UNIVERSITY OF CAPE COAST

INTERNAL FINANCE-INVESTMENT RELATIONSHIP AND FINANCIAL CONSTRAINT: THE CASE OF SMALL AND MEDIUM-SCALE MANUFACTURING ENTERPRISES IN GHANA.

STEPHEN KWEKU MENSAH BARLO

2020

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BY

STEPHEN KWEKU MENSAH BARLO

Dissertation submitted to the Department of Finance of the School of Business, College of Humanities and Legal Studies, University of Cape Coast in partial fulfillment of the requirements for the award of Master of Business Administration degree in Finance

DECEMDER 2020

DECLARATION

Student's Declaration

I hereby declare that this dissertation is the result of my own original research and that no part of it has been presented for another degree in this University or elsewhere.

Student's Signature..... Date.....

Name: Stephen K Mensah Barlo

Supervisor's Declaration

I hereby declare that preparation and the presentation of the dissertation were supervised in accordance with the guidelines on supervision of dissertation laid down by the University of Cape Coast.

Supervisor's Signature..... Date.....

Name: Carl Hope Korkpoe

ABSTRACT

This study examined the relationship between the level of investment and cash flow sensitivity as a measure of financial constraint of Small and Medium scale Enterprises (SMEs) in the manufacturing sector of Ghana. The most up-to-date 2013 World Bank Enterprise Survey (WES) data for Ghana comprising 720 private companies in Ghana's manufacturing, utility as well as other sectors was employed for the study. The dataset is country specific and the extant studies have been done using the same data justifying data credibility. The study was purely quantitative. The seemingly unrelated regression equations (SURE) model was used to model the simultaneity between investment and cash flow. The findings of the study revealed, among others, that the SMEs in the manufacturing sector adopted almost the same level of internal funds in financing their working capital. Also, the results of the study indicated a positive relationship between the percentage of working capital financed from internal funds and the level of investment among the SMEs in the manufacturing sector. Based on the investment-internal finance sensitivity criteria, the results was interpreted to imply that the SMEs in the manufacturing sector of Ghana are financially constrained. Further analysis revealed that enterprises were more likely to be externally constrained than internally constrained financially. The study recommends that, among other things, policy action by government agents such as the Central Bank and Ministry in charge of industries to improve access to finance among SMEs must target the manufacturing sector differently for an effective policy outcome since the nature of its constraint differ.

ACKNOWLEDGEMENTS

I would like to express my profound gratitude to my supervisor Mr. Carl Hope Korkpoe for his guidance and constructive criticism not only in academic affairs but in my general welfare as well. He is largely responsible for the success of this work and I am very much grateful to him.

To my wife, Phyllis Adjoba Ndasumah Mensah Barlo, all my children (Augustus Kofi Edem Ahiable Barlo, Joseph Yaw Elorm Mensah Barlo, Michael Chrispin Kwame Tsormana Barlo and Marie Dorminica Adjo Kafui Tenu Barlo) and the management and staff of Norviwo Limited, God richly bless you for the support, encouragement and sacrifices.

Furthermore, I wish to thank all authors of various research works and articles I made use of in the writing of this work, indeed your research works and articles have served as major sources of literature and knowledge. Also, special thanks go to my study mates (Mr.Louis Kwesi Essando and Mr. Bismark Buaba) for their support and encouragement.

Finally, I say a big thank you to Dr. Paul Naah Yemeh- my former church president and role model-who voluntarily accepted to do the proof reading of this work for me and also Mr. Abass Adams, for contributing to the success of this work. God bless you all.

DEDICATION

To my mother, Mrs. Francisca Barlo and to the memory of my late father, Mr. Joseph Yaw Mensah Barlo.

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LIST OF ACRONYMS

F C	:	Financial Constraint.
SME's	:	Small and Medium Enterprises.
I F	:	Internal Funds/Finance
E F	:	External Funds/Finance
POT	:	Pecking Order Theory
MMT	:	Modigliani and Miller Theory
AGI	:	Association of Ghanaian Industries
KZ	:	Kaplan and Zingales
ROA	:	Return on Asset
ROE	:	Return on Equity
WES	:	World Bank Enterprise Survey
SURE	:	Seemingly Unrelated Regression Equation
UK	:	United Kingdom
GDP	:	Gross Domestic Product
MASLOC	:	Microfinance and Small Scale Loans Center
FFI	:	Formal Financial Institutions
WW	:	White and Wu
GMM	:	Generalized Method of Moment
GR	:	Growth Rate
R&D	:	Research and Development

CHAPTER ONE

INTRODUCTION

Financial constraint remains one of the major bottlenecks confronting enterprises in emerging economies of which Ghana is not an exception. Even though there is the obvious case of constraint in accessing funds in less developed financial markets like that of Ghana, there is still the tendency for owners of enterprises to exaggerate their level of financial constraints in anticipation for supports from stakeholders. Economic decisions must, however, emanate from real state of events which suggest that alternative form of measuring financial constraints must be used along with the self-reporting survey outcomes. This study used an indirect approach to measuring financial constraint that uses investment-cash flow sensitivity to examine the level and nature of financial constraint in the manufacturing sector of Ghana.

Background to the Study

Financial constraint (FC) is a big challenge for businesses in emerging countries that have insufficient resources and poorly developed financial institutions (Arthur, 2016). The relative importance of the issue of financial constraint in Finance has to do with the fact that funds are the life blood on which businesses thrive. Without access to affordable and reliable funds, businesses would either die out or stay stagnant for a relatively longer period of time. Though the term financial constraint is not limited to small enterprises, the issue is severe for small and medium enterprises (SMEs) since the absolute value of internal funds (IF) is usually low (Nyanzu & Quaidoo, 2017). In large enterprises, especially listed firms, the management usually have huge earnings which they can retain and invest by deferring dividend pay-out but this is not

the case in SMEs (Kirui & Wawire, 2018). Enterprises in the small and medium categories can therefore be said to be financially constrained if they have difficulties accessing external funds (EF). By this notion, financial constraint is usually defined in terms of the level of dependence on internal finance by a firm for investment (Kumar & Ranjani, 2018). Kumar and Ranjani (2018) asserted that sensitivity of investment expenditure to internal finance is an indication of financial constraint to external finance.

Hence, an observation that internal funding showed a significantly positive impact on firm-level investment can be used as confirmation of financial limits (Yinusa, Ganiyu, Adelopo, Yulia & Olawale, 2019). In principle, Bond, Klemm, Newton-Smith, Syed and Vlieghe (2004) reported that financially restricted companies should exhibit greater sensitivity towards cash flow investment than uncontrolled companies. This view of financial constraints is not consistent with the perfect market model of capital structure. The Modigliani-Miller theorem suggests under the perfect assumption of capital markets that the capital structure of a company is meaningless to its real worth (Giannetti, 2005). Hence, external (new debt and/or equity) finance and internal (income retention) finance are a suitable substitution, such that the investment and funding options of a business are equally exclusive. That is, open market financing costs is the sole financial factor when deciding the investment amount. By this implication, a firm with an increased internal funds shall still demand external funds if the cost of external funds is competitive enough and demand fewer external funds otherwise. Hence, sensitivity of investment decision to internal funds is not necessarily a signal of constraint in accessing external funds (Kaplan & Zingales, 1997; Yinusa et al., 2019).

Evidence, however, suggest that the financial market is hardly perfect and that internal finance and external finance are not always perfect substitutes. The pecking order models identified in literature on corporate finance (Myers & Majluf, 1984), indicate that above a certain amount, a business faces an external finance expense premium which makes external funds more costly than internal funds. Research in finance cites as a cause of imperfection: taxation, transaction rates, and information asymmetries (between borrowers and lenders and/or between shareholders and managers) capable of making external sources of funding more expensive than internal finance (Roychowdhury, 2015). If markets are characterized by imperfect information, investment financing can either only be made available or not at all available on less favorable terms on foreign capital markets. This indicates that the investment budget of such businesses will be reduced by the lack of internal funds. Thus, the degree of internal financing may empirically be a major determinant of investment constraints (Kirui & Wawire, 2018).

In Ghana there is a debate as to what constitutes an SME. The National Board for Small Scale Industries, which is the regulatory body for SMEs in Ghana, defines SMEs in terms of fixed assets and number of employees (Hayford, 2012). Hayford (2012) defines an SME as a company with revenues higher than $200,000 but less than equal to $5 million. Comparatively, Gibson (2008) notes that a small and medium-sized enterprise in Ghana yields an annual turnover between US$ 23,700 and US$ 2,370,000. The World Bank Group describes SMEs with respect to the number of workers alone as enterprises that employ between 5 and 100 employees (World Bank, 2018).

This study used the World Bank Group's definition since the data used was from the enterprise survey from the World Bank Group. It is obvious that SMEs play an immense role in every country's economy. Agbozo (2012) argues that SMEs establish jobs and are also the biggest employers in developing manufacturing economies such as Ghana. This is why policymakers around the world are taking steps to protect small and medium-sized enterprises by reducing financial barriers and improving access to foreign funds. In Ghana only, SMEs account for 70% of their Gross Domestic Product (GDP) and 92% of companies (Agbozo, 2012). The need to pay particular attention to financial constraint of SMEs was purely based on their special role and dominance in Ghana.

Statement of the Problem

Financial constraint is among the most studied financial issues even in developing countries like Ghana (Arthur, 2016). Most of these studies, especially in Ghana, have measured constraint from self-reporting of the owner or of the managers of enterprises which may not always represent real constraint (Agbozo & Yeboah, 2012 as cited in Pawlowski, 2019). It has, however, been argued that mere admission of difficulty in accessing external finance may not be enough evidence that enterprises are financially constrained (Nyanzu & Quaidoo, 2017). The main motivation for this paper is the fact that new trends allow financial constraint to be measured from the cash flow of firms and their investment decision which shall result in a more revealing case of the actual state of access to finance in the SMEs in Ghana without any participant biases. Ferrando and Mulier (2013) classified financial constraint into perceived and actual and concluded that the first may not always be measuring difficulties in

accessing funds. According to Ferrando and Mulier (2013: p.1), "Firms are more likely to perceive access to finance problematic when they have more debt with short term maturity". Hence, when such firms indicated financial constraint they are actually complaining about ability to repay loans rather than lack of access to external finance.

With troubling financial system, information on access to finance and the level of constraint shall allow stakeholders to offer tailor made packages to isolate SMEs from inheriting the problems of the struggling financial sector and collapse as well. Saghafi and ArabMazar (2010) have stated that as companies are obliged to increase capital in order to finance investment opportunities, however, financial restrictions stop investing in projects with the necessary profitability potential. So enterprises with financial constraints avoid projects with positive net values due to high funding costs and this results in under-investment in the enterprise and inefficiency of investment (Sadiq, Ehtesham & Khan, 2017). Lewellen and Lewellen (2016) suggested that the current and lagged cash flows of the firm are associated with additional investment suggesting that financial constraints and free cash flows are significant for investment decisions. A systematic review of Husain, Alom and Tarique (2018) concluded that an upsurge in cash holdings influences the constrained firms to invest more.

Considering the several job losses in the financial sector in recent times, it is natural to safeguard the growth potential of SMEs' who according to the literature are the net job creators for Ghana and other Sub-Saharan African countries (Addotei, 2012).The solution to the rising youth unemployment of Ghana clearly lies in effective understanding of the nature of constraint to the

growth and survival of SMEs which are in the majority in the manufacturing industry. Access to finance, as a binding constraints, deserves to be one of the major constraints that must be well understood for proper policy action. The search for an alternative assessment may not be necessary to replace the existing but a mean of complementing the existing approach for effective allocation of scares resources. Cherchye, De Rock, Ferrando, Mulier and Verschelde (2020) indicated that theory offers only limited guidance on the way financial constraints are measured, so that a precise consensus has still to emerge.

This study therefore seeks to examine evidence of financial constraint in the business environment of Ghana using SMEs on the World Bank Enterprise Survey (WES) as a study sample, to test the alternative measurement of financial constraint in Ghana.

Purpose of the Study

The primary purpose of the study is to investigate the relationship that exist between internal source of finance and level of investment as an indirect measure of financial constraint among SMEs in Ghana in the case of manufacturing industries.

Objective of the Study

The specific objectives of the study include:

1. To determine the application internal finance among the SMEs in the manufacturing sector of Ghana.
2. To examine the relationship between internal finance and investment expenditure among the SMEs in the manufacturing sector of Ghana.
3. To identify the relationship between gross profit and investment expenditure among the SMEs in the manufacturing sector of Ghana.

4. To assess the nature of financial constraint among enterprises in the manufacturing sector of Ghana.
5. To determine the level of perceived financial constraint among SMEs in Ghana.

Research Questions

The following three objectives do not test the relationship between variables and hence were addressed with research questions:

1. What is the level of adoption of internal finance to finance working capital among small and medium scale enterprises in Ghana?
2. What is the nature of financial constraint among enterprises in the manufacturing sector of Ghana?
3. Is perceived financial constraint a reliable measure of financial constraint among SMEs in Ghana?
4. What is the nature of financial constraint among enterprises in the manufacturing sector of Ghana?
5. What is the level of perceived financial constraint among SMEs in Ghana?

Hypotheses of the Study

The following null hypotheses were tested to address the rest of the stated objectives:

1. Ho: Investment expenditure does not depend on the availability of internal finance in the manufacturing sector of Ghana.
2. Ho: Investment expenditure does not depend on the level of profitability in the manufacturing sector of Ghana.

Significance of the Study

The result of the study is of great importance to policy makers in assisting SMEs to grow. That is, the result gives another account of financial constraint devoid of the ability of the SME owners' tendency to fake constraint just to earn government and other stakeholders' support. Since resources are scarce, it shall be less prudent to commit resources to enterprises who have chosen to stay small just for the benefit of being small at the expense of enterprises who are actually constrained. The study therefore adds to the knowledge on existing literature on whether firms in developing countries, like Ghana, are actually financially constrained to grow or are just not ready to expand despite the existence of opportunities to expand.

Delimitations

The scope of the study was limited to Small and Medium scale enterprises operating in the non-agricultural sector of the manufacturing enterprises in Ghana. Since a secondary data from a national survey was used, only sampled firms in the survey were considered. Financial constraint captured both self-reporting and finance options which widens the theoretical scope and ensure construct validity and reliability.

Limitation

The outcome of the study can only be generalized to the non-agricultural sector of the manufacturing enterprises in Ghana since the survey data used does not cover the enterprises that engage directly in agricultural activities. Considering the special role of agriculture in Ghana, this is an important limitation the study wished to have avoided but for data constraint. Another limitation of the data was access to a more recent datasets on enterprises at the

national level. Considering the issues surrounding measurement of retained earnings, working capital and investment for SMEs a reliable data from a more credible source was needed for the study. But only the 2013 Enterprise Survey from the World Bank Group met the needs despite being relatively old. This was a major limitation but the outcome was still relevant considering the fact that the study actually tested a framework but did not attempt to access the state of financial constraint in any specific time frame.

Definition of Key Terms

Brief definition of the key terms of the study are provided here and an extended discussion and operationalization presented in the Chapter Two.

1. **Financial Constraint** refers to an enterprise's level of investment sensitivity to internal finance change. That is, if enterprises with higher percentage of internal finance are doing more investment then enterprises investing less are financially constraint (Tariverdi1 & Keivanfar, 2017).
2. **Internal Finance** is used in a loose sense to refer to owner's funds and retained earnings which constitute equity (Scheuten, 2010).
3. **Small and Medium-scale Enterprises (SME's)** refers to enterprises that employ less than 100 employees. Enterprises that employ less than 20 employees are considered small-scale enterprises while those that employ from 20 to 100 are considered medium-scale enterprises (World Bank, 2018).

Organization of the Study

The study covers five chapters. Chapter One speaks to the background, problem statement, purpose of the study, objectives, significance, delimitation, limitation, definition of terms and the organisation of the study. Chapter Two looks at existing literature related to the study. Theoretical review was done by identifying a theoretical framework to explain the theoretical underpinning of the study which was followed by an empirical review of related literature on financial constraints and internal financing options. Chapter Three comprises the research methodology that that was employed for the study. The research design and strategies were explained along with the data sources and description followed by model specification and post estimations. Chapter Four presents the results and discusses the findings of the study in line with the existing literature. Chapter Five summarizes the key findings of the study, draws conclusions and proposes recommendations that would address the problems raised, as well as offer directions for further study based on the findings of the present study.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Introduction

This chapter reviews of related literature (theoretical and empirical issues). Issues covered include; theoretical framework of the study, access to finance enterprises in Ghana, internal versus external sources of finance, investment sensitivity as a measure of financial constraint, financial constraint measurements, moderating factors and enterprise categorization, defining small to medium scale enterprises, empirical review of the literature and conclusion.

Theoretical Framework

The theoretical framework that underpinned the study was the Pecking Order Theory (POT) which deals with the hierarchical financing as opposed to the Modigliani and Miller (MM) theory of capital structure (Watse, 2017). The Pecking Order Theory model was advanced by Myers et al (1984). According to the POT model businesses prefer internal funding over external funding. In a situation business needs external funding, they shall prefer external finance (debt) over internal finance (equity) and equity is the last resort firms must consider. Hence businesses do not have predetermined or optimum debt-to-equity ratio due to asymmetric information (Jibran et al., 2012). Myers and Majluf, (1984) reported that the pecking order theory proposes that firms have a greater interest or desired in the order for capital used to fund their firms. The corporation would choose retained profits over interest, debt on equity and short-term debt over long-term obligations because of the asymmetrical details between the lenders and the company. Myers and Majluf (1984) indicated that intelligence asymmetry could be properly handled if businesses do not issue

new protection but only use the retained earnings to support investments. That suggests that providing equity goes for higher cost as asymmetry of information for outsiders and insiders increase. Companies with extensive information asymmetry can issue debts to prevent sales below securities market price levels. The financial structure in activities including new stock offerings which could lead to a reduction in the company's stock price.

Imperfections in capital market cause information asymmetry between lenders and borrowers as lenders may not have full records about borrower's investment projects. Lenders or financial instituions, therefore, charge higher risk premium on external financing to firms (Bond & Meghir, 1994; Fazzari, Hubbard & Petersen, 1998). In cases where internal funds of firms are not adequate to support expenses due to market imperfections, the financial market may be faced with financial constraints (Guariglia, 2008). Firms can be financially constrained internally when they must depend heavily on internal funds for major investment opportunities. On the other hands, firms can be said to be financially constrained externally if they find external financing costly such that they find it difficult going in for it (Guariglia, 2008).

In the context of this study, the Pecking Order Theory applies within some clear parameters. First the firms involved in this study are not listed and hence have no option to raising equity through issuance of shares. Hence the major options available to the enterprises are internal, debt from formal financial institutions (FFI) and debt from other informal sources such as money lenders and credit unions. The limited scope of sources available to the unlisted firms has the tendency of increasing their demand for external debt which can increase the cost of capital and make debt less profitable. Further, most firms in

the study are small and medium scale that are generally perceived as risky to finance and hence have higher interest charges compared to relatively larger firms. The case of SMEs in Ghana meets the POT conditions perfectly.

The relatively small size of firms in Ghana with their relatively small market shares also suggest that they will need the critical minimum effort in the form of external funds to leap frog to bigger firms which makes debt a necessary option. The choice of which source or mix an enterprise must adopt then depends on the perceived cheapness and ability to support financial performance necessary for steady growth to occur. Hence it could be expected that SMEs that are constrained to accessing external finance must show sensitivity to cash-flow or internal finance. Almeida et al. (2004:6) suggested in pursuit of an alternative way to analyzing financial constraints that corporations' "propensity to save money out of cash flows" (cash flow sensitivity) is a liquidity constraint proxy, since only limited companies are able to optimize their worth by liquidity management. Almeida et al. (2004) investigated if financially constrained companies exhibit greater sensitivities to investment cash flow than non-constrained companies. They discovered that companies that are financially constrained prefer to maintain cash more often because of disruptive macro-economic shocks, but these habits for non-constrained firms could not be detected.

Some scholars have challenged the use of investment sensitivity to internal finance as a measure of financial constraint. Kaplan and Zingales (1995) found contrary outcomes and interpretative inefficiency and inferred more that unconstrained companies had greater exposure to acquisitions and cash flow than restrictions. Further, other studies (Alti, 2003; Cleary, 2006;

Erickson & Whited, 2000, Kadapakkam et al., 1998) buttressed Kaplan and Zingales' (1995) findings. Dasgupta and Sengupta (2007) discovered from their study in japan that the sensitivity of invest-cash-flow is non-monotonic and hence are in line with the viewpoints of Kaplan and Zingales (1995) and Cleary (1999).

The alternative views from the empirical literature presented another opportunity to further test for the investment sensitivity to internal finance since the data set adopted allowed for that to be done.

Access to Finance Enterprises in Ghana

A number of options exist for enterprises in Ghana to access funds for growth and development in Ghana. The options can be soft loans from national support or donor support schemes (official scheme), loans from formal financial institutions, informal financial institutions, and business angels, venture capital, funds from family and friends, retain earnings among others (Adebisi & Olayinka, 2013). Company angels are channels of external finance from rich people with significant entrepreneurship expertise who personally participate in profitable SMEs (Abdul Saleh & Worthington, 2013). Though such official schemes (e.g. MASLOC) are geared towards improving access to finance, their scope are usually small and less sustainable due to political power changes. Empirical evidence suggest that retain earnings (internal funds), loans (formal or informal) and supports from family and friends are the dominants sources of finance to enterprises of all size categories in Ghana. According to Kwarteng (2017) microfinance loans are widespread among services provided by rural banks to SMEs due to the lack of collateral to access formal commercial bank loans.

Frimpong and Antwi (2016) indicated that most commercial banks are often reluctant to increase loan facilities to enterprises except they increase the security demands which results in growth slowdown and in some cases unable to grow into economies of scale sufficient to function as a national development engine. Financial constraint is a major obstacle to enterprises of all sizes who have difficulty accessing fund from banks, and, if even they do, have difficult relations with their lenders in terms of repayment (Frimpong & Antwi, 2016). The surest bet for enterprises in Ghana is therefore internal sources of finance since the informal money lenders have a limit of funds they can provide while the formal banks have a tall list of check list they consider before granting loans to enterprises.

In sum, the existing literature suggest that enterprises in Ghana lack access to external finance, especially from formal sources. Kwarteng (2017) revealed that it was very difficult for enterprises to access start-up capital from banks. The Association of Ghana Industries [AGI] (2011) reported low access to credit as the foremost factor limiting small business development in Ghana.

Internal Versus External Sources of Finance

If external funds are considered as the perfect alternatives to internal funds and thus, have identical effects on firm performance; then there is no cause to show preference for one. However, information asymmetry renders the financial market imperfect and hence the need to choose the best source of finance by evaluating which source enhances performance. With the notion that internal finance enhances performance more than external finance; an enterprise shall seek external funds only if it is constrained from accessing enough internal finance (Watse, 2017). Theoretically, there is differential effect on expenditure

exposure to cash flows of external and internal financial constraints. Cleary (2006) indicated an optimal degree of a company's investment model under financial constraints, separating it internally and externally. This model entails a corporation with a certain amount of internal funds needing external financing to support its investment ventures at times. Asymmetry of knowledge plays a crucial part in the model: there is a moral hazard dilemma when the business receives money that can't be used by external customers.

Cleary's (2006) model defers from the previous theories (see Guariglia, 2007) in three significant ways:

1. Investment is assumed to be scalable such that businesses do not solely decide as to whether execute an investment project or not, but may also take a decision on the scale-of their investment. The optimum level of investment in a business is thus a function of the marginal cost of external funds.
2. Cleary's (2006) model also builds on earlier theories by making room for the level of internal funds to be negative.
3. The third is dependent on the endogenous cost of borrowing funds.

The model shows that the association between investment and cash flow is U-shaped because of the balance between costs and profits. The cost impact is that the higher investment levels are attributed to higher repayment rates, higher default rates, and consequently higher external funding interest costs. The cost impact reveals a strong correlation between spending and cash flow. In addition, an impact on sales exists when a higher degree of spending produces higher profits, reducing the company's default risk and its marginal foreign finance costs. This income impact presupposes a negative correlation between

cash flow and investment. The U-shaped relation between cash flow and investment derives from the fact that while cash flow is substantially negative, the sales impact is more powerful, so that the company's existence is often in doubt.

Investment Sensitivity as a Measure of Financial Constraint

Ross et al. (1993) reiterated that internal sources is the most important source of finance to enterprises of all age and size categories. Moreover, one of the conclusions of the pecking order model is that although a company is the first choice for internal funds, if a company seeks external funds, it starts granting the safest (and therefore least expensive) techniques, such as debt, then adopts hybrid instruments and can only then issue new equity instruments after that (Myers, 1984). The above order shows that raising external funds is expensive than using internal sources of fund. Transaction charges, issues with agencies, taxation, chances of insolvability and knowledge asymmetries between prospective buyers and management may explain this phenomenon (Kuzmicheva & Kuzmichev, 2013).

Jensen and Meckling (1976 as cited in Kuzmicheva & Kuzmichev, 2013) used the argument of moral hazard to explain agency costs with a high level of debt. This represents high debt levels that can persuade companies to choose highly risky investment projects that provide higher mean returns since they have significant revenues in a good and zero bad situation.However, a higher insolvency risk incites investors to either request an interest rate premium or to reduce the firm’s debt use in the future (Kuzmicheva & Kuzmichev, 2013).

Fazzari et al. (1988) introduced a proposition which states that investment is subject to the impact of accessibility of external funds and

availability of internal funds. The researchers analyzed equity practices and financing of businesses with varying financial results and noticed that investments made by companies paying low dividends are more vulnerable to cash volatility than those made by matured companies who pay reasonably large dividends and are not faced with problems to collect money (Kuzmicheva & Kuzmichev, 2013). Therefore, the susceptibility of investment to cash flows can be used as a measure of financial constraints as indicated by Fazzari et al. (1988).

Kaplan and Zingales (1997) responded to Fazzari et al. (1988), calling into question classifying firms as being more or less financially constrained according to the pay- out ratio criterion and consequently appraising the sensitivity of investment to cash flow fluctuations for each group. Using the sample of Fazzari et al., Kaplan and Zingales considered 49 firms that pay the lowest dividends and concluded that the investment-cash flows sensitivity does not essentially increase with increasing financial constraints.

Moderating Factors

A number of factors directly or indirectly moderate the level of financial constraint of an enterprise. By assigning enterprises into groups with different levels of asymmetric information and agency cost, the investment sensitivity to cash-flow can better be understood from different perspectives. The choice of appropriate criteria to split the enterprises was also significant because the extent literature suggests that the cash flow sensitivity of investment is prone to the type of factors used in splitting the enterprises (Ruano, 2006). The literature identified size of firms, ownership status of the firm and debt profile of

enterprises as moderating factors in splitting enterprises into constrained and unconstrained enterprises for the analyses of this study.

Byun et al. (2013) indicated that the justification for the definition of ownership as the criteria for grouping companies is that companies with group affiliation appear to have better access to internal funds than standalone companies. Hoshi, Kashyap, and Scharfstein (1991) discovered from a data set from Japan that companies belonging to industrial groups exhibit lower sensitivities to invest-cash flow.

Size, as well, have implication of enterprises ability to access external finance as well as generate internal finance. Lamont et al. (2001) used market capitalisation as the proxy for size to split firm into groups. Ayyagari, Demirgüç-Kunt and Maksimovic (2006) indicated that cross-country evidence supports the view that SMEs are more limited than large corporations in their activities and expansion, and the access to financial services features greatly across restricted firms. Beck, Demirgüç-Kunt, Laeven and Maksimovic (2006) added that small businesses report constantly greater funding challenges than medium and large companies. This study falls on number of employees as the proxy to categorize enterprises into small and medium scale enterprises. Large enterprises were used at some point to make comparison on whether an observation about SMEs was unique or a general characteristics to all firms.

Conceptual Framework

The study developed a simple conceptual framework to explain the transmission mechanism among the variables.

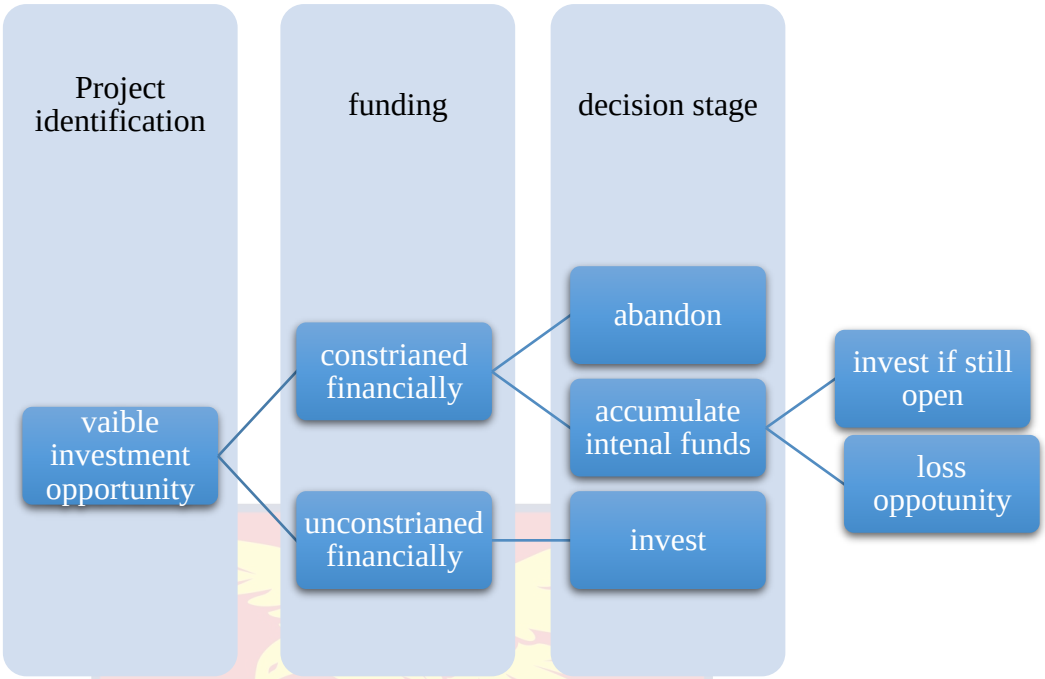

Figure 1-Conceptual Framework

Source: Barlo, 2020

The conceptual framework offers a pictorial view of the core tents of internal finance and investment sensitivity. The framework limits the discussion to a point where an enterprise has identify a projects that seems viable by all indicators and could enhanced the profitability and growth potentials of the enterprise. The major factor to implementing the projects is assumed to be funding which could come from either internal or external sources. If the firms is not constrained, either internally or externally, then the best option is to undertake the project. The investment process could be as simple as this under the perfect financial market assumption, that there are not friction in the financial markets such that an enterprise is at liberty to choose whether to finance a viable project from internal source or external source (Giannetti, 2005).

The POT then suggest that if there are enough internal source, then that will be the firms first bet (Watse, 2017). But in the real case that frictions do

exist in the financial market and that some level of imperfection exist, enterprises could be constrained by a factor that limits the ability to raise funds immediately to execute the project (Roychowdhury, 2015). The inability to raise enough funds to finance the viable project, based on the imperfect market assumption suggest that the firm is externally financially constrained. This conclusion is based on the fact that investment need not wait for current income to be executed considering the role that timeliness play is reaping the benefit of a timely investment.

From the Figure, constrained enterprises may have to accumulate enough internal funds through significant profitability or retain earnings to execute the projects. But, this option has disadvantages since the project may not be up for grab by the time profit would be make and earning retained. Financial constrained firms shall therefore be characterised by forgoing viable projects or executive them late which enough internal funds are accumulated. This prompted Fazzari, Hubbard and Petersen (1988) to propose that if investment expenditure exhibits significant positive relationship with internal sources of finance, then that could be interpreted as evidence of financial constraint.

As explained earlier, the debates still rages on the extent to which this whole proposing is true, and the validation lies in empirical estimates like the current study to determine whether the approach could find enterprises already perceived to be to exhibit such positive relationship. The method could be described as indirect because of the fact that it test the end product of investment decision to trace back constrained firms.

Empirical Review of the Literature

There have been pool of studies on determinants of access to finance, finance decisions and sources of finance among enterprises of all size categories and special attention paid to SMEs.

Andani and Al-hassan (2016) examined the determinants of the financing decisions of listed and non-listed firms in Ghana. The findings supported the pecking order hypothesis of preference for internal funds over external funds across all firms. The empirical studies on Ghana suggest that approaches to financial constraint from cash-flow sensitivity is not popular yet at the empirical level. There has however been a number of studies on the topic outside Ghana. In the African context Kwenda (2015) examined investment and financial constraint relationship using working capital management in South Africa, and found that working capital investments are vulnerable to fixed capital investments and changes in cash flow.

Wale (2014) studied six selected African countries and found that the investment curve is U-shaped if enterprises are grouped according to internal financial constraint measures. When external financial constraint proxies (age, size and pay out) were also used Wale found that all types of businesses indicated a significant and positive sensitivity to investment cash flow. Therefore, Wale (2014) inferred that the African firms sampled are externally constrained. For the period 2001-2010, a balanced panel of 85 companies listed on the Johannesburg Stock Exchange was used by Sadiq, Ehtesham and Khan (2017) to research it. The results revealed that working capital spending is susceptible to fixed capital investments and variations in cash flow.

Kumar and Ranjani (2018) tried to understand how cash flow sensitivity to investments would play a role as a measure of financial restrictions by using 768 listed Indian manufacturing companies from 2009 to 2015. The study found that the sensitivity of cash flow was a reliable measure of financial restrictions in the Indian manufacturing industry. Bo, Lensink, and Sterken (2003) used a sample of Dutch listing companies to demonstrate that financial restrictions for volatile companies were higher and that vulnerability to investment cash flow was a reliable proxy for financial constraints if companies were categorized by their uncertainty level.

During the span of 1998–2014, Guariglia and Yang (2016) used a wide panel of Chinese companies to pursue strong evidence of investment inefficiencies through funding restrictions and agency concerns. They observed that companies with low cash flows could underinvest due to financial constraints, while companies with cash flows above their optimum level could overinvest due to the costs for their agencies. In addition, they noted that the sensitivity of abnormal investments to free cash flow increases with the traditionally used funding constraints while the sensitivity increases with a broad range of firm-specific agency cost measures for over-investing firms. Here, Guariglia and Yang pointed to the fact that firm's investment behavior depends on the position as below or above the optimal cash flow level.

Guariglia (2007) used a sample of 24,184 United Kingdom companies for the period between 1993 and 2003 to examine how sensitive investments are to cash flow in companies with different levels of external and internal financial constraints. The results showed that when the panel is divided according to the level of internal funds available to companies, the relationship between

investment and cash flow is concave upward (U-shaped). In addition, the sensitivity to investment-cash-flow increases with external financial constraints facing firms. Combining the internal and external financial constraints they concluded that the dependency on cash flow for externally financially restricted companies with a relatively high level of domestic funds is stronger.

Kashanipour et al. (2010) used a sample of 96 listed firms on the Tehran Stock Exchange form 1999 to 2002 and disclosed that firms with financial constraints have had higher investment-cash-flows sensitivity than those firms with less financial constraints. Karimi and Sadeghi (2009) also studied 148 manufacturing firms on the same stock form 1999 and 2008. They noted that a significant positive relationship exists between company size and the sensitivity to investment in cash flows. They concluded that the sensitivity to investment in cash flows must increase with increased external financial restrictions.

Becker and Sivadasen (2006) examined financing constraints in a cross-country firms in Europe, and observed a strongly positive coefficient on the cash flow, which was interpreted to suggesting the presence of financial constraints. Their results also revealed that the investment-cash-flow sensitivity is lower in countries with better financing structures. Portal, Zani, and da Silva (2012) have found that external funds from regulated companies are consistently less vulnerable to cash flow than those of unregulated companies. Their analysis again showed a positive vulnerability to cash flow in the internal funds of restricted companies, while those of uncomplicated firms had no such noticeable behaviour. M'Zali and Cosset (2012) have used cross-country data from 44 countries from 1995 to 2007, demonstrating that greater exposure to investment flows can be interpreted as proof that companies are financially

limited and more aligned with the findings of Fazzari, Hubbard and Petersen (1988).

Tariverdi and Keivanfar (2017) used the financial statements of 112 firms listed in Tehran Stock Exchange from 2008 to 2013. Their results suggested that financial constraints increase with the effect of financial reporting quality on investment inefficiency.

Some empirical findings have also dismissed the sensitivity to investment cash flow as an indicator of financial restraint. Chang (2011) analyzed whether the findings are influenced by the rise in the amount of cash savings and concluded that the exposure to spending cash-flow is not a valid indicator of financial constraints. The result verified Kaplan and Zingales' place (1997).

Chapter Summary

The theoretical review lead to the conclusion that there are several approaches to measuring financial constraint among enterprises but investment sensitivity to cash-flow or internal sources of finance is one of the indirect measures of financial constraint and hence this study adopted it. The empirical results indicated that though there has been studies on access to finance and financial constraint, research on indirect evaluation of financial constraint using investment-cash flow sensitivity has not received enough attention in Ghana. Since firms have incentive to exaggerate their level of financial constraint in pursuit of official assistance; a gap exist in the literature on an indirect evaluation using real data on the firms themselves to gauge the actual extent of financial constraint to influence policy action. This study therefore seeks an indirect examination of financial constraint among SMEs using the investment cash flow sensitivity as a standard.

The study also seek to contribute the effective measurement of financial constraint by examining both the direct and indirect approaches for comparison. It opens the door for research into the area in Ghana.

CHAPTER THREE

RESEARCH METHODS

Introduction

This Chapter presents the overall methods followed in conducting the study. It includes the research design and approach, source, description and justification of data, operationalization and measurement of variables, independent sample t-test of internal finance-investment sensitivity, econometric model and estimation technique and ethical considerations.

Research Design and Approach

A research design defines methodology and procedures for collecting the data used to organize and solve research problems and specifies from which sources and what procedures the data needs to be obtained (Eisenhardt & Graebner, 2007). The main function of a research design is to ensure that the evidence obtained from the analyses of a study enables the researcher to answer the initial research questions as unambiguously as possible (Creswell, 2009). The study adopted a quantitative research design to examine the relationship between internal funds, investment expenditure and financial constraint of SMEs in Ghana. The quantitative research approach allows for hard data (numbers) to be used along with hypothesis testing to address the stated objectives (Saunders et al, 2013). That is, following the positivist objectivism position, a value free research is possible through the adoption of quantitative approach which reduces the subjectivity of verbal expressions (Greener, 2008). Badu et al. (2012) asserted that an epistemological philosophy which indicated that verified facts that can be established through scientific study in an objective manner for replication constitute the positivist approach. The dependent

variables and independents variables were all continuous variables that allow for quantitative analysis and generalization as required by the positivist philosophy. Multiple measures of the dependent variables were used to ensure validity and reliability of the outcomes of the study.

The major limitation of the quantitative design, from the perspective of the constructionist, has to do with the facts that reality may not be as objective as numbers alone can describe (Greener, 2008). That is, in the view of the interpretivist, value free research as that proposed by the positivist in a quantitative study is rarely possible (Greener, 2008). However, the choice of whether to use quantitative, qualitative or a blend of the two depends on the focus of the study (Badu et al., 2012). The arguments in this study was actually in line with the debates between the objectivist and the interpretivist on whether reality is objective or subjective. The proposition to use figure on internal finance and investment to gauge the level of financial constraint among SMEs is purely in line with the objectivist idea that such numbers can define the behaviour of the enterprises. Hence, the choice of the quantitative design was mandatory despite it weakness.

Source, Description, and Justification of Data

This study used the most recent World Bank Enterprise Survey (WBES) data released for Ghana in 2013 which consist of 720 firms. The exclusion of large firms and missing values left the analysis with 347 SMEs with 237 in the manufacturing sector (World Bank, 2017). The WBES is a firm level survey of a representative sample of an economy's private sector, conducted and sponsored by the World Bank. These surveys have been done for the past 14 years (since 2006) in over 100 countries using standardized survey instruments

and a uniform sampling methodology. The surveys used the stratified probability/random sampling technique, which afford every subset of a statistical population a relatively equal chance of being chosen (World Bank, 2017). Three levels of stratification were used: firm size, firm sector, and geographic region. Enterprise surveys target formal enterprises with 5 or more workers that are not 100 percent state/government owned. The population or universe of the study is all the privately owned firms in the manufacturing, services and other industries in Ghana (World Bank, 2017).

The dataset was chosen because the firms in the sample includes small, medium and large, young and old firms as well as enterprises with different legal structures (traded, non-traded, limited and unlimited partnerships and sole proprietorship). The surveys also try to capture business perceptions of the most important obstacles to enterprise operation and growth that allow for perceived level of financial constraint to be assessed. Aside from helping to ascertain the extent to which enterprises perceive access to finance as an obstacle it also has data on investment variables and sources of finance for working capital and assets that allowed for the kind of analyses the study sought to do. Finally, the data set has information on sales and employment for two different time periods which allow for the calculation of sales growth.

The major limitation of the dataset was the time frame which, much as the study would want a more recent dataset, happens to be the most recent and richest dataset for the kind of analysis done in the study. It also excludes micro enterprises which are key focus of most policy makers (World Bank, 2017). However, after admission of the limitations, it has advantages of a nationwide representation that has no match currently in Ghana.

Operationalisation and Measurement of Variable

The main variables of the study were operationalised and measured as presented in Table 1.

Table 1-*Operationalisation and Measurement of Variables*

Variable	Code	Measurement
Financial Constraint Variable (FCV)	k30	*Non-financial constraint(1)* if the firm did not see access to finance as an obstacle, *Moderately financial constraint (2)* if the enterprise sees access to finance as a minor or moderate obstacle and *Fully financial constraint (3)* if the enterprise sees access to finance as a major or severe obstacle.
Investment Expenditure	n5b	Expenditure of purchases of equipment and lands in the last fiscal year
SMEs	Size<3	Enterprises with number of employees from 5 to 99
Ownership (legal status)	B1	Shareholding company with traded shares (1), Shareholding company with non-traded shares (2), Sole proprietorship (3), unlimited partnership (4), Limited partnership (5) and others (6).
Ownership (gender)	b7a	Female presence in top management (1) or No female presence in top management (2)
Internal Finance of working capital	k3a	the percentage of Working Capital Financed from internal funds o
Internal finance of Assets	k5a	the percentage of Assets Financed from internal funds or loans
Age of the enterprise	b5	Number of years in continuous operation
Size of firm	size	Number of full time and temporal employees of the enterprise
Location		Rural (1) or Urban (2)
Sector		Manufacturing (1)
Labour productivity		Labour Productivity= $\frac{sales}{Number\ of\ Employees}$

Source: World Bank, 2017

Independent Sample t-test of Internal Finance-Investment Sensitivity

The independent sample t-test was used to compare the mean investment expenditure across enterprises categorized according to percentage of working capital that were financed from internal funds. The independent sample t-test of equality of the variance was used answer the first research question on the level of dependency of SMEs on internal finance (retained earnings), level of investment expenditure and profitability. The normality and homogeneity of variance tests were conducted before the test. The Levene's robust variance test was used for the variance test since it presents the option to determine whether to use the mean (W0) or the median (W50). The Doornik-Hansen multivariate normality test was used to test the normality of three continuous variables.

Econometric Model and Estimations Technique

The study adopted the Seemingly Unrelated Regression Equation (SURE) estimation model to analyse the relationship between internal finance and investment expenditure. The choice of the SURE simultaneous equation model over the static panel model was based on the objective to model the simultaneous or the bi-causal relationship between internal finance and level of investment. The SURE model estimated was specified as:

$$Inv_i = \alpha + \beta_1 IntF_i + \beta_2 size_i + \beta_3 sizesq_i + \beta_4 age_i + \beta_5 GR_i + \beta_6 Labprod_i + e_i \quad .....(1)$$

$$IntF_i = \phi + \varphi_1 Inv_i + \varphi_2 size_i + \varphi_3 sizesq_i + \varphi_4 age_i + \varphi_5 GR_i + \varphi_6 Labprod_i + \varepsilon_i \quad .....(2)$$

$$\text{Prof}_i = \eta + \gamma_1 Inv_i + \gamma_2 size_i + \gamma_3 sizesq_i + \gamma_4 age_i + \gamma_5 GR_i + \gamma_6 Labprod_i + \omega_i \quad .....(3)$$

$$Inv_i = \theta + \rho_1 \text{Prof}_i + \rho_2 size_i + \rho_3 sizesq_i + \rho_4 age_i + \rho_5 GR_i + \rho_6 Labprod_i + \upsilon_i \quad .....(4)$$

Where α, ϕ, η and θ were intercept while β, φ, γ and ρ refers to the respective slope coefficients or marginal effects estimated in each model. The respective error terms where e, ε, ω and υ and were assumed to be independent and identically distributed (iid). Also, Inv refers to investment expenditure, IntF

referred to internal finance which was either percentage of working capital or percentage of assets financed from internal source (retained earnings). Internal finance was squared because Haque, Abid, Qamar and Asif (2019) asserted that the relationship between investment and internal finance is U-shaped. Investment expenditure was logged which explained why it was not squared. Guariglia (2008) and Cleary et al. (2007) also found evidence that the relationship between internal funds and investment is not linear in nature.

Together the four equations attended to the second and third objectives of the study. The first, fourth and fifth objectives were mainly descriptive in nature and hence employed descriptive analysis. The models in equations (1) and (2) were intended to examine the first hypothesis of the study which seeks to examine the relationship between investment expenditure and internal finance of working capital. It allowed for the simultaneity bias in investment and internal finance to be modeled in a simultaneous equation framework. Equations (3) and (4) also models the relationship between investment expenditure and profitability and was intended to examine the second hypothesis of the study.

The model specification followed the traditional simultaneous equation and was meant to capture the simultaneity that could exist between the level of investment expenditure and the percentages of working capital financed from internal sources. That is, changes in level of internal finance such as retain earning could motivate an enterprise to invest more or less and hence internal finance is expected in theory to influence investment expenditure. On the other hand, changes in level of investment expenditure can position the firm to generate more internal finance and hence finance greater percentage of working

capital from the available internal funds. Hence, investment expenditure can be considered a determinant of level of adoption of internal finance. It was therefore necessary to take such simultaneity that could biased the results into consideration which is what this study did different from earlier studies on the relationship between internal finance and investment expenditure.

Hence, from the models, internal finance, gross profit and investment expenditure are the endogenous variables while the rest at the right hand side are the exogenous variables. Hence the most likely endogeneity could result from simultaneity biased as recorgnised by Kirui and Wawire (2018). Based on the difficulty in identifying a consistent and valid instrument for an instrumental variable estimation; the study estimated a simultaneous equation model (Oordt, 2015). The Seemingly Unrelated Regression Equation (SURE) model which is a simultaneous equation based estimation was estimated to capture both variables in a single estimation from the structural equation models. The Wald test and R-square were used to check the consistency of the estimated results.

Ethical Considerations

The study adopted a secondary data from a trusted source which is of open access and hence ethical issues of sampling, instrument for data collection and data collection procedures were of less concern to the study. The survey data was obtained from World Bank in a way that already ensure anonymity and confidentiality of the enterprises and owners of the enterprises. The major ethical issues of the study were data handing and reporting of outcomes. The study adopted the right methods for the analysis and the results were reported as objective as possible.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter presents the results of the analysis of the adopted secondary data and provides some discussion on the main findings. The discussion was done in terms of the stated objectives and the result was integrated into the literature.

Distribution of Internal Finance, Level of Investment and Profitability of SMEs by Industrial Sector

The first objective of the study examined the distribution of internal finance, investment expenditure and profitability of SMEs in Ghana. The main aim was to determine whether the distribution differ between small scale and medium scale enterprises. Since there were only two size categories involved in the analysis, the independent sample t-test was used to examine the descriptive statistics to identify sources of differences in the adoption of internal finance, investment and performance as proxies by average profitability. The Doornik-Hansen normality test indicated that variables were jointly normal (chi2 (4) = 4.3706, Prob>chi2 =0.2371). That is, the null hypothesis of symmetric distribution could not be rejected at the 5 percent significance level.

Table 2 presents the descriptive statistics of internal finance adoption along with the results of the independent sample t-test of equality of the means.

Table 2-*Percentage of Working Capital Financed from Internal Funds*

Group	obs	Mean	Std. Err.	Std. Dev.
Small	489	80.24744	1.028722	22.74849
Medium	137	78.37956	2.18776	25.60708
Combine	626	79.83866	0.9350658	23.39534
diff		1.867882	2.262103	
Diff=mean(small)-mean(medium)				t= 0.8257
Ho: Diff=0			DF=624	
Ha: Diff<0	Ha: Diff ≠ 0		Ha: Diff>0	
Pr(T<t)= 0.7954	Pr(T<t)= 0.4093		Pr(T<t)= 0.2046	
Test of equality of variance (Levene's robust test)				
W0 = 0.040563 df(1, 624) Pr > F = 0.80728				

Source: Barlo, 2020

From Table 2, it was observed that the small scale enterprises financed about 80.25 percent of working capital from internal funds/retained earnings on the average with a spread of 22.75 percent. On the average, the medium scale enterprises financed about 78.38 percent of working capital with internal funds with a spread of 25.61 percent. The absolute figures suggest that the small scale enterprises depend more on internal finance than the medium scale though both categories of firms have heavy reliance on internal finance for working capital. The t-test of equality of the mean, however, suggested that the observed difference in means is not statistically significant at the five percent significance level (diff = 0, df =624, p>0.05). The reason for no statistical difference between the mean internal finance could be traced to the spread in the distribution in the small and that of the medium scale enterprises. That is, the small scale

enterprises had the highest mean with the least spread as compared to the medium scale enterprises who had a relatively smaller mean with a high spread. The major conclusion therefore was that on the average the small enterprises and medium enterprises adopt the same level of internal finance in financing working capital in Ghana. The average percentage of working capital financed from internal funds in the entire SME sample was 79.84 percent which is relatively higher compared to 64 percent among larger enterprises in the same sample (see Appendix A).

Table 3 presents the descriptive statistics and t-test for investment expenditure of SMEs based on size category.

Table 3-*Investment Expenditure across Size Categories*

Group	obs	Mean	Std. Err.	Std. Dev.
Small	492	2.50e+07	4942717	1.10e+08
Medium	137	4.12e+08	3.22e+08	3.77e+09
Combine	629	1.09e+08	7.04e+07	1.77e+09
diff		-387e+08	1.70e+08	
Diff=mean(small)-mean(medium)				t= -2.2791
Ho: Diff=0		Satterthwaite's degrees of freedom = 141.719		
Ha: Diff<0	Ha: Diff ≠ 0		Ha: Diff>0	
Pr(T<t)= 0.0115	Pr(T<t)= 0.0230		Pr(T<t)= 0.9885	

Test of equality of variance (Levene's robust test)

W0 = 63.357809 df(1, 627) Pr > F = 0.00000000

Source: Barlo, 2020

The outcome of Table 3 indicated that the small scale enterprises made an annual investment expenditure of GHS25, 000, 000.00 while the medium scale enterprises made an annual investment of GHS412, 000, 000.00. A clear difference of GHS387, 000, 000.00 could be observed between the two size categories in terms of average investment expenditure. The t-test confirmed the fact that the medium scale enterprises invest significantly more than the small scale enterprise, which was not much of a surprise. Comparison with the large enterprises suggested that the investment level is relatively low since the average investment for the 67 large enterprises in the same sample along with the SMEs in the survey made an annual investment of about GHS35 billion of annual investment in the same period compared to the average investment of GHS109 million of the SMEs (see Appendix A).

Table 4 presents the case of gross profit of the small scale and that of the medium scale enterprises along with their mean comparison test.

Table 4-*Profitability of Enterprises across Size Categories*

Group	obs	Mean	Std. Err.	Std. Dev.
Small	492	1.89e+08	2.26e+07	5.01e+08
Medium	137	6.21e+08	1.56e+08	1.83e+09
Combine	629	2.83e+08	3.89e+07	9.76e+08
diff		-4.32e+08	9.28e+07	
Diff=mean(small)-mean(medium)				t= -2.7346
Ho: Diff=0		Satterthwaite's degrees of freedom = 141.719		
Ha: Diff<0	Ha: Diff ≠ 0		Ha: Diff>0	
Pr(T<t)= 0.0035	Pr(T<t)= 0.0000		Pr(T<t)= 0.9965	
Test of equality of variance (Levene's robust test)				
W0 = 21.623926	df(1, 627)		Pr > F = 0.00000405	

Source: Barlo, 2020

Despite the low investment, it was surprising to observe that the SMEs in the medium scale category made higher average gross profit than the SMEs in the small scale category. The SMEs in the small scale category recorded a mean gross profitability of about GHS189 million while that of the medium scale category was about GHS621 million annually. The t-test results indicated statically significant difference between the mean gross profit of the small and medium enterprises.

The major conclusion drawn from the descriptive statistics and the parametric test was that though small and medium enterprises differ by level of investment expenditure and profitability, they have the same reliance on internal finance for the working capital on the average. The fact that the two size categories have the same level of internal finance adoption explain why they were put together as SME for the rest of the analysis since the focus is mainly on relationship between internal and external investment expenditure.

Investment Expenditure Sensitivity to Internal Finance among SMES

The second and major objective of the study was to test the investment sensitivity to internal finance. This test was done by estimating a simultaneous equation model that had logarithm of investment expenditure and percentage of working capital financed from internal sources of finance as endogenous variables. Two different regressions were estimated for this objective to test the relationship in the entire industry, than for SMEs in the manufacturing sector. The regression results for the entire industry is presented in Table 5 which included 347 SMEs. The F-test of overall significance of the model indicated that each of the models is better than an empty model which has only the constant terms and hence the selected variables jointly explained the dependent

variables (F=19.17, P<0.05). As a simultaneous equation based model, the R-square is not much of concern (the reason it is in inverted commas). The R-square, however, suggest that the model with investment as the dependent variable has higher predictive power than internal finance model.

Table 5-*Simultaneous Equation Model for the Entire Sample of SMEs*

Variables	Coef.	Std. Err.	t	P>t
Investment expenditure (dependent variable)				
Internal funds	0.1694837	0.0346439	4.89	0.000
Internal funds square	-0.0012501	0.0002565	-4.87	0.000
Profit per employees	1.13e-08	2.44e-09	4.63	0.000
Age	0.241452	0.0620296	3.89	0.000
Age square	-0.002935	0.0011094	-2.65	0.008
Legal status (base category is Shareholding company)				
Partnership	-2.717439	0.591452	-4.59	0.000
Sole proprietor	-2.077794	0.8385894	-2.48	0.013
Concentration	.0435128	0.0168499	2.58	0.010
Lag sales	8.28e-11	7.24e-11	1.15	0.253
Sex : (base category is female ownership)				
Male ownership	-1.37484	.3686353	-3.73	0.000
Constant	4.710892	2.093299	2.25	0.025
Internal funds (dependent variable)				
Investment expenditure	.3228053	.3398759	0.95	0.343
Legal status				
Partnership	-3.099218	4.080252	-0.76	0.448
Sole proprietor	-5.095996	5.662083	-0.90	0.368
Profit per employees	-2.46e-08	1.68e-08	-1.46	0.144
Age	.5510877	.4225179	1.30	0.193
Age square	-.0115318	.0074597	-1.55	0.123
Concentration	.0383049	.1138324	0.34	0.737
Lag sales	9.79e-10	4.80e-10	2.04	0.042
Constant	68.91891	12.36013	5.58	0.000
	Diagnostic tests			
Observations	347			
R-square	0.3408			
Wald test	F=19.17	P=0.0000		
RMSE	3.320496			

Source: Barlo, 2020

The investment model suggests that increasing the percentage of working capital financed from internal funds has the tendency to increase investment expenditure in the entire SME industry significantly. The results of the significant positive squared term of internal finance suggest that the relationship can turn negative at higher adoption of internal funds to finance working capital. That is, initially both working capital and investment expenditure increase with retained earnings but as more retained earnings are used to finance working capital, the amount left for investment eventually diminishes. The analysis, therefore, confirmed the sensitivity of investment expenditure to internal finance among small and medium scale enterprises in Ghana. From theory, the significant relationship between investment and internal finance can be considered a real proof of financial constraint among the SMEs in Ghana. The ideal expectation is that a positive relationship should exist between investment expenditure and internal finance as observed in this study.

The results in the internal financing model suggested that no statistical significant effects could be observed from investment expenditure to the proportion of working capital financed from internal sources. This could be explained by the business fact that firms consider their working capital financing first before considering investment to other ventures. That is, to avoid illiquidity during the operation process, management have the responsibility to secure their working capital before considering any niche on investment.

It could also be observed from Table 5 that the control variables were more responsive in the investment model than the internal finance model. Profit per employee was statistically significant and had direct effects on investment though the magnitude of the effects was very marginal. Age was found to have

direct but reducing effects on investment expenditure which suggest that younger enterprises have higher tendency to do more investment than matured or older enterprises. The results on legal status suggest that compared to the Shareholding enterprises, investment reduces in the Sole Proprietorship and Partnership enterprises significantly. Concentration, which is the percentage of an enterprise held by the largest owner, was found to have direct significant effects on investment, which suggests that as concentration increase the enterprises have enough incentive to do more investment. The results further indicated that compared to enterprises with female presence in the top management; investment expenditure of enterprises without female presence or male managed reduce significantly.

Only previous or lag sales had statistical significant effects on the proportion of working capital financed from internal sources. The outcome suggested that increase in the lag sales of an enterprise has the tendency to increase the proportion of working capital financed from internal sources of retained earnings. This outcome makes both theoretical and empirical sense since increase in sales serve as a boost for firms to have excess income to finance activities internally.

Table 6 presents the case of the investment-internal finance relationship in the manufacturing sub-sector.

Table 6-*Investment Sensitivity of Internal Finance in the Manufacturing Sector*

Variables	Coef.	Std. Err.	t	P>t
Investment expenditure (dependent variables)				
Internal funds	.1710608	.0437795	3.91	0.000
Internal funds square	-.0012934	.0003202	-4.04	0.000
Profit employees	2.05e-08	4.67e-09	4.39	0.000
Age	.2618069	.0705864	3.71	0.000
Age square	-.0031099	.0012106	-2.57	0.011
Legal status				
Partnership	-2.928125	.7205775	-4.06	0.000
Sole proprietor	-1.764296	1.015289	-1.74	0.083
Concentration	.0535962	.0204046	2.63	0.009
Lag sales	5.35e-11	7.76e-11	0.69	0.491
Sex : (base category is female ownership)				
Male ownership	-1.337407	.42686	-3.13	0.002
Constant	3.651852	2.553735	1.43	0.153
Internal funds (dependent variables)				
Investment expenditure	-.0231504	.4022869	-0.06	0.954
Legal status				
Partnership	-5.738645	4.868529	-1.18	0.239
Sole proprietor	-3.618881	6.663332	-0.54	0.587
Profit per employees	-1.34e-08	3.20e-08	-0.42	0.674
Age	.566967	.4736835	1.20	0.232
Age square	-.0120911	.0079773	-1.52	0.130
Concentration	.1506068	.1352251	1.11	0.266
Lag sales	1.27e-09	4.96e-10	2.55	0.011
_cons	63.95975	14.2453	4.49	0.000
	Diagnostic tests			
Observations	237			
R-square	0.3763			
Wald test	F=15.65 Prob.=0.0000			
RMSE	3.205897			

Source: Barlo, 2020

The results from the investment model suggested that increase in internal finance significantly increase the investment expenditure of SMEs in the manufacturing sector of Ghana. The magnitude of the direct effects is, however, diminished by the negative significant effects of the quadratic terms as more internal funds are used to finance working capital. The observed positive relationship was the expected investment sensitivity necessary to conclude that the SMEs are externally financially constrained. That is, the enterprises have the desire to invest but the inability to access external funding defer the investment until more internal funds are sourced. Hence a positive relationship between investment expenditure and internal finance could be considered a real measure of external financial constraint. That is, enterprises must wait to generate or accumulate enough internal funds to finance working capital so that any external funds sourced is invested and hence as internal funds increase so does investment expenditure increase.

Enterprise age, as a control variable, maintained the direct but diminishing effects on investment in the manufacturing sector. The shareholding enterprises were again found to invest significantly higher than the Sole Proprietorship and the Partnership enterprises in the manufacturing sector. The internal finance model discovered a negative effects of increasing enterprise size on the level of adoption of internal finance. Concentration was still found to be positively related to the level of investment of the enterprises in the manufacturing sector of Ghana. Again, compared to male managed enterprises, the male managed enterprises invest less into their enterprises.

Previous or lag sales was still the only significant variable in the model that explains the proportion of working capital financed from internal funds or

retained earnings. The fact that investment expenditure does not influence the proportion of working capital financed from internal funds was confirmed among SMEs in the manufacturing sector of Ghana

The analysis on the second objective tested two hypothesis and lead to the conclusion that investment expenditure is sensitive to changes in internal sources of finance which indicate that the SMEs in general are financially constrained in Ghana. The sectorial analysis indicated that investment expenditure has direct relationship with the level of internal finance which is an indication of SMEs in the manufacturing sector being financially constrained from accessing external finance as was observed in the entire sample. It was necessary to analyse the case of the manufacturing sector because to conclude that manufacturing enterprises are financially constrained because it was observed in the entire sample of SMEs amounts to fallacy of division.

The percentage of assets financed from internal source was also used in place of the percentage of working capital in the model estimated in Table 6, and the results was presented in Table 7 (see appendix B for full model). The investment model had an R-square of 0.29 and the Wald test confirmed the overall significance of the model ($F=13.12$, $P=0.0000<0.05$). The results still identified significant positive relationship between investment expenditure and percentage of investment finance from internal source. The outcome suggest that a percentage increase in the percentage of working capital finance from internal source could increase investment expenditure by about 4 pesewas. It could therefore be concluded that the relationship is robust to the choice of proxy for internal finance, since the same conclusion could be drawn.

Table 7-*The relationship between percentage of internal finance for assets and investment*

Variable	Coef.	Std. Err.	t	P>t	[95% Conf.Interval]	
Log of investment						
internal_assets	.0393378	.010144	3.88	0.000	.0194014	.0592742
prof_emp	1.17e-08	2.61e-09	4.47	0.000	6.55e-09	1.68e-08
age	.2453552	.0756621	3.24	0.001	.0966539	.3940565
agesq	-.003083	.0013952	-2.21	0.028	-.005825	-.0003409
legalstatus						
2	-2.515619	.7905104	-3.18	0.002	-4.069235	-.962002
3	-2.767561	1.023336	-2.70	0.007	-4.778757	-.756366
largestowner	.0141229	.0211862	0.67	0.505	-.0275152	.0557609
sales_2009	2.35e-11	8.65e-11	0.27	0.786	-1.46e-10	1.93e-10
2.femaleown	-1.105484	.4873312	-2.27	0.024	-2.063252	-.1477154
_cons	8.194722	2.322789	3.53	0.000	3.629667	12.75978

Source: Barlo, 2020

Investment Expenditure Sensitivity to Profitability

One major source of internal finance is profitability which can be retained to finance working capital, assets or capital investment. Investment is expected to directly influence profitability in the long run but capital investment must not wait for profitability to accumulate before it changes. If it does then it

is an indication that there is the difficulty in accessing external sources of finance necessary to undertake such investment venture. Table 8 presents the simultaneous equation model of the relationship between internal finance and profitability.

Table 8-*Investment Sensitivity of Level of Profitability of SMEs in the Manufacturing Sector*

Variables	Coef.	Std. Err.	t	P>t
Investment expenditure (dependent variable)				
Profit per employees	2.2272	0.081606	27.29	0.000
Labour growth	-2.94	0.258	-11.39	0.000
Size	1.82	0.9627631	18.90	0.000
Age	-6.11	0.718	-8.50	0.008
Legal status (base category is Shareholding company)				
Partnership	1.07	0.202	3.53	0.000
Sole proprietor	2.00	0.272	0.73	0.464
Concentration	0.033475	0.361	0.09	0.010
Sex : (base category is female ownership)				
Male ownership	-9.91	19.60	0.51	0.926
Constant	4.710892	2.093299	2.25	0.612
Internal funds (dependent variable)				
Investment expenditure	0.1927597	0.0159907	12.05	0.000
Labour growth	0.855	0.0931396	9.18	0.000
Lag sales	0.2499172	0.0318623	10.98	0.000
Size	-4.42	0.4326732	-10.22	0.000
Age	1.49	0.248	5.98	0.000
Partnership	-2.84	.965	-2.94	0.003
Sole Proprietorship	-2.09	1.02	-2.05	0.041
Concentration	-2.57	1.85	-1.39	0.165
Males ownership	-0.353756	6.23	-0.01	0.995
Constant	2.81	1.65	1.70	0.090
	Diagnostic tests			
Observations	347			
R-square	0.8949	0.8563		
Wald test	F=557.55	P=0.0000		
RMSE	6.91	N=237		

Source: Barlo, 2020

The content of Table 8 suggests that a direct significant relationship exist between the level of profitability and the level of investment expenditure among the SMEs in the manufacturing sector of Ghana. The outcome suggests that a cedi increase in profitability has the tendency to increase investment expenditure by about 2.23 cedis keeping all other factors constant. On the other hand, a cedi increase in investment expenditure has the tendency to significantly increase profitability by about 19 pesewas among the SMEs in the manufacturing sector. The positive sensitivity of investment expenditure to profitability further affirm the earlier observation that the SMEs in the manufacturing sector are financially constrained from accessing external finance.

Most of the control variables were significant in both the investment and profitability models. Age and Labour growth rate had a negative effects while sales had direct effect on investment expenditure. Compared to the shareholding enterprise; profitability of Sole Proprietorship enterprises increase significantly in the manufacturing sectors. This observation was not surprising since Sole Proprietorship is the dominant ownership structure among the SMEs.

Internally or Externally Constrained to Accessing Finance

Sensitivity of investment expenditure can be considered a sign of financial constraint but source of such constraint can be tricky. This section explored some variables to throw more light on the nature and kind of financial constraint.

The first point considered was whether reduction in internal finance which is synonymous to increased external funds leads to increase in investment expenditure. Table 9 presents the t-test of current investment and level of

internal finance. The current investment variables were the response to the question whether an enterprise invested in the fiscal year prior to the survey years.

Table 9-*T-Test of Current Investment and Level of Internal Finance*

Group	obs	Mean (%)	Std. Err.	Std. Dev.	[95% Conf.	Internal]
Investing	146	69.2179	1.74	27.88	65.79	72.64
Not investing	154	79.2206	1.46	20.78	76.35	82.09
Combine	300	644	1.19	25.45	71.31	75.97
diff		-10.003	2.343		-14.61	-5.40
Diff=mean(invest)-mean(no-invest)						t= -4.2684
Ho: diff=0				Degree of freedom=298		
Ha: diff<0			Ha: diff ≠ 0			Ha: diff>0
Pr(T<t)=0.0000			Pr(T<t)= 0.0000			Pr(T<t)=1. 0000
Levene's robust test of equality of variance						
W0 = 0.04056299 df(1, 299) Pr > F = 0.64072767						

Source: Barlo, 2020

The first major observation from Table 8 was the fact that enterprises that engage in active investment used less internal funds for working capital (69.2 %) compared to those not currently investing (79.2 %) in the manufacturing sector. Under the assumption of equal variance assumed, the differences in the mean was proven to be statistically significantly different

from zero at the five percent significance level (t=-4.2684, df=298, p-value<0.05). One possible explanation to this observation is that as enterprises succeed in accessing more external finance to finance working capital; they are able to do more investment. Hence the SMEs in the manufacturing sector were classified as externally constrained such that improving access to external finance shall see more investment in the sector.

Table 10 presents the cross tabulation of the perception of financial constraint as an obstacle and application for loans in the same period.

Table 10-*Perception of finance as an obstacle*

Obstacle	Yes	No	Total
None	4	22	26
Minor	8	27	35
Moderate	17	40	57
Major	29	90	119
Severe	23	69	92
Total	81	248	329

Source: Barlo, 2020

The major interests in Table 9 are the number of loan applications made by the firms that considered access to finance as major and severe obstacle. The results suggest 52 (29+23) out of the 211 (119+92) SMEs in the manufacturing sector that perceived access to finance as either major or severe obstacle actually applied for loan in the fiscal year prior to the survey, which translates to about 24.6 percent loan application rate. Interestingly, 29 (4+8+17) out of the 118 (26+35+57) of those who consider access to finance to be moderate, minor or no obstacle applied for loans, which indicates an application rate of about

24.6 percent. This simply imply that the percentage of firms that applied for loan were identical among those who complain more to access to finance as against those who complained less. Together, only 81 out of the total of 329 manufacturing enterprises actually applied for loans, which translates to about 24.6 percent loan application rate among the enterprises. This explains why an indirect measure of financial constraint was necessary to determine the actual state of financial constraint in Ghana.

One possible reason for which constrained enterprises may not apply for loans is the existence of an old loan being serviced. Table 11 offers information on the number of outstanding loans held by enterprises.

Table 11-*Number of Outstanding Loans*

Number of outstanding loans	Frequency	Percentage
1	38	70.40
2	11	20.40
3	1	1.85
4	2	3.70
5	2	3.70
Total	54	100

Source: Barlo, 2020

From Table 11 only 54 out of the 329 SMEs had an outstanding loan with 38 holding one and 11 holding two lines of loans. Clearly, there were not enough evidence to conclude that the enterprises are not applying for loans because they do not have the financial space to apply.

The bigger question then is what constitute access to finance to the SMEs owners, or are they judging their access by some encounter in the past

when they applied for a loan and could not access it? Alternatively, the SMEs could be complaining about their inability to generate enough internal finance through sales growth or profitability to support their operations. On whether the experience in the past may have been bad; the outcome of Table 12 indicates that about 86.76 percent of total lines of loans were approved with 1.47 percent still in process and 11.76 percent rejected. The rate of loan approval does not leave room for access to loans to be a major concern in the context holding the issues of collaterals constant.

Table 12-*Outcome of Past line of Loan Applied*

Outcome	Frequency	Percentage
Application still process	4	1.47
Application was approved	118	86.76
Application was rejected	16	11.76
Total	136	100

Source: Barlo, 2020

The outcome of the analysis points to the fact that the perception of finance as an obstacle may not entirely be a measure of external constraint since enterprises' complaints may well be informed by their internal constrain at generating enough funds within the organization to finance their activity. That is, it could be concluded that the probability that a randomly selected line of loan shall be approved in the financial sector of Ghana is about 86.76 percent, which by all standard is encouraging considering the fact that the sample comprises SMEs that are mostly perceived to be risky customers by banks. Hence, the actual state of financial constraint and its nature can best be seen from the analysis of the cash flow of the enterprises and other indirect means

other than the self-reporting information provided by the enterprise owners. It was clear from the analysis of the survey that self-reported obstacle enterprises claiming to be severely constrained are not making efforts to access funds while enterprises that do not see finance as obstacle are applying for loans and complaining about interest rates. That is, enterprises may always have a reason to complain about access to finance but not all such complaints may be legitimate as compared to what the cash flow can indicate.

Discussion of the Results

The analysis of the study gauged the level and nature of financial constraint among SMEs in the manufacturing sector of Ghana using investment cash flow sensitivity approach. The first objective was to examine the level of adoption of internal finance among small and medium scale enterprises in Ghana. The outcome of the analysis suggested that the small and medium scale enterprises adopts almost the same level of internal funds in financing their working capital. It was further revealed that the SMEs adopt relatively high level of internal funds as compared to large enterprises in Ghana. The outcome of the study support the pecking order theory that if firms must use internal funds, then they will prefer retained earnings to equity. That is, the SMEs in the study sample finance greater portion of their working capital and assets from retained earning which supports their preference for internal funding before external funding even if it is accessible. The finding support the earlier findings of Andani and Al-hassan (2016) on both listed and unlisted firms in Ghana. Andani and Al-hassan (2016) observed that listed and unlisted firms treat debt equally and prefer internal funding to external funding.

The second objective assessed the relationship between internal finance and investment expenditure in the manufacturing sector of Ghana. The outcome of the analysis indicated that a positive but diminishing relationship exist between the percentage of working capital financed from internal funds and the level of investment among the SMEs in the manufacturing sector. The outcome was interpreted to mean that the SMEs in the manufacturing sector are financially constrained from accessing external funds to finance investment and hence, the more working capital is catered for by internal funds, the more the enterprise have the space to invest any extra income into long term investment. The results support the position of Wale (2014) on enterprises in African countries.

The outcome of this study agreed with Wale on the fact that the manufacturing enterprises in Ghana are externally financially constrained but differ on the functional form of the relationship. Wale (2014) just as Guariglia (2007) concluded that the investment curve is U-shaped when firms are classified on the basis of internal financial constraint measure, but this study observed the relationship to be inverted U-shaped. The inverted U-shape relationship implies that investment sensitivity could be an indication of financial constraints but very high level of financial constraints could mean something else. That is, when financial performances are very good and enough returns are made, financing all or higher proportion of working capital from internal funds could be a way of reducing interest payment than an indication of financial constraints, which is the position of this study on the observed inverted U-shape relationship between internal finance and investment expenditure in the manufacturing sector of Ghana. The results of the study also

agree with the findings of other studies such as Kumar and Ranjani (2018), Sadiq, Ehtesham and Khan (2017) and Guariglia and Yang (2016) all of which supported investment cash flow sensitivity as indicating external financial constraints of enterprises.

The third objective evaluated the relationship between the level of profitability and investment expenditure in the manufacturing sector of Ghana and the outcome suggested a direct relationship between the two variables. The observation was a more direct measure of the investment-cash-flow relationship which further confirm the conclusion that the SMEs in the manufacturing sector are financially constrained from accessing external funds. Earlier studies such as Tariverdi and Keivanfar (2017), Portal, Zani, and da Silva (2012), Marhfor, M'Zali, and Cosset (2012) and Kashanipour et al. (2010) all of which observed a positive significant relationship between profitability and investment expenditure and concluded that it is an indication of external financial constraints of enterprises. The argument is that financially constrained firms have the desire to invest but lack the funds and hence takes advantage of any returns to invest by retaining it. They find the reinvestment of the retained earnings as an easy means to avoid the difficulties of appling for an external finance, which they are not even sure to access. Studies such as Chang (2011), however, rejected existence of investment sensitivity to cash flow and indicated that, it might not be a good proxy for financial constraints. The studies that accept the investment-cash flow sensitivity far out weight those that rejects it, and hence this study concluded that the enterprises in the manufacturing sector of Ghana are financially constrained from assessing external debt.

The fourth objective sought to identify the nature of financial constraint as being internal or external. The analysis found support for the fact that SMEs in the manufacturing sector are more likely to be externally than internally constrained, since the SMEs that financed less of working capital from internal funds engaged more in investment activities than those that used more internal funds to finance working capital. The outcome collaborated the position of Portal, Zani, and da Silva (2012) who concluded that strong investment sensitivity to internal finance is an indication of external financial constraint. That is, investment is expected in theory to depend on past income or savings, hence a strong dependency to current income or profitability is a strong indication of financial constraint and an attempt to access external debt in the past.

Finally, the study examined the reliability of self-reporting financial constrained variables from the enterprises whose cash flow were analysed. The contradiction in the responses simply indicated that an independent assessment of the level of financial constraint is necessary to obtain the true level and nature of financial constraint for policy action. The fact that self-reporting financial constraints may not be a good measure such that a more independent assessment is needed as iterated by Sadiq, Ehtesham and Khan (2017) who reviewed alternative measures including investment cash-flow sensitivity as was used in this study.

Chapter Summary

This chapter presents the results and discussion on the relationship between cash-flow variables and investment expenditure in the manufacturing sector of Ghana. The results found supports for the existence of investment

cash-flow sensitivity which as interpreted to signify the existence of external financial constraints among enterprises in the manufacturing sector of Ghana. Theoretically, the outcome of the study supports the Pecking Order Theory (POT) and provides empirical supports to a number of existing studies and contradict the outcome of few studies. The summary of the main findings are presented in the next chapter.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter presents the overview of the entire study in the area of summary of main findings. Conclusions were drawn based on the main findings after which recommendations were offered in response to the conclusions drawn. Finally, the limitations were highlighted to make suggestions for further studies.

Summary of the Study

The study is purely a quantitative study whose main purpose is to examine the relationship between level of investment and cash flow sensitivity as a measure of financial constraint of SMEs in the manufacturing sector of Ghana. Cash flow items considered were the percentage of working capital financed from internal funds and the gross profitability of the enterprises. The focus was to gauge the nature and extent of financial constraint of SMEs as exhibited by investment sensitivity to cash flow changes. Data on SMEs cash flow and investment activities was sourced from the World Bank Enterprise Survey data set conducted first in Ghana in 2007 and again in 2013 business years. The analysis followed the simple t-test of comparison of means across the manufacturing sector on selected issues regarding investment, internal finance and gross profit.

The main analysis followed the simultaneous equation model which allows for the simultaneity between investment and internal finance or gross profitability. The model adopted ensured that the right sign and magnitude of the effects of either variables on the other is consistent and valid for policy

action. The major argument of the analysis was the fact that enterprises must source external funds to undertake major projects in order to recoup the benefits in the form of increasing profitability and hence capital investment must not depend strongly on profitability. Therefore, if investment expenditure depends strongly on profitability then it is an indication of inability to access external funds to finance investment. That is, certain investment must be timely enough to be profitable and hence must not wait for profitability to accumulate before they are executed. Hence a one way effect was expected to have linked investment to profitability but if the reverse effect is significant then that is interpreted as evidence of financial constraint. The results were presented and discussed in the previous chapter and the main findings are summarized in the next section.

Summary of Main Findings

The analysis of the study lead to a number of findings, the main and those that related to the objectives of the study are summarised below:

1. SMEs in both small and medium scale enterprise categories rely heavily on internal funds to finance working capital.
2. Direct significant relationship was observed between investment expenditure and internal finance in the manufacturing sector which was interpreted to mean that the SMEs in the sector are externally financially constrained.
3. A positive relationship was observed between investment expenditure and gross profit of SMEs in the manufacturing sector which further confirm the investment-internal finance sensitivity which establishes the fact that the SMEs are financially constrained.

4. The SMEs in the manufacturing sector are more likely to be externally financially constrained than internally constrained in accessing funds.
5. The use of perception of access to finance as an obstacle to measure financial constraint may not be reliable means of measuring financial constraint among SMEs in Ghana.

Conclusions

A number of conclusions can be drawn from the main findings of the study. First the observation that firms are using high level of internal finance in the manufacturing sector suggest that enterprises in the sector have common investment constraint. Second, though the investment sensitivity was interpreted in line with the literature to imply financial constraint of the SMEs, the actual reason may be more than just access to external finance. That is, if enterprises must use high level of internal finance to finance both working capital and assets before enjoying positive return, as was observed from the optimal finance, then external sources of finance may well be expensive. The major implication is therefore more than access in terms of availability but rather access in terms of cost of capital as most empirical studies have earlier suggested.

The decision to rely on internal funds to expand could be an indication of low growth expectation, lack of information or misconceptions about other finance options. The outcome also suggests that one approach cannot be followed to address financial constraint in the manufacturing sector of Ghana. The inconsistencies in the responses of the enterprises on issues of finance and their commitment to accessing external finance can be a premise to conclude

that the SMEs may have different conceptualisations of access to finance than what the survey team and researcher actually expect them to know.

Recommendations of the Study

Based on the conclusions drawn from the main findings the study offered the following recommendations.

Policy action by government agents, such as the Central Bank and Ministry in charge of industries, to improve access to finance among SMEs must target the manufacturing sectors differently from other sectors for an effective policy outcome. The Association of Ghanaian Industries must champion the course of helping SMEs understand the other finance options and how to make productive use of them through seminars to disabuse any misconception by SMEs about external sources of finance. For example, one major aspect of perceiving cost of capital as high is the level of profitability of the SMEs such that if they can be innovative they could survive the current interest levels until competitions bring them down.

Survey teams such as the World Bank Group, Ghana Statistical Service and even individual researchers must improve on questions that solicit information about access to finance and well delve into the understanding of the survey enterprises on what constitute access to finance. Also, actual figures on what proportion of working capital is financed from internal sources must be provided since percentages are estimated from actual figures.

Limitations and Direction for Further Studies

The major limitation of the study was the size of the data which limited the depth of the analysis. That notwithstanding, the study made the most out of the available data to examine the investment and internal finance sensitivity for

consistent results. Future study can extend the study to cover the investment-cash flow sensitivity by using time series data that allows the relationship to be examined from how the same firm behaves when internal funds increases. The fact that the dataset used was on enterprises as far as 2013 was also a major limitation which can be addressed in future studies by using time-series data on firms as well as replicated this study when a more recent survey data is available.

REFERENCES

Abdulsaleh, A. M., & Worthington, A. C. (2013). Small and medium-sized enterprises financing: A review of literature. *International Journal of Business and Management, 8*, 36-54. doi:10.5539/ijbm.v8n14p36

Addotei, C. (2012). *The challenges of financing Small and Medium Scale Enterprises (SMEs) In the Ashanti Region. A Case study of Stanbic Bank (GH) Ltd.,* Unpublished Thesis, Kwame Nkrumah University of Science and Technology, Kumasi: Ghana. Retrieved on 06 May 2016, from http://hdl.handle.net/ 123456789/4292

Adebisi, J. F., & Olayinka, M. (2013). Small business financing in Nigeria: An investigation of the angel options. *Canadian Social Science, 9*, 98-103.

Agbozo, E., & Yeboah, E. O. (2012). *Exploring the financial gap for small and medium-sized enterprises (SMEs) in Ghana: a case study of Ghana.* Unpublished thesis, School of Management, Blekinge Institute of Technology, Sweden.

Almeida, H., Campello, M., & Weisbach, M. S. (2004). *The cash flow sensitivity of cash. Journal of Finance, 59*(4):1777–1804

Alti, A. (2003). *How sensitive is investment to cash flow when financing is frictionless? Journal of finance, 58*, 707 - 722.

Andani, A., & Al-hassan, S. (2016). *The Determinants of the Financing of Listed and Nin-Listed Firms in Ghana. Asian Economic and Financial Review 2*(7): 751-771.

Arthur, M. (2016). *The constraint in credit accessibility among the SMEs in. Ghana. A case of business in Kumasi Metropolis*. Unpublished Thesis, Kwame Nkrumah Unisversity of Scienec and Technology, Kumasi: Ghana. Retrieved on 06/01/2020 from: https://www.google.com/search?sxsrf=ALeKk00dyTug6rZpRuph1IkNcL3w2opcLA%3A1583419940120&source=hp&ei=JBJhXtWVBdDYaKXmlPAM&q=Arthur+finanacial+constariant+&oq=Arthur+finanacial+consta

Ayyagari, M., Demirgüç-Kunt, A., & Maksimovic, V. (2006*). What determines protection of property rights? Analysis of direct and indirect effects using DAG methodology.* Working Paper No. RHS-06-032. Retrieved on 6/5/2019 from: http://ssrn.com/abstract=891750

Badu, A. N. Y. (2012). *An assessment on the effectiveness of credit risk management tools utilized by financial institutions in Ghana.* Unpublished Thesis, Ashesi University College, Accra, Ghana.

Beck, T., Demirgüç-Kunt, A., & Maksimovic, V. (2006). Financial and legal constraints to firm growth: does firm size matter. *Journal of Finance 60*(1), 137-177.

Becker, B. & J. Sivadasen (2006). *"The Effect of Financial Development on the Investment-Cash Flow Relationship: Cross-Country Evidence from Europe", ECB Working Paper Series No. 689. European Central Bank. Retrieved form 11/11/2019 from: https://ideas.repec.org/p/ecb/ecbwps /2006689.html.*

Benard Kipyegon Kirui, B. K. & Nelson H. W. Wawire2Measures of Financial Constraints in Kenya. *International Journal of Economics and Financial Issues, 8*(1), 217-231.

Bo, H., Lensink, R., & Sterken, E. (2003). Uncertainty and financing constraints. *Review of Finance, 7*(2):297–321

Bond, S., & Meghir, C. H. D. (1994). Dynamic investment models and the firm's financial policy. *Review of economic studies, 1*(1); 23-34.

Bond, S., Klemm, A., Newton-Smith, R., Syed, M., & Vlieghe, G. (2004). *The roles of expected profitability, Tobin's Q and cash flow in econometric models of company investment.* Working paper, 04/12, Institute for fiscal studies (IFS). London. Retrieved on 11/11/2019 from http://dx.doi.org/10.1920/wp.ifs.2004.0412

Byun, H. Y., Choi, S., Hwang, L. S., & Kim, R. G. (2013). Business group affiliation, ownership structure, and the cost of debt. *Journal of Corporate Finance, 23*:311–331

Carpenter, R. E., & Guariglia, A. (2008). Cash flow, investment, and investment opportunities: new tests using UK panel data. *Journal of Bank. Finance, 32*, 1894-1906.

Chang, L. C. (2011). The study on relationship between financing constraints and investment-cash flow sensitivity in Chinese listed companies. *Advanced Materials Research, 270*, 1844-1849.

Chapman. D. R., Junor, C. W. &, Stegman, T. R. (1996). Cash flow constraints and firms' investment behaviour. *Applied Economics, 28*(8):1037–1044

Cherchye, L., De Rock, B., Ferrando, A., Mulier, A., & Verschelde, M. (2020). *Identifying Financial Constraints*. ECARES working paper 2020-04. Retrieved on 3rd October, 2020 from: file:///C:/Users/USeR/Downloads /2020-04-cherchye_derock_ferrando_mulier_vershelde.pdf

Cleary, S. (1999). The relationship between firm investment and financial status.\ *Journal of finance, 54*(2), 673 - 692.

Cleary, S. (2006). International corporate investment and the relationships between financial constraint measures. *Journal of banking & finance, 30*, 1559-1580.

Cleary, S. (2006). International corporate investment and the relationships between financial constraint measures. *Journal of Banking & Finance, 30*, 1559-1580.

Creswell, J. W. (2006). Methods research editorial: mapping the field of mixed. *Journal of Mixed Methods Research, 1*, 23-39.

Dasgupta, P., & Sengupta, K. (2007). E-commerce in the Indian insurance industry: prospects and future. *Electronic Commerce Research, 2*, 43–60.

Eisenhardt, K.M., and M.E. Graebner. 2007. Theory building from cases: opportunities and challenges. *Academy of Management Journal, 50*: 25-32.

Erickson, T., & Whited, T. (2000). Measurement error and the relationship between investment and q. *Journal of political economy, 19*(4), 1027-1057.

Fazzari, S. M., Hubbard, R. G., & Petersen, B. C. (1998). Financing constraints and corporate investment. *Brook. Pap. Economic Activities, 1*, 141–195.

Ferrando, A, & Mulier, K. (2013). *Firms' Financing Constraints Do Perceptions Match the Actual Situation?* European Central Bank, Working Paper SerieS NO 1577 / august 2013.

Frimpong, S. K. & Antwi, D. A. (2016). *Sources of financing Small Scale Enterprises (SSEs) in Akwapim North Municipal Assembly, Ghana. International Journal of ICT and Management, 2*(1), 25-32

Gaud, P., E. Jani, E., Hoesli, M. & Bender, A. (2005). the capital structure of Swiss companies: An empirical analysis using dynamic panel data. *European Financial Management, 11*(1), 51-69.

Giannetti, M. (2003). Do better institutions mitigate agency problems? Evidence from corporate finance choices. *Journal of Financial and Quantitative Analysis*, *38*(1), 185-212.

Gibson, T., & Van der Vaart, H. (2008). *Define SMEs: a less imperfect way of defining small and medium enterprises in developing countries. Brookings global economy and development*. Retrieved on 08/09/2019 from: http://www.brookings.edu/~/media/research/files/papers/2008/9/ developENT%20gibson/09_ development_gibson. Pdf

Greener, S. (2008). Business Research. Ventus Publishing: India. Retrieved on 3rd October, 2020 from: https://gent.uab.cat/diego_prior/sites/gent.uab.cat. diego_prior/files/02_e_01_introduction-to-research-methods.pdf

Guariglia, A. & Yang, J. (2016). A balancing act: managing financial constraints and agency costs to minimize investment inefficiency in the Chinese market. *Journal of Corporate Finance, 36*, 111-130.

Guariglia, A. (2008). Internal financial constraints, external financial constraints, and investment choice: evidence from a panel of UK firms. *Journal of Bank Finance, 32*, 1795–1809.

Guariglia, A. (2008). Internal financial constraints, external financial constraints, and investment choice: Evidence from a panel of UK firms. *Journal of Banking & Finance, 32*, 1795-1809.

Hadlock, C., & Pierce, J. (2012). New evidence on measuring financial constraints: moving beyond the KZ index. *Review of financial studies, 35*(5), 1909-1940.

Haque, A, Abid, A., Qamar, M. A. J.., & Asi, S. (2019). Financial distress of companies and cash flow-investment-sensitivity: evidence from panel of non-financial firms. *International Journal of Economic Sciences, 8*(1), 52-68.

Harford, J., Mansi, S.A., & Maxwell, W.F. (2008). Corporate Governance and Firm Cash Holdings in the US. *Journal of Financial Economics, 87*(3), 535-555.

Hayford, S. (2012). *The Development of Small Medium Enterprises and their impact to the Ghanaian Economy.* Commonwealth Executive Masters in Business Administration, Unpublished Thesis, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana. Retrieved on 11/11/2019 form: http://hdl.handle.net/123456789/4837

Hoshi, T., Kashyap, A., & Scharfstein, D. (1991). Corporate structure, liquidity, and investment: evidence from Japanese industrial groups. *Quarterly Journal of Economics*, 106 (1):33–60

Husain, H., Alom, K., & Tarique, K. (2018). Nexus between firm level investment and financing constraint measures: a critical review. *Review of Economics & Finance, 12*(2), 88-103.

Jensen, M. C. & Meckling, W. H. (1976). Theory of the firm: managerial behaviour, agency costs and ownership structure. *Journal of Financial Economics, 3*, 305 – 360.

Jibran, S., Wajid, S. A., Waheed, I., & Muhammad, T. M. (2012). Pecking at pecking order theory: evidence from Pakistan's non-financial sector. *Journal of competitiveness, 4*(4), 86-95.

Kadapakkam, P. R., Kumar, P. C., & Riddick, L. A. (1998). The impact of cash flows and firm size on investment: The international evidence. *Journal of Banking and Finance, 22*(3), 293-320.

Kaplan, S. N., & Zingales, L. (1997). Do investment-cash flow sensitivities provide useful measures of financing constraints? *Quarterly Journal of Economics, 112*, 169–215.

Karimi, F., Sadeghi, M. (2009). Internal and external financial limitations and their relationship with investment in capital assets of companies listed in TSE. *Financial Accounting, 1*(4), 43-58.

Kashanipour, M., Rasekhi, S., Naghinejhad, B., Rasaeian, A. (2009). Studying the relationship between financial constraints and cash flows sensitivity. *Journal of Accounting Developments in Shiraz University*, 2(2), 51-74.

Kim, C.-S., Mauer, D.C., & Sherman, A.E. (1998). The determinants of corporate liquidity: theory and evidence. *Journal of Financial and Quantitative Analysis, 33*(3), 335–359.

Kumar, S. & Ranjani, K. S. (2018). Financial constraints and investment decisions of listed Indian manufacturing firms. *Financial Innovation, 4*(6), 23-34

Kuzmicheva, E. & Kuzmichev, K. E. (2013). *The influence of financial constraints and real options on corporate investment decisions*. Higher School of Economics Research Paper No. WP BRP 17/FE/2013. Retrieved on 05/09/2019 from: https://www.hse.ru/data/2013/09/18/12756 65084/17FE2013.pdf

Kwarteng, O. (2017). Financing small and medium size businesses: experiences from Kwaebibirem rural bank limited, Asuom, Ghana. Unpublished Thesis, University for Development Studies, Tamale, Ghana.

Kwenda, F. (2015). Investment and financing constraints: can working capital management make a difference in South Africa? *Banks and Bank Systems, 10*(1), 24-33.

Kyereboah-Coleman, A. (2007). The determinants of capital structure of microfinance institutions in Ghana. *South African Journal of Economic and Management Sciences, 10*(2), 270-281.

Lamont, O., Polk, C., Saá-Requejo, J. (2001). Financial constraints and stock returns. *Review of Finance Studies, 14*(2):529–554.

Lewellen, J., & Lewellen, K. (2016). Investment and cash flow: New evidence. *Journal of Financial and Quantitative Analysis, 51*, 1135-1164.

Marhfor, A., M'Zali, B. & Cosset, J. (2012). Firm's financing constraints and investment-cash flow sensitivity: evidence from country legal institutions. *ACRN Journal of Finance and Risk Perspectives*, 1(1), 50-66.

Mazur, K. (2007). The determinants of capital structure choice: evidence from Polish companies. *International Advances in Economic Research, 13*, 495 – 514.

Modigliani, F., &b Miller, M. H. (1963). The cost of capital, corporation finance and the theory of investment. *American Economic Review*, *48*, 261–297.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Finance Economics, 13*, 187–221.

Myers, S.C., (1984). The capital structure puzzle. *Journal of Finance*, *39*(3), 575 -592

Nkuah, J. K., Tanyeh, J. P. & Gaeten, K. (2013). Financing Small and Medium Enterprises (SMEs) in Ghana: challenges and determinants in accessing bank credit. *International Journal of Research in Social Sciences, 2*(3), 12 25

Nyanzu, F., & Quaidoo, M. (2017). *Access to finance constraint and smes functioning in Ghana,* MPRA Paper No. 83202, December, University Library of Munich, Munich.

Olawale, F., & Garwe, D. (2010). Obstacles to the growth of new businesses in South Africa: A principal component analysis approach. *African Journal of Business Management*, *4*(5), 729 – 738

Oordt, M. V. (2015). *A summary of introductory econometrics by Wooldridge.* SSRN Electronic Journal. 10.2139/ssrn.3401712.

Opler, T., Pinkowitz, L., Stulz, R., & Williamson, R. (1999). The Determinants and Implications of Corporate Cash Holdings. *Journal of Financial Economics, 52*(1), 3-46.

Portal, M. T., Zani, J., & da Silva, C. E. S. (2012). Financial frictions and substitution between internal and external funds in publicly traded Brazilian companies. *Revista Contabilidade & Finanças, 23*(58), 19 - 32.

Ross, S. A., Westerfield, R. W., & Jordan, B. D. (2001). *Essentials of corporate finance***.** 3rd ed. New York, McGraw-Hill.

Roychowdhury, B. (2015). Do internal funds play an important role in financing decisions for constrained firms? Claremont Colleges. CMC, Senior Theses. Paper 1090. Retrieved on 08/09/ 2019 http://scholarship.claremont.edu/cmc_theses/1090

Ruano, J. (2006). Investment and financing constrains: Evidence from the funding of corporate pension plans. *Journal of finance, 61*(1), 33 - 71.

Sadiq, R., Ehtesham, U. & Khan (2017). Sensitivity of Investment to Internal Funds and Its Impact on Asset Sales and Performance: Case of a Developing Economy. *Global Management Journal for Academic and Corporate Studies*, *7*(2), 1-20.

Saghafi, A., & ArabMazar, Y. M. (2010), the relationship between financial reporting and inefficiency of investment. *Financial Accounting, 4*(6), 1-20.

Saunders et al., (2013). Summary Research Methods for Business Students (Saunders et al.) - English version. Retrieved on 3rd October, 2020 from: https://www.worldsupporter.org/en/chapter/40519-summary-research methods-business-students-saunders-et-al-english-version

Scheuten, G. (2014). *The influence of financial constraints on the investment-cash flow sensitivity in Dutch SMEs*. Unpublished master thesis, University of Twente, Netherlands. Retrieve on 06/12/2019 form https://pdfs.semanti cscholar.org/9ce9/da9fd38735d2a11180a74480d9767b174b98.pdf?_ga =2.30430648.647846955.1583852329-286613086.1583852329

Setsoafia, E. D., Aboah, J., & Danso- Abbeam, G. (2015). Growth and constraint analysis of micro and small scale agro enterprises in Accra, Ghana. *International Journal of Economics, Commerce and Management*, *3*(3), 1 -19.

Tariverdi, Y., & Keivanfar, M. (2017). The effect of financial constraints on relatioship between financial reporting quality and investment inefficiency. *International Journal of Economics and Financial Issues*, *7*(5), 161-168.

Tariverdi1, Y. & Keivanfa, M. (207). The effect of financial constraints on relationship between financial reporting quality and investment inefficiency. *International Journal of Economics and Financial Issues*, *7*(5), 161-168.

Wale, L. E. (2014). Investment cash flow sensitivity as a measure of financing constraints: evidence from selected African countries. *Journal of Economics and Behavioural Studies, 6*(8), 647-657.

Watse, D. U. (2017). *Sources of financing for Small and Medium enterprises in Nigeria.* Retrieved on 6/5/2019 from https://www.semanticscholar. org/paper/Sources-of-Financing-for-SmallandMediuminWatse/19354d38e 8c6 8826f1194 cd49d8d0799db324317

Whited, T. M., & Wu, G. (2006). Financial constraints risk. *Review of Financial Studies, 19*(2), 531 – 559.

World Bank, (2017). Enterprise surveys indicator descriptions, The World Bank Group, International Finance Corporation IFC). Retrieved on 6 May, 2019 form http://www.enterprisesurveys.org

Yinusa, O. G., Adelopo, I., Yulia, R & Olawale, L. S. (2019). Capital structure and firm performance in Nigeria. *African Journal of Economic Review, 7*(I), 31-39.

APPENDICES

APPENDIX A

INTERNAL, FINANCE AND INVESTMENT

Internal Finance and investment based on size categories size	Internal finance	Investment (GHS)
Small	80.25%	25,000,000.00
Medium	78.38%	412, 000,000.00
SME (combined)	79.84%	35,000,000,000.00
Large	64.01%	109,000,000.00

Computed from ES dataset on Ghana, 2013.

APPENDIX B

Raw outputs from STATA version 14 (copied as picture)

```
. sureg (llinvest_expenditure intfunds intfunds2 prof_emp age agesq i.legalstatus largestowner sales_2
> 009 i.femaleown)(intfunds llinvest_expenditure i.legalstatus prof_emp age agesq largestowner sales_2009)
> if size<3, sm

Seemingly unrelated regression
```

Equation	Obs	Parms	RMSE	"R-sq"	F-Stat	P
llinvest_e~e	347	9	3.320496	0.3408	19.17	0.0000
intfunds	347	8	22.22558	0.0268	1.30	0.2393

	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
llinvest_expenditure						
intfunds	.1694837	.0346439	4.89	0.000	.1014607	.2375067
intfunds2	-.0012501	.0002565	-4.87	0.000	-.0017538	-.0007465
prof_emp	1.13e-08	2.44e-09	4.63	0.000	6.52e-09	1.61e-08
age	.241452	.0620296	3.89	0.000	.1196575	.3632466
agesq	-.002935	.0011094	-2.65	0.008	-.0051133	-.0007568
legalstatus						
2	-2.717439	.591452	-4.59	0.000	-3.878749	-1.556129
3	-2.077794	.8385894	-2.48	0.013	-3.724356	-.4312325
largestowner	.0435128	.0168499	2.58	0.010	.0104282	.0765974
sales_2009	8.28e-11	7.24e-11	1.15	0.253	-5.92e-11	2.25e-10
2.femaleown	-1.37484	.3686353	-3.73	0.000	-2.098652	-.6510286
_cons	4.710892	2.093299	2.25	0.025	.6007211	8.821064
intfunds						
llinvest_expenditure	.3228053	.3398759	0.95	0.343	-.3445376	.9901483
legalstatus						
2	-3.099218	4.080252	-0.76	0.448	-11.11075	4.912315
3	-5.095996	5.662083	-0.90	0.368	-16.21344	6.021448
prof_emp	-2.46e-08	1.68e-08	-1.46	0.144	-5.76e-08	8.45e-09
age	.5510877	.4225179	1.30	0.193	-.2785219	1.380697
agesq	-.0115318	.0074597	-1.55	0.123	-.0261788	.0031152
largestowner	.0383049	.1138324	0.34	0.737	-.1852038	.2618136
sales_2009	9.79e-10	4.80e-10	2.04	0.042	3.71e-11	1.92e-09
_cons	68.91891	12.36013	5.58	0.000	44.64993	93.1879

The Regression for the Manufacturing Sector

```
. sureg (llinvest_expenditure intfunds intfunds2 prof_emp age agesq i.legalstatus largestowner sales_2
> 009 i.femaleown)(intfunds llinvest_expenditure i.legalstatus prof_emp age agesq largestowner sales_2009)
> if size<3 & sector==1, sm

Seemingly unrelated regression
```

Equation	Obs	Parms	RMSE	"R-sq"	F-Stat	P
llinvest_e~e	237	9	3.205897	0.3763	15.65	0.0000
intfunds	237	8	20.99685	0.0394	1.22	0.2870

	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
llinvest_expenditure						
intfunds	.1710608	.0437795	3.91	0.000	.0850251	.2570964
intfunds2	-.0012934	.0003202	-4.04	0.000	-.0019227	-.0006642
prof_emp	2.05e-08	4.67e-09	4.39	0.000	1.13e-08	2.97e-08
age	.2618069	.0705864	3.71	0.000	.1230903	.4005236
agesq	-.0031099	.0012106	-2.57	0.011	-.0054888	-.0007309
legalstatus						
2	-2.928125	.7205775	-4.06	0.000	-4.344206	-1.512044
3	-1.764296	1.015289	-1.74	0.083	-3.759544	.2309518
largestowner	.0535962	.0204046	2.63	0.009	.0134971	.0936954
sales_2009	5.35e-11	7.76e-11	0.69	0.491	-9.90e-11	2.06e-10
2.femaleown	-1.337407	.42686	-3.13	0.002	-2.176274	-.4985405
_cons	3.651852	2.553735	1.43	0.153	-1.366755	8.67046
intfunds						
llinvest_expenditure	-.0231504	.4022869	-0.06	0.954	-.8137259	.7674251
legalstatus						
2	-5.738645	4.868529	-1.18	0.239	-15.30629	3.829004
3	-3.618881	6.663332	-0.54	0.587	-16.71368	9.475918
prof_emp	-1.34e-08	3.20e-08	-0.42	0.674	-7.62e-08	4.94e-08
age	.566967	.4736835	1.20	0.232	-.3639172	1.497851
agesq	-.0120911	.0079773	-1.52	0.130	-.0277682	.003586
largestowner	.1506068	.1352251	1.11	0.266	-.1151379	.4163515
sales_2009	1.27e-09	4.96e-10	2.55	0.011	2.91e-10	2.24e-09
_cons	63.95975	14.2453	4.49	0.000	35.96484	91.95466

SURE model for assets finance and investment expenditure

Seemingly unrelated regression

Equation	Obs	Parms	RMSE	"R-sq"	F-Stat	P
llinvest_e~e	231	8	3.51892	0.2900	13.12	0.0000
internal_a~s	231	8	22.47164	0.0287	2.89	0.0038

	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
llinvest_ex~e						
internal_as~s	.0393378	.010144	3.88	0.000	.0194014	.0592742
prof_emp	1.17e-08	2.61e-09	4.47	0.000	6.55e-09	1.68e-08
age	.2453552	.0756621	3.24	0.001	.0966539	.3940565
agesq	-.003083	.0013952	-2.21	0.028	-.005825	-.0003409
legalstatus						
2	-2.515619	.7905104	-3.18	0.002	-4.069235	-.962002
3	-2.767561	1.023336	-2.70	0.007	-4.778757	-.756366
largestowner	.0141229	.0211862	0.67	0.505	-.0275152	.0557609
sales_2009	2.35e-11	8.65e-11	0.27	0.786	-1.46e-10	1.93e-10
2.femaleown	-1.105484	.4873312	-2.27	0.024	-2.063252	-.1477154
_cons	8.194722	2.322789	3.53	0.000	3.629667	12.75978
internal_as~s						
llinvest_ex~e	1.668746	.4088997	4.08	0.000	.8651216	2.47237
legalstatus						
2	1.163434	5.169501	0.23	0.822	-8.996359	11.32323
3	5.082542	6.647235	0.76	0.445	-7.98149	18.14657
prof_emp	-5.72e-09	1.75e-08	-0.33	0.743	-4.00e-08	2.86e-08
age	.0651614	.4955212	0.13	0.895	-.908703	1.039026
agesq	.0009406	.0090278	0.10	0.917	-.0168021	.0186832
largestowner	.0653966	.1343195	0.49	0.627	-.198586	.3293793
sales_2009	9.96e-11	5.53e-10	0.18	0.857	-9.88e-10	1.19e-09
_cons	59.67093	14.65876	4.07	0.000	30.86158	88.48029