources. This may be because the firms surveyed are located in the urban centres. The mean difference test however, shows that the mean value of working capital financed from informal sources does not vary with firm size (Table 5.3 and Appendix Table A.1VI).

The order of financing working capital by small and medium firms is not different from that of large firms; though for the particular source used, there is a significant difference among firm sizes. The pattern of financing working capital for firms show that internal financing is the primary source followed by trade credit, bank financing, non-bank financial institutions and informal sources.

5.3.2 New Fixed Investments

Internal financing is highly used by all firm categories for new fixed investment purposes than for working capital purposes. Small firms finance 89.94 percent of new fixed investments from internal sources while for the same purpose medium and large sized firms finance 80.93 percent and 63.48 percent respectively internally (Table 5.4). These values show that there is a negative relationship between firm size and the use of internal financing.

Table 5.4: Analysis of Variance results on variation in new fixed investment financing by firm size

Source of Financing new fixed investments	Firm size		
	Small	Medium	Large
Internal funds	89.94***	80.93***	63.48***
External funds:	10.06***	19.07***	36.52***
Bank	6.05***	13.80***	32.17***
Nonbank	0.88	0.00	0.00
Trade credit	1.66**	5.09**	0.00**
Informal	1.46	0.19	0.00
New equity	0.00***	0.00***	4.35***
New debt	0.00	0.00	0.00
<i>Number of firms</i>	<i>181</i>	<i>54</i>	<i>23</i>

*significant at the 10% level **significant at the 5% level ***significant at the 1% level

Source: Author's computation with information from World Bank Enterprise Survey, Ghana - 2007

The use of bank financing also varies significantly across firm size in the financing of new fixed investments (Table 5.4 and Appendix Table A.2III). Large firms relatively finance a higher proportion of their new fixed investments from banks than small and medium firms. While small firms finance 6.05 percent of investments from banks that for medium sized firms is 13.80 percent and for large firms, the percentage is 32.17.

There is no significant difference in the use of non-bank financial institutions by firm size. Firms finance less than 1 percent of new fixed investments from non-bank financial institutions. Non-bank financial institutions finance a higher proportion of investment of small firms than medium and large firms.

Trade credit varies significantly with firm size. For investment purposes medium sized firms finance a higher proportion of their activities with trade credit than small and large sized firms. Though the use of trade credit for investment purposes varies with firm size, there is no definite pattern (See Table 5.4).

New equity was not used by both small and medium sized firms. It is only large sized firms that finance 4.35 percent of their investments with new equity. This may not be surprising because for firms to issue equity on the public capital market there are requirements that have to be met. To be listed on the Ghana Stock Exchange for example, the firm must be a public limited liability company duly incorporated under the Companies Code, 1963, Act 179 (Ghana Stock Exchange, 2006). The hypothesis that the proportion of investment financed from the issue of new equity is the same for all firm sizes was proved to be otherwise (Table 5.4 and Appendix Table A.2VII).

Informal financing of new fixed investment does not significantly differ with firm size (Table 5.4 and Appendix Table A.2VI). For each firm size it constitutes less than 2 percent. Also with regard to the use of new debt as a source of finance for new fixed investments none of the firms used this source.

Financing of new fixed investments by firms follows the following pattern: internal finance, bank financing, trade credit and informal financing. However with the introduction of large firms, the pattern of financing new fixed investments follows the following order: internal financing, bank financing, trade credit, informal financing, new equity and new debt.

On the whole it is evident that internal funds, bank financing, trade credit and new equity vary significantly with firm size. There is no significant evidence to show that the use of informal finance, nonbank financial institutions and new debt vary with firm size. Internal financing of investments has a negative relationship with firm size while external financing has positive relationship with firm size.

For the common sources of financing investments, the order of trade credit and bank finance for financing working capital and new fixed investments is differently placed. While trade credit is highly used in financing working capital, bank financing is highly used to finance new fixed investments. This can be explained by the differential volume of capital requirements for working capital and fixed investments financing. Generally fixed investments require huge capital as compared to working capital.

5.4 Factors determining the use of external financing

In this section we analyse the factors that influence firms' decision to use external sources (bank and trade credit) to finance their working capital and new fixed investments both at the aggregate level²³ and disaggregate level²⁴.

²³ External sources of financing working capital are; banks, non-bank financial institution, trade credit and informal sources. The external sources for financing new fixed investments are; bank, trade credit, non-bank financial institutions, informal sources, new equity and new debt.

²⁴ We considered the two major external sources of financing working capital and new fixed investments which are bank financing and trade credit.

5.4.1 Working capital financing from external sources

The analysis of the factors affecting firms' decision to use external sources to finance working capital is provided in this section. Results of the aggregate and disaggregate analysis of factors influencing firms' decision to use external sources are shown in Table 5.5.

Table 5.5: Tobit results on the determinants of working capital financing from external sources

Independent Variables	External Finance	Trade credit	Bank Finance
Sales growth	1.07	1.15	0.51
Exporter	5.71	2.76	7.33
Manufacturing	5.11*	6.39***	7.85
Age	0.08	-0.05	0.46
Small firms	-12.64**	-8.24*	-9.77
Medium firms	-7.36	-6.58	8.05
Basic education	8.35*	16.45***	31.28
Secondary education	6.05	1.23	-10.27
Tertiary education	7.54*	13.60**	41.74*
Financial constraint	0.10	-1.15	7.01***
External audit	9.28***	1.41	50.21***
Private foreign	53.65***	-2.93	46.07**
Private domestic	34.15*	-4.61	18.75
Kumasi	5.49*	2.18	36.18***
Takoradi	7.55*	8.26**	-1.57
Tamale	6.69	8.30**	10.54
_Cons	-19.53	11.22	-165.94***

*significant at the 10% level **significant at the 5% level ***significant at the 1% level

Source: Author's estimation based on World Bank Enterprise Survey data, Ghana-2007

Firm Size: From Table 5.5, small firms are more likely to finance 12.64 percent less of their working capital from external sources as compared to large firms. This is explained by small firms' lower significant use of trade credit for financing working capital. Small firms, thus, use less external sources to finance their working capital than large firms. Small firms' lower use of external sources of financing for working capital, especially trade credit can possibly be explained by the type of assets suppliers will be funding. Working capital goes into the production process and once used cannot be recovered and resold, should the firm default on paying for the credit granted. Thus suppliers may be less interested in funding the current assets of small firms.

Sector: The predicted value of the proportion of working capital financed from external sources is 5.11 percent higher for manufacturing firms than for firms engaged in services. This is explained by the manufacturing firms' higher use of trade credit. Manufacturing firms will significantly finance 6.39 percent more of their working capital from supplier credit and customers advance than services firms. Thus more capital intensive sectors are more likely to finance a higher proportion of their working capital from trade credit.

Educational level of managers

Managers with basic education are more likely to finance 8.35 percent of working capital from external sources than managers of firms with no education. This is explained by their significant higher use of trade credit. From Table 5.5 managers with basic level of education are likely to finance 16.45 percent more of working capital from trade credit.

Firms with managers having tertiary education will finance 7.54 percent more of their working capital from external sources than managers with no education. This is explained by their higher use of banks. As shown in Table 5.5, firms with managers having tertiary education are more likely to finance 41.74 percent of their working capital from banks than firms with managers with no education. This result can be explained based on the requirements for application of bank credit. Managers having tertiary level of education are better placed in terms of drawing winning proposals than those with no education. Also credit evaluators at the banks may tie firms' efficiency with their managers' level of education.

Financing constraint: Firms that view access to finance as a severe obstacle are more likely to finance 7.10 percent from banks as compared to firms that view access to finance as a minor obstacle. Such firms are more likely to be cash constrained than those reporting less financing constraints, hence their high use of bank financing.

Information: External audit was used as a proxy for the availability of quality financial information. It is shown in Table 5.5 that audited firms are more likely to finance 9.28 percent of their working capital from external sources than unaudited firms. The higher use of external sources of financing by audited firms is largely explained by their use of banks in financing working capital (Table 5.5). This indicates that firms with quality financial information are more likely to use external sources in financing working capital. The availability of audited statements serves as a source of information for credit evaluation. Audited financial statements provide quality information on the financial position of firms which is used as criteria to assess the risk level of firms and their capacity to repay credit granted.

Ownership: Private firms with foreign ownership are more likely to finance a higher proportion of their working capital externally than firms with state owned enterprises. Private foreign firms finance 53.65 percent more of their working capital from external sources than firms than state enterprises (Table 5.5). This is largely explained by their use of bank financing. Private foreign firms are likely to finance 46.07 percent more of their working capital from banks than state owned enterprises. Private domestic firms are also likely to finance 34.15 percent more of their working capital from external sources compared to state enterprises.

Location: All the location variables are significant determinants of financing working capital externally. Firms in Kumasi and Takoradi are likely to finance 5.45 percent and 7.55 percent more, respectively, of their working capital form external sources than firms in the Accra-Tema region. The significant use of external sources of financing working capital by firms in Takoradi and Tamale is explained by their higher use of trade credit. On the other hand, the higher use of external sources by firms in Kumasi is explained by their use of banks. These trends suggest that firms in the Accra-Tema locality use more internal finance in financing than external financing for working capital purposes.

5.4.2 New fixed investment financing from external sources

In this section the factors that explain firms' use of external sources of financing new fixed investments are discussed. Results for the determinants are shown in Table 5.6 (with detailed regression results presented on Tables A.4I, A.4II and A.4III).

Table 5.6: Tobit results on the determinants of new fixed investment financing from external sources

Independent variable	External	Bank	Supplier credit
Sales growth	1.33	0.35	-0.07
Exporter	-1.67	-10.00	2.69
Manufacturing	-6.79	-4.37	-0.18
Age	0.10	-0.06	0.03
Small firms	-24.69***	-28.76***	7.10***
Medium firms	-18.23**	-22.64***	9.14***
Basic education	5.39	-0.45	1.27
Secondary education	1.10	4.20	0.19
Tertiary education	8.93	-0.42	1.40
Financial constraints	-2.46*	-2.68**	0.53
External audit	9.74**	10.21**	3.63***
Private-foreign	24.69*	23.65*	3.32
Private-domestic	5.63	7.99	-4.93
Kumasi	5.00	6.18	-2.51*
Takoradi	-8.88	-3.68	-3.85
Tamale	24.25***	20.54***	-1.94
_cons	23.71	30.91	-4.56

*significant at the 10% level **significant at the 5% level ***significant at the 1% level

Firm size: It is evident from Table 5.6 that firm size²⁵ is a significant determinant of their use of external sources to financing. Small firms finance 24.69 percent less of new fixed investments from external sources as compared to large firms. Medium

²⁵ Whiles size is significant at the 10% level in financing working capital externally, it is significant at the 1% level for the financing of new fixed investment externally (See Table 5.4 and 5.5)

firms also finance 18.23 less of their new fixed investments from external sources than large firms.

The lesser use of external sources of financing by both small and medium sized enterprises is explained by their lesser use of banks in financing new fixed investments (see Table 5.6). Small and medium sized firms also finance more of their new fixed investments from trade credit. While using less of bank financing small firms are more likely to finance 7.1 percent of their new fixed investments from trade credit than large firms. Medium sized firms are also more likely to finance 9.14 percent of their new fixed investments from trade credit than large firms. The higher use of trade credit by small and medium sized firms may be because suppliers are more willing to provide fixed assets for firms on credit than current assets. This is because should firms default on repaying the credit extended, the supplier can easily take over fixed assets than current assets; current assets finally become part of the final product.

The positive relationship between firm size and the use of external sources of financing is similar the results of Beck et al. (2004). In their study of the financing patterns of firms in 48 countries, Beck et al. (2004) found that small firms use to a lesser extent external sources of financing as compared to medium and large firms. In the same study it was found that the effect was even stronger in the use of bank financing. Abor and Biekpe (2007) also found a positive relationship between firm size and reliance on bank debt.

Financial constraint: This variable is only significant for external financing as a whole and specifically bank financing. For investment purposes firms which view access to finance as a high constraint are less likely to use external sources, especially banks, in financing their new fixed investments. Such firms are likely to finance 2.68 percent less than those that report low financing constraints.

Information: In financing new fixed investment the external audit variable explains significantly the use of external sources. Firms with audited financial statements are more likely to use external sources of financing new fixed investments than those who do not. Firms with audited financial statements finance 9.74 percent more of their new fixed investments from external sources than those with unaudited statements. This is explained by the higher use of both banks and trade credit by firms with audited financial statements (Table 5.6). Being audited externally means that the financial statement of the firm is more credible than those with unaudited financial statements. Analysis of the financial position based on audited statements is more likely to be reliable. Thus credit evaluators are more likely to grant credit to firms with audited statements than those with unaudited statements.

Ownership: From Table 5.6 private foreign firms are more likely to finance 24.69 percent of their new fixed investments from external sources than state owned firms. Specifically private foreign firms are more likely to use banks to finance 23.65 percent more of their new fixed investments than state owned enterprises.

Location: In financing new fixed investments firms in Tamale are more likely to finance 24.25 percent from external sources than firms in Accra (Table 5.6).

Specifically, firms in Tamale are more likely to finance 20.54 percent of their new fixed investments from banks than firms in Accra-Tema. This indicates that firms in Accra-Tema use more internal sources in financing their new fixed investments. The indication may be that firms in Accra-Tema are less cash constrained than their counterparts in Tamale. Another possible explanation may be the finding by Gockel and Akoena (2002) that financial institutions have marginalised small and medium enterprises. In the survey data, among the firms located in Accra-Tema, small firms are more than large firms.

In all there exists a positive relationship between firm size and the use of external sources of financing for both working capital and new fixed investments. This confirms studies by Titman and Wessels (1986), Kester (1986), March (1982), Rajan and Zingales (1995), Biger et al. (2008), Hang and Song (2006) who all identified a positive relationship between firm size and the use of external sources of financing, specifically debt. The positive relationship between the use of external financing and firm size is consistent with the argument that the smaller the firm, the higher the probability of default. Added to this small firms may not have access to public equity markets and hence will have to rely more on internal funds as compared to large firms.

In terms of sector, manufacturing firms were seen to significantly use more of external sources of financing investments (working capital) than firms engaged in services. This could possibly be explained by the existence of time lags in cash flows which is more prevalent and pronounced in the manufacturing sector than the services

sector. Thus the higher likelihood of manufacturing firms to face cash constraints explains their reliance on external sources of financing their investments.

The educational level of managers was found to significantly explain firms' use of external sources in financing working capital but not fixed investments. The use of external sources in financing working capital by firms with managers having basic education is largely explained by their use of trade credit. However, the use of external sources of financing working capital by firms with managers having tertiary education is explained largely by their use of bank financing. It has been explained earlier that highly educated managers may have the capacity to come up with winning credit proposals than uneducated managers. In addition to this financial intermediaries may tie performance with the level of education of managers.

It was expected that firms located in Accra-Tema will use more external sources of financing than firms in the other localities. Contrary to this expectation firms in the other localities were found to use to a higher extent external sources than those in the Accra-Tema locality. A possible reason may be that firms in areas having relatively high concentration of large firms may be limited in having access to external funds, especially from banks than firms in areas with relatively more small sized firms. This indicates that the mere concentration of financial institutions in a given locality does not guarantee that firms, especially SMEs will have access to external financing from such institutions.

The ownership status of the firm also determines the source of finance used in that firm. Firms with foreign ownership use more external sources of financing than state

owned enterprises. One of the reasons behind the massive privatisation of state owned enterprises was the perceived poor performance of such firms. If this is anything to go by then state owned enterprises will use less external sources of financing. Another good explanation can be that raised by Beck et al. (2004) that state owned enterprises may have easy access to development financing than the other firms and hence will rely less on other external sources such as banks.

The cash position of firms was found to have a positive relationship with the use of bank financing of working capital but a negative relationship with firms' use of banks in financing new fixed investments. Firms would like to have goodwill in their dealings with creditors. Yield from working capital investments are more short-run oriented increasing firms' likelihood to repay for credits faster. Contrary to this, yield from fixed capital investments are more long-run oriented reducing firms' ability to repay loans faster. Also given that firms would like to have goodwill in their dealings with creditors, they are more likely to use banks in financing their working capital than their fixed investments.

The availability of quality financial information on firms is positively related to their use of external sources of financing both working capital and new fixed investments. The availability of audited financial statements provides credit evaluators with a reliable source of information on firms' financial position and their probable credit risk. It is therefore not difficult for firms with audited statements to have access to external sources of financing as compared to those with unaudited financial statements.

5.5 Why do firms decide not to apply for loans?

This section presents the results on the reasons behind the non-application for loans or lines of credit by firms. Surveying firms' use of lines of credit from financial institutions, it is evident that majority of the firms did not apply for lines of credit (Table 5.7). On the whole 376 out of the 494 firms surveyed, representing approximately 76 percent, did not apply for lines of credit. The three most widely cited reasons for the non-application for lines of credit or loans are analyzed below with summary statistics on Table 5.7.

Non-application for lines of credit reduces with firm size. Small firms that did not apply for loans were approximately 82 percent while medium and large firms were 62 percent and 50 percent respectively (Table 5.7). For small firms the three most reported reasons why they did not apply for loans in the year 2006 are no need for loans because they have sufficient capital, collateral unattainable and complex application procedures. The respective percentages for these reasons are 22.11, 22.11 and 21.45. The key reasons given by medium sized firms for the non application for lines of credit are no need – have sufficient capital (36.84 percent), complex application procedure (21.05 percent) and unfavourable interest rates (15.79 percent). Large firms cited collateral being unattainable (37.5 percent), no need for loans (25 percent) and unfavourable interest rates (18.75 percent) as the top three reasons. With reference to firm size therefore firms are either self-excluded from the loan market (firms not applying for loans because they had sufficient capital) or are excluded from the loan market because of the features of the loan product; specifically unattainable collateral, complex application procedure and unfavourable interest rates. Berger and Udell (1995) explain that small, young firms – generally with shorter banking

relationships – pay higher interest rates and are more likely to be required to pledge collateral.

From Table 5.7, the key reasons why firms with audited financial statements did not apply for lines of credit are availability of internal capital (33.33 percent), unattainable collateral (20.16 percent) and unfavourable interest rate. The key reasons accounting for the non-application for loans by firms with unaudited statements are complex application procedure (26.32 percent), unattainable collateral (21.86 percent) and the availability of internal capital (19.84 percent). The application procedure is viewed by firms with unaudited statements as complex and this is possibly because they are not able to meet the informational needs of credit evaluators.

By comparing this to the distinction between access to and use of formal finance as explained using Figure 3.1, it can be argued that though the firms surveyed were not patronizing loan products due to self exclusion – no need (24.47) and perception that it will not be approve (6.12 percent) – not because of its unavailability, there were still others who were involuntarily excluded due to reasons such as unattainable collateral (21.28 percent), complex application procedure (21.08 percent) and unfavourable interest rate (18.62). What this implies is that for even firms in the urban centres access to finance is still a problem though per the ranking of the firms surveyed it is the second serious obstacle affecting their operations.

Table 5.7: Reasons for non-application for lines of credit by size and audit status

Reasons for non application for loans	Size			External audit		Overall
	Small	Medium	Large	No	Yes	
No need – has sufficient capital	22.11	36.84	25.00	19.84	33.33	24.47
Complex application procedure	21.45	21.05	12.50	26.32	10.85	21.01
Unfavourable interest rate	19.14	15.79	18.75	18.22	19.38	18.62
Collateral unattainable	22.11	12.28	37.50	21.86	20.16	21.28
Insufficient loan amount and maturity	3.30	3.51	0.00	3.64	2.33	3.19
Think it will not be approved	5.94	8.77	0.00	6.48	5.43	6.12
Other	5.94	1.75	6.25	3.64	8.53	5.32
Total	100	100	100	100	100	100
Number of firms	303	57	16	247	129	376
Percentage of total	81.89	61.96	50.00	82.89	65.82	76.11

Source: Author's compilation with information from World Bank Enterprise Survey, Ghana-2007

5.6 Conclusion

The broad objective of the study was to determine the factors that affect the financing patterns of firms. The specific objectives as stated earlier, are to find the financing patterns of firms, to find out if financing of working capital and new fixed investments vary with firm size and lastly to find out if the availability of quality financial information affects firms' use of external sources of financing.

The financing patterns of firms showed that firms finance a higher proportion of their investments from internal sources. It was also evident that the two main external

sources used by firms to finance working capital and new fixed investments are banks and trade credit.

Assessing the two important external sources of financing by firms, the main factors which significantly determine the use of external sources of financing both working capital and new fixed investments are firm size, sector, availability of quality financial information, educational level of the manager, ownership and location. It can thus be concluded that firm size and the availability of quality financial information affect firms' access to and use of external sources of financing.

It can be added that access to finance though not the first obstacle to the operations of firms is the second serious obstacle and that the percentage of firms not applying for lines of credit due to the combined effects of reasons such as unattainable collateral, complex application procedure and unfavourable interest rates are more. This indicates that the features of existing credit products offered by financial institutions makes them to be used less by firms, especially small ones.

CHAPTER SIX

CONCLUSION AND POLICY RECOMMENDATIONS

6.0 Introduction

This chapter concludes the study by presenting the summary of findings in section 6.1, policy recommendations in section 6.2 and limitations of the study in section 6.3.

6.1 Summary of findings

The objective of the study was to analyze the determinants of the key external sources of financing for firms. Specifically, the study sought to investigate the pattern of finance used by firms, find out if the sources of financing for firms vary with size and also if the availability of quality financial information affects firms' use of external sources of financing.

Though access to finance has been considered in the literature as the first major obstacle to the operations of firms, it was found to be the second severe obstacle to the operations of firms in this study. The study also found that 76.11 percent of all firms did not apply for any line of credit or loans. For these firms 24.47 percent did not apply for loans because they had adequate capital whiles other reasons given are unattainable collateral (21.28 percent), complex application procedures (21.01 percent) and unfavourable interest rates 18.62 percent.

The study found firms to be more reliant on internal sources of financing as compared to external sources. Large firms were found to use more external sources of financing than small and medium firms. Large firms finance 43.34 percent of working capital

from external sources as compared to 29.63 percent for medium and 22.13 percent for small firms. Financing from external sources is more pronounced for working capital than for fixed investments. The proportion of working capital financed from external sources is 24.9 percent but for new fixed investments external financing constitutes 14.3 percent. The two key external sources of financing both working capital and new fixed investments emanating from the study are trade credit and bank financing. While trade credit is more important in financing working capital, bank financing is more important in financing new fixed investments.

Using the mean difference test it was found that for all the sources of financing used by firms internal sources, bank financing, trade credit and new equity financing vary with firm size. Financing from nonbank financial institutions, informal sources and new debt were found to be invariable with respect to firm size.

Investigations into the factors that determine the use of the two key external sources of financing the operations of firms reveal that the size of the firm, availability of quality information, sector, level of education of managers, type of ownership and location to be significant factors influencing the financing of working capital using external sources of financing. Firstly the size of the firm was found to have a positive relationship with the use of external sources of financing. Secondly manufacturing firms were also found to use more external sources of financing than firms engaged in services. Thirdly firms with managers having basic and tertiary levels of education use more external sources of financing than those with no education. Fourthly foreign private firms use more external sources of financing than state owned enterprises.

Lastly firms in Kumasi, Takoradi and Koforidua were found to finance a higher proportion of their working capital externally as compared to firms in Accra-Tema.

The factors which significantly determine the use of external sources of financing new fixed investments of firms were found to be firm size, financial constraints, external audit, ownership and location of the firm. Firstly the size of firms has a positive relationship with the use of external sources of financing new fixed investments. Secondly financially constrained firms, reporting access to external sources of financing as a higher constraint, use less external sources of financing. Thirdly firms that submit their financial statements to be verified by external auditors finance a higher proportion of their investments from external sources more than those who do not. Fourthly private foreign firms use more external sources of financing than state owned firms and private domestic firms. Lastly in terms of location firms in Tamale use more external sources of financing than firms in the other localities.

6.2 Policy Recommendations

The size of the firm was found to have a positive relationship with the use of external sources of financing for both working capital and fixed investments. The small and medium firm dummy variables were significant indicators of investment financing. Small and medium firms use less external sources of financing as compared to large firms. The significance of the size variables for fixed investments shows that providers of finance when financing the fixed assets of small and medium firms are more cautious. External finance providers put in place measures to reduce the risk they are likely to face. Reasons given by small firms that did not apply for lines of

credit include unattainable collateral, complex application procedures and unfavourable interest rates. Despite the less access to sources such as banks by small enterprises, other sources of financing such as nonbank financial institutions do less in relaxing the financing constraints of firms. Nonbank financial institutions contribute less than two percent to the financing of firms and this is not different from the contribution from informal sources. Thus there is still the need for policy makers to encourage the existing financial intermediaries to introduce products which targets SMEs.

The availability of quality information was also found to be a significant determinant of firms' use of external sources of financing, especially in using bank financing. This result seems to give a confirmation of the financial growth cycle given by Berger and Udell (1998) which postulates that informationally opaque firms rely more on internal sources and less on external sources of financing. As firms become less informationally opaque they will gain access to external sources of financing. The result signals that firms should be interested in keeping financial records on their activities because financiers are interested in analyzing the financial position of firms to ascertain the probable risk and the capacity to honour credit obligations. Firms will also have to engage the services of educated individuals with relevant skills to help in the management of their enterprises. Added to these, policy should be directed towards training the managers of firms on proper record keeping and also the need to submit their financial statements to be assessed by auditors. This will make it easier for credit evaluators to assess their capacity to take on more debt.

However, while firms put in place measures to provide the needed financial information to external finance providers, financial intermediaries should develop more relationship lending products if they are to meet the financing needs of SMEs. As argued by Berger and Udell (2002) relationship lending is different from transactions based lending technologies, such as financial statements lending, asset based lending or credit scoring lending. Relationship lending information is often 'soft' data, such as information about the owner's character and reliability, which may be difficult to quantify, verify and communicate through the normal transmission channels. The use of relationship lending will help reduce the limited access to finance by good performing firms, who are constrained for growth simply because of their inability to meet the transactions based technologies of financial intermediaries.

6.3 Limitations of the study

Although the data set used in this study has complete information on the financing patterns of firms, financial information is limited. Financing patterns used were in proportion to a given source but not as debt to asset ratios, which is common in the literature.

The World Bank Enterprise Survey (WBES) data set used in this study covered firms principally drawn from the urban part of the country. Since this study used the WBES data set, application of the results therefore will have to be placed in context. It was found that informal sources do not finance a higher proportion of the investments of firms and this might not be the case in rural areas.

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APPENDIX

Table A.1I: Analysis of Variance, Internal financing of working capital by firm size

Analysis of Variance: Internal financing of working capital

Source	SS	Df	MS	F	Prob > F
Between groups	15789.26	2	7894.63	16.74	0.0000
Within groups	231545.68	491	471.58		
Total	247334.94	493	501.69		

Bartlett's test for equal variances: $\chi^2(2) = 13.55$ Prob> $\chi^2 = 0.001$

Table A.1II: Analysis of Variance, External financing of working capital by firm size

Analysis of Variance: External financing of working capital by firm size

Source	SS	Df	MS	F	Prob > F
Between groups	15789.26	2	7894.63	16.74	0.0000
Within groups	231545.68	491	471.58		
Total	247334.94	493	501.69		

Bartlett's test for equal variances: $\chi^2(2) = 13.55$ Prob> $\chi^2 = 0.001$

Table A.1III Analysis of Variance: bank financing of working capital among firm sizes

Analysis of Variance: bank financing of working capital

Source	SS	Df	MS	F	Prob > F
Between groups	9637.06	2	4818.53	26.36	0.0000
Within groups	89767.06	491	182.82		
Total	99404.11	493	201.63		

Bartlett's test for equal variances: $\chi^2(2) = 118.65$ Prob> $\chi^2 = 0.000$

Table A.1IV: Analysis of Variance: use of nonbank financing of working capital among firm sizes

Analysis of Variance: use of nonbank financing of working capital

Source	SS	df	MS	F	Prob > F
Between groups	15.25	2	7.63	0.31	0.7318
Within groups	11986.48	491	24.41		
Total	12001.73	493	24.34		

Bartlett's test for equal variances: $\chi^2(2) = 47.87$ Prob> $\chi^2 = 0.000$

Table A.1V: Analysis of Variance: trade credit financing of working capital among firm sizes

Analysis of Variance: trade credit financing of working capital

Source	SS	df	MS	F	Prob > F
Between groups	1645.45	2	822.73	2.86	0.0582
Within groups	141207.38	491	287.59		
Total	142852.83	493	289.76		

Bartlett's test for equal variances: $\chi^2(2) = 0.6417$ Prob> $\chi^2 = 0.726$

Table A.1VI: Analysis of Variance: informal financing of working capital among firm sizes

Analysis of Variance: informal financing of working capital

Source	SS	df	MS	F	Prob > F
Between groups	25.80	2	12.90	1.02	0.3621
Within groups	6222.23	491	12.67		
Total	6248.03	493	12.67		

Table A.2I: Analysis of Variance: Internal financing of Investment among firm sizes

Analysis of Variance: Internal financing of Investment by firm size

Source	SS	df	MS	F	Prob > F
Between groups	15849.53	2	7924.76	9.58	0.0001
Within groups	210924.89	255	827.16		
Total	226774.42	257	882.39		

Bartlett's test for equal variances: $\chi^2(2) = 25.79$ Prob> $\chi^2 = 0.000$

Table A.2II: Analysis of Variance, external financing of investment by firm size

Analysis of Variance: external financing of investment by firm size

Source	SS	df	MS	F	Prob > F
Between groups	15849.53	2	7924.76	9.58	0.0001
Within groups	210924.89	255	827.16		
Total	226774.42	257	882.39		

Bartlett's test for equal variances: $\chi^2(2) = 25.79$ Prob> $\chi^2 = 0.000$

Table A.2III Analysis of Variance: bank financing of investment among firm sizes

Analysis of Variance: bank financing of investment by firm size

Source	SS	df	MS	F	Prob > F
Between groups	14911.3839	2	7455.69195	11.24	0.0000
Within groups	169138.616	255	663.288691		
Total	184050	257	716.14786		

Bartlett's test for equal variances: $\chi^2(2) = 38.1758$ Prob> $\chi^2 = 0.000$

Table A.2IV: Analysis of Variance, non-bank financial institution financing of investment among firm sizes

Analysis of Variance: non bank financial institution financing of investment

Source	SS	Df	MS	F	Prob > F
Between groups	42.2116579	2	21.1058289	0.48	0.6192
Within groups	11208.5635	255	43.9551511		
Total	11250.7752	257	43.7773354		

Table A.2V: Analysis of variance, trade credit financing of investment among firms sizes

Trade credit and firm size					
Source	SS	df	MS	F	Prob > F
Between groups	616.208284	2	308.104142	3.93	0.0208
Within groups	19977.2995	255	78.3423509		
Total	20593.5078	257	80.1303804		

Bartlett's test for equal variances: $\chi^2(1) = 96.1366$ Prob> $\chi^2 = 0.000$

Table A.2VI: Analysis of Variance, informal financing of investment among firm sizes

Analysis of Variance: informal financing of investment					
Source	SS	df	MS	F	Prob > F
Between groups	96.7151222	2	48.3575611	0.67	0.5113
Within groups	18335.1647	255	71.9026068		
Total	18431.8798	257	71.7193768		

Bartlett's test for equal variances: $\chi^2(1) = 152.2057$ Prob> $\chi^2 = 0.000$

Table A.2VII: Analysis of Variance: new equity financing of investment among firm sizes

Analysis of Variance: new equity financing of investment					
Source	SS	df	MS	F	Prob > F
Between groups	396.022919	2	198.011459	5.28	0.0057
Within groups	9565.21739	255	37.5106564		
Total	9961.24031	257	38.7596899		

Table A.3 I: Tobit results on the determinants of external financing of working capital

Independent variables	Coef.	Std. Err.	t	P> t
Sales growth	1.07	2.01	0.53	0.593
Exporter	5.71	5.46	1.05	0.296
Manufacturing	5.11*	2.85	1.79	0.074
Age	0.08	0.13	0.66	0.511
Small	-12.64**	5.84	-2.16	0.031
Medium	-7.36	5.90	-1.25	0.213
Beduc	8.35*	4.64	1.8	0.073
Seduc	6.05	3.90	1.55	0.122
Teduc	7.54*	4.57	1.65	0.099
Finacc	0.10	0.89	0.11	0.912
Extaudit	9.28***	3.00	3.1	0.002
Private foreign	53.65***	19.00	2.82	0.005
Private domestic	34.15*	18.70	1.83	0.069
Kumasi	5.49*	3.24	1.69	0.091
Takoradi	7.55*	4.13	1.83	0.068
Tamale	6.69	4.62	1.45	0.148
_cons	-19.53	20.09	-0.97	0.331
/sigma	24.50	0.99		
Number of obs = 436				
LR chi2(16) = 75.00				
Prob > chi2 = 0.0000				
Log likelihood = -1667.9965				
Pseudo R2 = 0.0220				
Obs. summary: 92 left-censored observations at extfinwc<=0				
341 uncensored observations				
3 right-censored observations at extfinwc>=100				

*significant at the 10% level **significant at the 5% level ***significant at the 1% level

Table A.3 II: Tobit results on the determinants of bank financing for working capital

Independent variable	Coefficient	Standard Error	t	P> t
salesgrowth	0.51	4.88	0.10	0.917
exporter	7.33	12.08	0.61	0.544
manuf	7.85	7.73	1.02	0.311
age	0.46	0.31	1.46	0.145
small	-9.77	13.69	-0.71	0.476
medium	8.05	12.87	0.63	0.532
beduc	31.28	24.41	1.28	0.201
seduc	-10.27	8.22	-1.25	0.212
teduc	41.74*	23.51	1.78	0.077
finacc	7.01***	2.52	2.78	0.006
extaudit	50.21***	9.88	5.08	0.000
Pfor	46.07**	18.28	2.52	0.012
Pdom	18.75	19.67	0.95	0.341
Kumasi	36.18***	9.26	3.91	0.000
takoradi	-1.57	12.42	-0.13	0.899
Tamale	10.54	15.29	0.69	0.491
_cons	-165.94***	40.88	-4.06	0.000
/sigma	42.00	4.16		
Number of firms	= 436			
LR chi2(16)	= 111.45			
Prob > chi2	= 0.0000			
Log likelihood	= -459.96707			
Pseudo R2	= 0.1081			
Obs. summary:	363 left-censored observations at bankwcfm<=0			
	72 uncensored observations			
	1 right-censored observation at bankwcfm>=80			

*significant at the 10% level **significant at the 5% level ***significant at the 1% level

Table A.3 III: Tobit results on the determinants trade credit financing working capital

Independent variables	Coefficient	Standard Error	t	P> t
salesgrowth	1.15	1.67	0.69	0.492
exporter	2.76	4.47	0.62	0.537
manuf	6.39***	2.38	2.69	0.007
age	-0.05	0.11	-0.51	0.612
small	-8.24*	4.72	-1.75	0.081
medium	-6.58	4.77	-1.38	0.168
beduc	16.45***	6.18	2.66	0.008
seduc	1.23	2.69	0.46	0.647
teduc	13.60**	6.24	2.18	0.030
finacc	-1.15	0.74	-1.56	0.120
extaudit	1.41	2.51	0.56	0.573
pfor	-2.93	7.68	-0.38	0.703
pdom	-4.61	8.07	-0.57	0.568
kumasi	2.18	2.71	0.81	0.421
takoradi	8.26**	3.41	2.42	0.016
tamale	8.30**	3.90	2.13	0.034
_cons	11.22	12.12	0.93	0.355
/sigma	20.28	0.85		
Number of firms	= 436			
LR chi2(16)	= 36.56			
Prob > chi2	= 0.0024			
Log likelihood	= -1544.8779			
Pseudo R2	= 0.0117			
Obs. summary:	108 left-censored observations at tradewcfin<=0			
	325 uncensored observations			
	3 right-censored observations at tradewcfin>=80			

*significant at the 10% level **significant at the 5% level ***significant at the 1% level

Table A.4 I: Tobit results on the determinants of external financing for new fixed investments

Independent variables	Coefficient	Standard Error	t	P> t
salesgrowth	1.33	2.81	0.47	0.636
exporter	-1.67	8.36	-0.20	0.842
manuf	-6.79	4.44	-1.53	0.127
age	0.10	0.21	0.45	0.651
small	-24.69***	8.72	-2.83	0.005
medium	-18.23**	8.52	-2.14	0.033
beduc	5.39	13.68	0.39	0.694
seduc	1.10	4.92	0.22	0.823
teduc	8.93	13.43	0.66	0.507
finacc	-2.46*	1.40	-1.76	0.080
extaudit	9.74**	4.56	2.14	0.034
pfor	24.69*	14.07	1.76	0.081
pdom	5.63	15.84	0.36	0.723
kumasi	5.00	4.87	1.03	0.305
takoradi	-8.88	9.10	-0.98	0.330
tamale	24.25***	7.55	3.21	0.002
_cons	23.71	23.60	1.00	0.316
/sigma	28.93	1.43		
Number of obs = 234				
LR chi2(16) = 47.29				
Prob > chi2 = 0.0001				
Log likelihood = -1059.8058 Pseudo R2 = 0.0218				
Obs. summary: 0 left-censored observations				
216 uncensored observations				
18 right-censored observations at extinvtfm>=100				

*significant at the 10% level **significant at the 5% level ***significant at the 1% level

Table A.4 II Tobit results on the determinants of bank financing for new fixed investments

Independent variables	Coefficient	Standard Error	t	P> t
salesgrowth	0.35	2.44	0.14	0.886
exporter	-10.00	7.21	-1.39	0.167
manuf	-4.37	3.84	-1.14	0.256
age	-0.06	0.18	-0.31	0.758
small	-28.76***	7.53	-3.82	0.000
medium	-22.64***	7.34	-3.08	0.002
beduc	-0.45	11.85	-0.04	0.970
seduc	4.20	4.26	0.99	0.326
teduc	-0.42	11.63	-0.04	0.971
finacc	-2.68**	1.21	-2.21	0.028
extaudit	10.21**	3.95	2.58	0.010
pfor	23.65*	12.14	1.95	0.053
pdom	7.99	13.64	0.59	0.559
kumasi	6.18	4.22	1.47	0.144
takoradi	-3.68	7.89	-0.47	0.642
tamale	20.54***	6.53	3.14	0.002
_cons	30.91	20.39	1.52	0.131
/sigma	25.09	1.23		
Number of obs		234		
LR chi2(16)		51.83		
Prob > chi2		0.0000		
Log likelihood		-1040.8083		
Pseudo R2		0.0243		
Obs. summary:	0	left-censored observations		
	219	uncensored observations		
	15	right-censored observations at invbank>=100		

*significant at the 10% level **significant at the 5% level ***significant at the 1% level

Table A.4 III: Tobit results on the determinants of trade credit financing for new fixed investments

Independent variable	Coefficient	Standard Error	t	P> t
salesgrowth	-0.07	0.82	-0.08	0.934
exporter	2.69	2.41	1.12	0.266
manuf	-0.18	1.29	-0.14	0.886
age	0.03	0.06	0.44	0.662
small	7.10***	2.52	2.82	0.005
medium	9.14***	2.45	3.73	0.000
beduc	1.27	3.96	0.32	0.749
seduc	0.19	1.43	0.13	0.896
teduc	1.40	3.89	0.36	0.720
finacc	0.53	0.41	1.31	0.192
extaudit	3.63***	1.32	2.74	0.007
pfor	3.32	4.05	0.82	0.413
pdom	-4.93	4.54	-1.09	0.279
kumasi	-2.51*	1.42	-1.77	0.077
takoradi	-3.85	2.65	-1.45	0.149
tamale	-1.94	2.18	-0.89	0.375
_cons	-4.56	6.79	-0.67	0.503
/sigma	8.44	0.39		
Number of obs	234			
LR chi2(16)	45.51			
Prob > chi2	0.0001			
Log likelihood	-830.3526			
Pseudo R2	0.0267			
Obs. summary:	0 left-censored observations			
	233 uncensored observations			
	1 right-censored observation at invtcr>=100			

*significant at the 10% level **significant at the 5% level ***significant at the 1% level