

UNIVERSITY OF CAPE COAST

**EFFECTS OF MACROECONOMIC UNCERTAINTY ON CAPITAL
STRUCTURE CHOICES FOR NON-FINANCIAL FIRMS ON THE
GHANA STOCK EXCHANGE**

BY

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DECLARATION

Candidate's declaration

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

Candidate's Signature..... Date.....

Candidate's Name: CHRISTIAN WUTSIKAH

Supervisor's declaration

I hereby declare that the preparation and 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.....

Supervisor's Name: DR. JOHN GARTCHIE GATSI

ABSTRACT

The study examined the effects of macroeconomic variables on capital structure choice of non-financial listed firms in Ghana. The capital structure variables used were short term debt, long term debt and total debt. Macroeconomic variables were measured using inflation rate, interest rate and GDP growth rate. The study employed pure quantitative method and panel data covering the period from 2004 to 2014. Annual data for capital structure and macroeconomic variables were collected from 2004 to 2014 and the panel ordinary least square estimator was used to establish the relationships between capital structure and macroeconomic variables. The result revealed that 59.40% of the total capital of the non-financial firms in Ghana is made up of debts. Of this 48.46% constitute short-term debt while 12.40% is long-term debt. It is therefore concluded that non-financial firms listed on the GSE rely heavily on debt to finance their operations. The regression results for inflation rate, interest rate and GDP growth rate had negative relationships with short term debt and total debt. Interest rate had a positive relationship and inflation and GDP growth rates had negative relationships with long term debt. The overall results show that macroeconomic variables had no significant effect on capital structure of non-financial firms listed in Ghana. While by entering control variables such as return on asset, return on equity, asset structure and firm size, the effects become significant in relation to short term debt. It is therefore recommended that

management should focus on internal factors and closely observe the economic fundamentals so as to respond to movements in macroeconomic variables.

KEY WORDS

Capital structure

Fixed effect regression

Macroeconomic factors

Non-financial listed firms on the GSE

Panel data

Panel unit root tests

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DEDICATION

This work is dedicated to my lovely wife Mrs. Elizabeth Wutsikah and the entire Wutsikah family.

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CHAPTER ONE

INTRODUCTION

There is growing trend or direction as to what determine capital structure of firms in Ghana. Studies such as Abor and Biekpe (2005); Amidu (2007) and Gatsi and Akoto (2010) presents empirical results on what determine capital structure of firms in Ghana. These studies found out that firm's profitability, firm size, asset structure and growth opportunities were the factors that influence capital structure decisions of firms in Ghana. However, these factors are the firm's internal factors. In discussing factors influencing capital structure decisions, earlier researchers focused on firms' internal factors, though a few of other developing countries concentrate on the effects of macroeconomic variables on capital structure. You and He, (2011) argued that studies relating to exploratory power of macroeconomic variables in predicting capital structure decisions were uncommon even though some macroeconomic factors had more significant impact on capital structure decisions. Frank and Goyal (2003) presents empirical results and conclude that around 30 percent of differences in the capital structure inside the country can be explained by internal factors. This means that there are other factors that influencing capital structure decision than internal factors. In view of the fact that not much work has been done on the effects of macroeconomic factors on capital structure decision of firms in Ghana, it motivates the current study to fill the research gap on how macroeconomic variables influence capital structure choice of non-financial listed firms in Ghana.

Background of the Study

The state of a country's economy affects the performance of its organizations or companies either positively or negatively. Whenever the economy is performing well, the general expectation of most investors and shareholders is that companies would perform well and thus lead to overall growth in wealth. The economic performance is judged by the stability in macroeconomic indicators. Brinson, Singer and Beebower (1991) defined macroeconomic indicators as those that are pertinent to a broad economy at the national level and affect a large population rather than a few selected individuals. In other words, it is the broad economy that affects businesses and activities of the populace either positively or negatively. Thus, macroeconomic uncertainty is to economic variables or indicators of being uncertain and subject to change. The variables identified as macroeconomic indicators having influence include inflation rate, gross domestic product (GDP) growth rate, interest rate and currency exchange rate. These variables are closely observed by government, businesses, and consumers and by extension, managers of firms since they have an impact on their financial performance. It is the expectation of policy makers at both macro and micro levels in an economy that these variables would remain stable and favourable to sustain business and economic growth. Moreover, it is the wish of potential and existing investors that these macroeconomic elements remain favourable so as not to threaten the firm's returns of its securities (Osoro & Ogeto, 2014).

The effect of unstable macroeconomic conditions in a country is unfavourable for business activities. In other words, the economic disorders like higher inflation, rising level of fuel prices and energy crises, power shortages and increasing cost of conducting businesses, highly affect the operational activities of firms. In effect, the end result of these unfavourable macroeconomic indicators is the collapse of businesses. According to Vladimir (2010), macroeconomic variables represent the basic indicators of economic activity in any country. Therefore, a progressive economic growth in a country is essential for effective and sound decision making of firms' financial policies.

The importance of the macroeconomic factors cannot be neglected in any business cycle when business or a firm is making decision to maximize its value. According to Damodara (2010), corporate finance is built on three decisions including the investment decision, the financing decision, and the dividend decision. Any decision be it investment, financing, or dividend that increases the value of a business is considered a good one, whereas one that reduces a firm's value is considered a poor one. Considering the financing choice of a company as one of its major decisions will have substantial effects on the cost of capital and consequently on its value. In this regard, the state of the economy cannot be ignored. "In the economic and financially integrated world of today, no company can remain unaffected by what happens in the world economy. Thus, interconnectedness places demands on company management to consider the connection between their own company's development and changes in the company's macroeconomic environment" (Oxelheim, 1999). Accordingly, Ghana

is not in isolation and cannot be left out of whatever happens in the world economy. Thus, no company in Ghana can remain unaffected if the macroeconomic factors are unstable and unfavourable for business activities. Therefore, the more the management of a company understands the power and dynamics of macroeconomic factors on corporate capital structure, the more flexible and efficient it will be during the decision making process.

Capital structure is one of the most important areas of firms' strategic financial decision making. This is because financing decisions have gained much attention in finance literature over the years since the seminal works of Modigliani-Miller (1958). These financing decisions vary from country to country, and are mostly explained by firms' internal factors as well as institutional and legal environment.

Pandey (2010) defined capital structure choice as the various means of financing a firm; that is the proportion of debt and equity that firms use to finance business. Gatsi and Akoto (2010) described the term capital structure as the combination of debt and equity that make the total capital of firms and explained that the proportion of debt to equity is strategic financial choice of corporate managers. Therefore, the capital structure of a firm is also termed as leverage. It comprises a mix proportion of debt (long-term and short-term), common stock and preferred stock. A firm requires all these financing instruments or a combination of these in order to carry out its operational activities. These are the sources of funds which enable a firm to finance its assets (resources). Debt financing comprises issuance of bond or long-term debt instruments, whereas

equity is categorized in terms of common stock, preferred stock and retained earnings. The short-term debt available to a firm is also a source of additional funds for any business. Therefore, capital structure decisions of a company are of relative importance, on the basis of which future projections can be made.

Moreover, managers who are the main decision-makers of a firm may make a choice between internal and external sources of funds. According to Bokpin (2009), internally, firms can make use of their retained earnings that they are profitable and operating cash flow whereas external funding is normally a choice between debt and equity or a combination of both. A combination of these instruments determines the capital structure of a firm. Therefore, the goal in decision making around capital structure is intended to maximize a firm's value or firm's equity value. According to Chen (2010), companies decide on quantity of debt to hold and timing of debt restructuring, and when to default based on their cash flows as well as macroeconomic conditions. Chen (2010) presents the fact that the economy is made of a cross-sectional mix of firms in addition to government and households. Thus, firms get the same macroeconomic shocks but experience different peculiar shocks. That is, capital structure of firms should be determined by peculiar factors which are specific to the individual firm as well as macroeconomic factors which are similar for firms in a particular economy.

There are several theories in the finance literature (trade off theory, pecking order theory, agency theory and market timing theory) that have made efforts to explain the mix of financing sources of a firm and its behavior according to capital structure choices. However, there is no universally accepted

theory that explains a firm's preference in choosing the financing source (Camara, 2012). Capital structure determinants have been at the center of attention in the past decades. Over the years, studies such as Modigliani and Miller (1958); Jensen and Meckling (1976); Myers (1977); Myers and Majluf (1984) research on capital structure have enhanced the overall perceive of how firms make their financing decisions. Based on these studies, most research conducted on capital structure determinants in both developed countries (Harris & Raviv, 1990; Rajan & Zingale, 1995) and developing countries (Booth et al., 2001) give consideration to the special firm's characteristics and they considered almost similar agreements on the key internal factors affecting capital structure.

A good number of studies have been conducted on capital structure of firms in developing countries especially in Africa for which the studies were mostly on internal factors that explained the choices of capital structure. Using Ghanaian firms, Abor (2005) maintains that capital structure decision is crucial for any business organization that aims at maximizing returns to various organizational constituencies. He further explains that capital structure decision is crucial because of its impact on a firm's ability to deal with its competitive environment. In addition, few studies have been conducted on the capital structure and performance of the listed firms in Ghana. Mention can be made of studies carried out by Abor (2005) on capital structure on the profitability of listed firms in Ghana; Abor and Biekpe (2005) on what determine the capital structure of Ghanaian firms. Others are Amidu (2007) on study of determinants of capital structure of banks in Ghana; and Gatsi and Akoto (2010) studies on capital

structure and profitability of banks in Ghana. These studies have also identified the internal factors that influence the capital structure of listed firms in Ghana. In other words, determinants of capital structure decisions have been identified to be firms' internal factors. These key internal factors such as profitability, firm size, asset structure, growth opportunities and industry classification were identified as factors affecting capital structure decisions (Titman and Wessels, 1988; Camara, 2012). However, Frank and Goyal (2003) have come to the conclusion that around 30 percent of differences in the capital structure inside the country can be explained by internal determinants (firm characteristics and industry factors), which show that there are other factors than internal determinants influencing financing decisions. Hackbarth et al. (2006) revealed that apart from internal determinants, external factors like macroeconomic conditions have considerable impacts on target capital structure. The study suggests that internal factors and their impact can be managed by the firm, while macroeconomic factors cannot be controlled by managers and both types of determinants have significant effects on the corporate capital structure.

Considering the fact that external sources of financing are directly affected by the macroeconomic conditions while firms' characteristics including probability of bankruptcy, profitability, and capital investment are indirectly influenced by stages of life cycle through cost of capital, cash flows, leverage and the balance sheet components, it is implied that the capital structure and its adjustments are both directly and indirectly affected by macroeconomic conditions and different stages of corporate life cycle (Camara, 2012). In this

regard, the area of external factors affecting capital structure decisions of firms in Ghana has not seen much attention on the effect of uncertainty of macroeconomic variables on capital structure choices. Thus, the need for the current study to examine the extent to which external factors like the country's macroeconomic conditions could influence the financing decisions of non-financial listed firms on the Ghana Stock Exchange (GSE).

Statement of the Problem

What determines capital structure decision of firms has been a major issue in Ghana. This issue is relevant to managers of firms and policy makers in general. In discussing factors influencing capital structure decisions of firms in Ghana, Abor (2005); Abor and Biekpe (2005); Amidu (2007) and Gatsi and Akoto (2010) present empirical results on what determine capital structure of firms in Ghana. These researchers found out that profitability, firm size, asset structure and growth opportunities were the factors that influence capital structure decisions of firms in Ghana. These factors are identified as determinants within the firms and are seen to be factors influencing capital structure decisions of firms in Ghana.

However, Frank and Goyal (2003) presents empirical results and conclude that around 30 percent of differences in the capital structure inside the country can be explained by internal factors. This means that there are other factors than internal factors influencing capital structure decisions. Recent studies in a few other developing countries concentrate on the impact of macroeconomic

fundamentals on capital structure of firms. You and He (2011) argued that studies relating to exploratory power of macroeconomic variables in predicting capital structure decision were uncommon even though some macroeconomic factors had more significant impact on capital structure decisions since it helps firms to make good choice in an economic environment. So, for a firm to make capital structure choice, it looks out for economic performance which is normally judged by stable macroeconomic indicators.

The issue has been that the economic disorders like higher inflation rate, high interest rates, energy crises, power shortages and high cost of conducting businesses do affect operational activities of firms, especially non-financial listed firms in Ghana. This is because these firms are big companies with huge assets and contribute very largely to gross domestic product of Ghana and also provide jobs as well as social responsibility to the people of Ghana. These companies engage in exploration, production, manufacturing, processing, marketing and distribution of all kinds of goods and services and deliver goods and services to meet the needs of individuals, businesses and the government. For these reasons, these firms cannot be ignored when there are uncertainties in macroeconomic indicators. Therefore, the importance of macroeconomic factors of a country cannot be neglected in any business cycle when business or a firm is making capital structure decisions to maximize its value. The above, motivate the current study, as it examines how macroeconomic variables influence capital structure decisions. This will help contribute to filling the research gap on how

macroeconomic variables influence capital structure choice of non-financial firms on the Ghana Stock Exchange.

Research Objectives

The main objective of the study is to examine the effects of macroeconomic uncertainty on capital structure choice of non-financial firms listed on the Ghana Stock Exchange (GSE).

The specific objectives of the study will be:

1. To establish effects of inflation rate on capital structure choice of non-financial listed firms on the GSE.
2. To establish effects of interest rate on capital structure choice of non-financial listed firms on the GSE.
3. To establish effects of gross domestic product rate on capital structure choice of non-financial listed firms on the GSE.
4. To establish possible signs or relationships between macroeconomic variables and capital structure choice of non-financial listed firms on the GSE.

Research Questions

The research questions are:

1. To what extent can inflation rate influence capital structure choice of the non-financial listed firms on the GSE?
2. To what extent can interest rate influence capital structure choice of the non-financial listed firms on the GSE?

3. To what extent can gross domestic product rate influence capital structure choice of the non-financial listed firms on the GSE?
4. What are the possible signs or relationship between macroeconomic variables and capital structure choice of the non-financial listed firms on the GSE?

Significance of the Study

The question of how firms finance their operations and growth aspiration is, therefore a pertinent one, given the limited availability of funding resources during more certain macroeconomic conditions and the associated costs of obtaining external funding. Capital to fund a firm's activities can be accessed internally or externally. Firms' internal funding can make use of their retained earnings provided that they are profitable and their operating cash flow allows for it. Firms' external funding is normally a choice between debt and equity or a combination of both. A combination of these instruments determines the capital structure of a firm. The goal of this capital structure decision making is intended to maximize a firm's value or firm's equity. However, the question of how macroeconomic conditions influence capital structure has only recently started to received attention in developed nations and little in some developing nations.

Through knowledge of what macroeconomic factors and how they influence capital structure choices of firms, managers of companies can better position their firms to withstand macroeconomic shocks, since macroeconomic factors cannot be controlled by managers of the firms. This knowledge can assist

a firm's management in their decision making around capital structure in order to maximize a firm's value in the context of changing macroeconomic conditions.

The purpose of this study, among other things, is to contribute to literature by empirically examining the effects of macroeconomic variables on capital structure choices for non-financial listed firms on the Ghana Stock Exchange. The research findings would prove useful for policy makers and managers of the firms to adopt appropriate policies to capital structure decisions with changes in macroeconomic conditions.

Delimitation

This study examines the effects of some selected macroeconomic variables such as inflation rate, interest rate and gross domestic product on capital structure decisions or leverage of non-financial listed firms on the GSE using annual data from 2004 to 2014.

The study covered only non-financial firms listed on the GSE. Financial firms such as banks, insurance firms and other financial firms listed were not considered based on the reason that such firms are subject to special regulations and financial structure. In effect, the finding may not represent all listed firms on the GSE. The study was also restricted to only secondary data. Use of annual time series data for macroeconomic variables reported and published on Bank of Ghana and World Development Indicator of World Bank database were obtained; and computation of leverage ratios such as short-term debt, long-term debt and total debt to total capital from balance sheets of financial statements of 23 listed non-financial firms on the GSE over the period were also obtained. These debt

ratios make use of book values leverage measures of capital structure. That is, the book values of leverage ratios were used in the study. The reason is that the book values of capital structure better reflect management's target of capital structure.

The macroeconomic data obtained from Bank of Ghana and World Development Indicator of World Bank were downloaded into an excel spreadsheet for each company over the eleven (11) years. The leverage ratios were computed from each of the firm's balance sheet into the spreadsheet. Each of these spreadsheets would then be put together into single Excel workbook where the data for macroeconomic variables and data for leverage ratios for all the firms over the period would be compiled showing computed short-term debt, long-term debt and total debt; and figures for inflation rate, interest rate and gross domestic product over the period. Once the two datasets having the same frequency and combined and aligned into one excel workbook, this data could then be uploaded into the statistical software, EViews version 7 for statistical analysis.

Limitations of the Study

The study was conducted on 23 non-financial listed firms on the Ghana Stock Exchange (GSE). In other words, the study was restricted or limited to only non-financial firms listed on the GSE. Financial firms such as banks, insurance firms and other financial firms listed were not considered based on the reason that such firms are subject to special regulations and financial structure. Hence, the results from this study may not be applicable to all listed firms on the GSE. The

study focuses on macroeconomic factors and does not include firm-specific factors and industry factors. The reason for excluding these factors from the study is that the effect of these parameters on capital structure has been generally well established in the literature. However, inclusion of some firm-specific and industry factors as control variables may be determined along with, even though that is not the main focus of the study.

Besides, during the period of the study, the researcher could not obtain all the needed data (financial statements) from the Ghana Stock Exchange database for some non-financial listed firms because some were not listed before 2004. As a result, those firms would be excluded in the study due to their unavailability of financial data.

Another problem was on the issue of the preparation of the financial statements. Some of the companies did not separate long-term liabilities from short-term liabilities. To obtain accurate data, the researcher had tedious task of re-arranging the financial data of those companies. It was also observed that whereas some of the firms were not listed in 2004, others were listed but financial statements for some of the firms had either been omitted or not published. For this reason, those firms whose data are not available would not be included in the study.

Organization of the Study

The study is structured into five chapters. Chapter one comprises the background of the study, the statement of the problem, the objective of the study,

research questions, significance of the study, the scope of the study and the limitations of the study.

Chapter two explores the relevant theory and reviews existing literature on the subject of capital structure in the context of changing macroeconomic conditions.

Chapter three discusses the methodology selected for the study and the reasons for the selection. The selected research methodology and approach is further described in terms of the following aspects: the research design, target population, sample and sampling procedures. It also discusses the data collection procedures, definition of variables and measurement, panel unit root test, panel data, data processing and analysis and model specification.

Chapter four presents and discusses the research findings for the study based on the research methodology. Both descriptive and analytic results are presented.

Chapter five provides the summary, conclusions of the results of the study, and recommendations based on the research findings made. Furthermore, recommendations on future research, based on the study are made.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Introduction

This Chapter basically gives an overview on capital structure theory and empirical literature in the context of changing macroeconomic conditions. Determinants of capital structure for companies in the literature are then evaluated, with specific focus on the effect of macroeconomic variables identified in the literature.

Theories of Capital Structure

The relationship between capital structure and firms' value has been the subject of considerable debate with the debate centering on whether there is an optimal capital structure for an individual company or whether the proportion of debt use is irrelevant to individual company's value.

Theoretically, corporate capital structure came from the traditional view, which begins with the observation that debt is generally cheaper than equity as a source of investment finance. Hence, a firm can lower its average cost of capital by increasing its debt relative to equity (that is its leverage), provided that the firm's cost of debt and equity remain constant.

According to Lemma & Negash (2013) there is currently no one universal theory that explains capital structure decisions of firms. Instead, there are

conditional theories, namely: trade off theory by Modigliani & Miller (1958), Titman & Wessels (1988); pecking order theory by Myers (1984), Frank & Goyal (2009); agency theory by Jensen & Meckling (1976) and market timing theory by Baker & Wurgler (2002).

The trade-off theory

The trade -off theory which states that optimal capital structure is obtained where the net benefit of debt financing equals to the related costs such as financial distress and bankruptcy costs. In other words, the capital structure decisions of firms depend on benefits and costs using more debt. Less debt is used if expected cost of bankruptcy is higher than the tax benefit of using debt (example Kim and Sorensen, 1986, Altman, 1984, and Graham, 2000). One of the most influential papers ever written in corporate finance containing one of corporate finance best-known theorem is the Modigliani and Miller (1958). They first argued that in absence of taxes, transaction costs and possibility of default, the value of a firm is unaffected by its leverage. Modigliani and Miller (1963), however, ultimately reversed this claim, explaining that leverage has a positive effect on the value of the firm and it is maximized when a firm is entirely financed with debt. In view of this theory, issuing equity means moving away from the optimum and should, therefore, be considered as bad news.

According to Myers (1984), firms adopting this theory could be regarded as setting a target debt-to-value ratio with a gradual attempt to achieve. Myers (1984), however, suggests that managers will be reluctant to issue equity if they feel it is undervalued in the market. The consequence is that investors perceive

equity issues to only occur if equity is either fairly priced or overpriced. As a result, investors tend to react negatively to an equity issue and management is reluctant to issue equity, and therefore optimal capital structure (leverage) is said to be chosen dynamically to maximize individual firm value. So, according to this theory, capital structure decisions depend on benefits and costs of using more debt. Harkbarth et al., (2006) affirmed that, if a firm determines its optimal capital structure by balancing the related benefits and costs of debt, then both benefits and costs should depend on macroeconomic conditions. Thus, trade-off theory predicts a positive impact of inflation rate, GDP growth rate and interest rate on capital structure decision of firms. Tax considerations in the trade-off theory make debt financing more attractive due to apparent inflation. GDP is associated with higher profits for firms and consequently the theory predicts the higher profits make debt financing more attractive due to larger tax shield benefits.

Pecking order theory

Although the pecking order theory has long roots in the descriptive literature (Frank & Goyal, 2009), it was first clearly articulated by Myers (1984). The pecking order theory states that a firm will finance its activities in a specific order that sequentially starts with internal funding, followed by debt, and as a last resort equity (Myers, 1984). The reason for this ‘pecking order theory’ is said to be the presence of information asymmetries and transactional cost that firms face when raising capital from external sources (Myers, 1984). Others have argued that although the pecking order theory is mostly articulated in terms of asymmetric information, it can also be caused by macroeconomic conditions, tax, agency, or

behavioral considerations (Frank & Goyal, 2009). It has been argued that managers of a firm know more than the rest of the market about their firm's value (information asymmetry); therefore, when a firm issues equity the market penalizes it (Myers, 1984).

According to Kayo & Kimura (2011), managers tend to issue new shares when prices are overvalued to the benefit of old shareholders; consequently, new shareholders might demand a discount on stock price in order to buy. Furthermore, from an outside investor's point of view, equity is more risky than debt; therefore a rational investor will negatively revalue a firm's securities when it announces a security issue (Frank & Goyal, 2009). Accordingly, managers avoid issuing new shares even though this might be at the expense of potentially profitable investments at times (Kayo & Kimura, 2011). Those within the firm view retained earnings as a better source of fund than outside financing (Frank & Goyal, 2009). According to this theory, there is no optimal or targeted capital structure (Frank & Goyal, 2009; Myers, 1984). Pecking order theory implicitly assumes that managers behave rationally but not necessarily opportunistically unlike the agency theory (Kayo & Kimura, 2011). Thus, pecking order theory predicts a negative relationship between GDP and interest rate on capital structure due to more internal funds available for firms.

The agency theory

An agency relationship has been defined as a "contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making

authority to the agent” (Jensen & Meckling, 1976). The manager of a firm is the agent, and outside debt and equity holders are the principals. They further argued that agent (management) will always act in the best interest of principal (debt and equity holders); therefore, principals have to limit divergence from their interest by establishing appropriate incentives for the agent and by incurring monitoring costs. These additional costs to prevent the agent from diverting from the interests of the principals are referred to as agency costs (Jensen & Meckling, 1976). The agency theory states that there is a conflict of interest between a firm’s management, and outside debt and equity holders, and propose that the capital structure of a firm is determined by the management’s attempt to balance agency costs of debt against benefits of debt (Jensen & Meckling, 1976). An assumption made in the agency theory is that managers behave in an opportunistic and rational manner in order to maximize their own satisfaction at the expense of shareholders (Kayo & Kimura, 2011). According to this view, capital structure would discipline management behaviour in such a way that firms with few investment opportunities and high free cash flow would increase the use of debt (Kayo & Kimura, 2011). According to this theory, there is optimal capital structure and it is said to be achieved when agency costs are minimized and firm value is maximized (Jensen & Meckling, 1976).

There are some studies that have contradicted the agency theory (Camara, 2012; Levy & Hennessy, 2007). They argued that a firm’s management engages in tactical managerial activism whereby financial managers actively replace equity with debt during economic expansions and replace debt with equity during

economic contractions. This school of thought contradicts agency theory, as the opposite behaviour is predicted by the agency theory. Thus, the agency theory predicts a positive relationship between GDP and capital structure. Due to a rise in GDP, firms are characterized by more profits and cash, aggravating the free cash flow problem postulated by Jensen & Meckling (1976).

Market timing theory

Market timing theory states that firms consider conditions in the securities market and time of raising funds in accordance with market condition (Bakar & Wurgler, 2002; Lemma & Negash, 2013). The basic idea is that when managers need to finance their companies, they consider current prevailing conditions in both debt and equity markets and then proceed to make use of whichever market is more favourable (Frank & Goyal, 2009). (Tsyplakov, 2008) argued that firms take advantage of mispricing in equity markets when issuing equity, so that more equity is issued when market is overpriced than when they are underpriced. Axelson et al., (2013) further argued that firms should issue more debt when debt market is overvalued, and more favourable interest rates are on offer.

Frank & Goyal (2009) suggest that if both debt and equity markets are unfavourable, firms may defer issuances. They, however suggest that if conditions are unusually favourable, firms may raise funds even if there is no current need for funds. According to the market timing theory, there is no optimal capital structure; instead, “capital structure evolves as the cumulative outcome of past attempts to time the equity market” (Baker & Wurgler, 2002). Market timing theory, according to Frank & Goyal (2009) suggest that stock returns and debt

market conditions will have an important role to play in capital structure decision, but has nothing to say about most factors traditionally considered in corporate capital structure studies. According to the market-timing theory, if inflation is expected, managers will time the market by increasing the capital structure (leverage) in order to pay off the debt in devalued currency (dollar). In a similar vein, a recession often leads to a decrease in stock valuation and therefore, companies forego to issue equity and increase the leverage. Here, a positive relationship is expected (Frank & Goyal, 2009). Finally, an increase in the discount rate leads to a decrease in share prices, making equity issues less attractive. Hence, a positive relationship between interest rate and leverage can be expected.

Review of Empirical Literature

Capital structure decisions have been described in the literature to be determined by a firm's characteristics and industry factors by most studies over past decades and it was of late that the impact of country or macroeconomic factors on capital structure begins to receive attention in the literature. There is some disagreement about how and the extent to which these three categories of factors, which is a firm's characteristics, industry factors and macroeconomic factors impact on capital structure of companies. There is a view that a firm's factors, and time are more significant determinants of capital structure, and macroeconomic factors and industry factors play a role, but a less important one (Kayo & Kimura, 2011). Some of this research has found that industry factors according to Kayo & Kimura (2011) and macroeconomic factors according to De

Jong et al., (2008) have both a direct and indirect impact on the capital structure decisions. In view of this, the direct and indirect effects of macroeconomic and industry factors in strengthening firms' specific factors impact on capital structure choices has received limited attention in the literature. Though the issue of firms' characteristics and industry factors will not be pursued further in the current study, as previously stated, the focus in the study is on the direct impact of macroeconomic conditions on capital structure choices.

Little attention has been given to the impact of macroeconomic conditions on capital structure choice within the literature (Hackbarth et al., 2006). The studies by Hackbarth et al., (2006), and Booth et al. (2001) were some of the first papers to demonstrate that macroeconomic conditions influence financing policies of firms. Furthermore, according to Bokpin (2009), financing decisions, and therefore capital structure choices within companies have been reported to reflect the state of the economy.

Hackbarth et al., (2006) and Bokpin (2009) postulated that if optimal leverage is determined by balancing the tax benefit of debt and cost of debt, then both the benefit and cost of debt will be dependent on macroeconomic conditions. They argued that the tax benefit of debt depends on the level of company cash flows which in turn depends on whether the economy is in recession or is expanding. Hackbarth et al., (2006) and Bokpin (2009) further argued that costs of debt will depend on the probability of default and loss given default; both of which should be dependent on the current state of the economy. It has been reported that defaults are more likely during recessions, when they are more

costly and harder to bear (Arnold et al., 2012). Firms tend to default at higher cash flow levels during recessions than when the economy is expanding (Chen, 2010). That is, when operating cash flows of companies are dependent on economic conditions, it would be expected that capital structure choices will be adjusted according to the economy's business cycle phase (Hackbarth et al., 2006). Evidence of this has been presented in the literature, where a survey of chief financial officers of firms revealed that they account for variations in macroeconomic conditions when making capital structure decisions (Graham and Harvey, 2001).

There are conflicting views in the literature on how macroeconomic conditions affect leverage. One view is that leverage varies counter-cyclically with macroeconomic conditions (Axelson et al., 2013; Chen, 2010); that is, leverage increases during contractions and decreases during expansions. Another view is that the variation of leverage with macroeconomic conditions is different for financially constrained and unconstrained companies (Levey & Hennessy, 2007). According to Levey & Hennessy (2007), leverage has been reported to vary counter-cyclically with macroeconomic conditions for financially unconstrained firms while for financially constrained firms, leverage was reported flat over the business cycle by some (Levey & Hennessy, 2007). Others have reported leverage to vary pro-cyclically with macroeconomic conditions (Korajczyk & Levey, 2003). Thus, Korajczyk & Levey, (2003) defined a firm as financially constrained if it does not have sufficient cash flow to take on

investment opportunities and faces severe agency costs when assessing financial markets.

In view of this review, various studies are conducted on multiple aspects of the firms' choices of leverage, shedding light on several factors that affect the firms' capital structure decisions. Firms performing their business activities also belong to an economic group; therefore, the existence of economic factors in the economy has a substantial impact on a firm's operational activities and leverage measures.

Macroeconomic Variables

Many studies have investigated the relation between capital structure and firm-level determinants and they have introduced almost a same set of factors. However, Mokhova & Zinecker (2014) have found that external determinants of capital structure play a substantial role in financial decision making process and the knowledge about the power and direction of such influence support managers to make effective and accurate financial decisions for stable and successful development. Variables considered to define macroeconomic conditions in a particular country, in previous capital structure studies include gross domestic product (Axelson et al. 2013; Bokpin, 2009; Booth et al., 2001; Frank & Goyal, 2009; Kayo & Kimura, 2011 and Lemma & Negash,2013), inflation (Bokpin, 2009; Frank & Goyal, 2009; and Lemma & Negash, 2013), and interest rate (Bokpin, 2009; Axelson et al., 2013; Graham & Harvey, 2001).

Gross domestic product and capital structure

Gross domestic product is one of the mostly used external factors in the literature. There are varying views on how changes in economic growth influence capital structure choice. Economic growth has been represented in previous studies by gross domestic product rate, which is defined as change in gross domestic product over a set period (Kayo & Kimura, 2011). One view is that leverage is negatively influenced by the GDP growth rate (Axelson et al., 2013; Kayo & Kimura, 2011). This view is supported by those who reported that leverage varies counter-cyclically with macroeconomic conditions (Axelson et al., 2013 and Chen, 2010). This was further supported by the argument that when firms enter into recession, they are stuck with the debt issued in good times; as a result, leverage is likely to increase because equity value falls more than debt during a recession (Chen, 2010), hence the negative relationship between GDP growth rate and leverage.

Another view is that GDP growth rate has a positive effect on leverage (Booth et al, 2001 and Frank & Goyal, 2009). This counter argument of GDP growth rate influencing leverage positively is because of firms in countries with higher GDP growth rates are willing to increase their leverage in order to finance future investments (De Jong et al., 2008) is plausible. Empirical results suggest that GDP relates positively with firm's leverage, advocating that as countries become richer and richer, firms operating in those countries are able to find out several opportunities to invest their additional funds. Furthermore, when the value of a country's GDP improves, firms operating in those countries are more likely to have easily available external funds in order to meet their additional financing

needs. Analysis of GDP growth rate shows that it positively relates with firms leverage. As a rule, during the period of economic expansion, when interest rates are rising, banks are willing to increase loans to the private sector; therefore, financial leverage should rise (Mokhova & Zinecke, 2014) but according to the pecking order theory, when product market goes up, it leads to more retained earnings therefore the use of debt will decrease (You & He, 2011). These two different views raise the possibility that the effect of GDP growth rate on leverage is conditional as proposed by some in the literature (Korajczyk & Levy, 2003; Levy & Hennessy, 2007).

Inflation rate and capital structure

Another macroeconomic factor identified in the literature review worth exploring further is inflation. Inflation represents an overall index in the cost of living for a particular country (Mokhova & Zinecke, 2014). According to Lemma & Negash (2013), inflation rate is ordinarily considered as a proxy for government's ability to manage the economy and it is said to offer information about the stability of a given currency in long-term contracting. Lemma & Negash (2013), therefore, argue that inflationary situations affect financing patterns of firms. It has been shown empirically that inflation positively influences capital structure (Frank & Goyal, 2009; Lemma & Negash, 2013). This effect of inflation was, however, reported to be relatively weak by Frank & Goyal, (2009), but not by Lemma & Negash, (2013). It has been argued that a firm is likely to issue more debt under an inflationary environment because inflationary situations have the effect to both decrease the real value of debt and increase the real tax

advantage of debt to firms (Lemma & Negash, 2013; Frank & Goyal, 2009). This means that financial managers of firms will take advantage of the decreased real value of debt and increase tax benefits of debt offered by higher inflation. Bokpin (2009) suggest that higher inflation increases the cost of external financing makes sense for firms that are financially constraint as argued by Korajczk & Levy (2003). The positive effect of inflation on leverage is consistent with the trade-off theory (Frank & Goyal, 2009; Lemma & Negash, 2013).

Other research has reported a negative association between inflation and capital structure (Booth et al, 2001); Camara, 2012). This negative association has been explained to be due to firms resorting to internal sources of funding in periods of high inflationary pressures as inflation increases the cost of obtaining external sources of funding whether in the long-term or short-term debt (Bokpin, 2009, Camara, 2012). The negative association between inflation and firm's leverage implies that rising level of inflation in a country brings down the firm's level of borrowing (external debt). Based on these different views presented in the literature, it is clear that the effect of inflation on leverage is still a matter of debate. As with economic growth, it is possible that differences in the result on the effect of inflation on capital structure are determined by whether the firms under consideration are financially constraint or unconstraint.

Interest rates and capital structure

Another macroeconomic variable identified in the literature review worth exploring further is interest rate. Chen (2010) postulated that firms issue more debt when interest rates are lower; thus, they behave like “market timers”. It has

been shown empirically that interest rates negatively influence leverage (Axelson et al., 2013). This can be explained by the surveyed behavior of managers who turn to time issuance of debt for periods when interest rates are at historical low and debt is cheaper (Graham & Harvey, 2001). In other words, the arguments in favour of this relationship suggest that the borrowing decisions of the firms depend upon the trends in the interest rates. Usually firms plan to borrow funds when interest rates in the economy are lower. It has been shown empirically that interest rates negatively influence leverage (Axelson et al., 2013).

A different view on this issue was presented by Bokpin (2009) who presented empirical evidence that interest rate positively influences the choice of short-term debt over equity, whilst the effect of interest rate was found to be insignificant in most of the other measures of capital structure choice. Other measures of capital structure choice used by Bokpin (2009) were long-term debt to equity and total debt to total book assets ratio. The effect of interest rates on capital structure is expected to be related to changes in inflation because changes in inflation determine interest rates (Booth et al, 2001).

Chapter Summary

This chapter has discussed the theories in relation to capital structure and macroeconomic variables and reviewed literature on them. The findings have been discussed and it has become the bases of the study.

CHAPTER THREE

RESEARCH METHODS

Introduction

This chapter discusses the methods used in the study. The study discusses the research design, target population, sample and sampling procedures. It also discusses the data collection procedures, definition of variables and measurement, panel unit root test, panel data, data processing and analysis and model specification.

The Research Design

The methodology adopted in the study was purely quantitative. According to Cooper and Schindler (2001) quantitative research method relates to numbers and measuring of observed facts. They argue that quantitative research methodology permits specification of dependent variable and allows for panel data measures of subsequent performance of the research subject. They further explain that it involves reliance on observable hard facts for which data is collected, analyzed and described in terms of numbers.

Furthermore, panel data is a combination of time series and cross-sectional data. According to Abor (2005) and Gatsi & Akoto (2010) panel data involves pooling of observations on cross-section of units over several time periods. Since

the study involves pooling of observations on cross-section of units over several time periods with data available, it will lend itself to panel data form.

The method is compatible with the study because it allows the research problem to be conducted in a very specific and set terms. This approach clearly and particularly specifies both the dependent and the independent variables under investigation. It also follows resolutely the original set of research goals, arriving at more objective conclusions.

Study Area

The research covers the non-financial listed firms on the Ghana Stock Exchange (GSE) and macroeconomic indicators of Ghana. The non-financial firms are firms listed on the GSE that operate in the areas of business such as manufacturing, production, exploration, processing, and sales and distribution of goods. These firms are considered as big companies in Ghana; it is therefore of much concern to shareholders and management on how the country's macroeconomic indicators affect the nature of business.

Population

A population has been defined as a complete group of entities sharing some common set of characteristics (Zikmund, 1997). Drawing from this definition, the population for the current study was defined to be companies that are operating in Ghana and are listed on the Ghana Stock Exchange (GSE) for the period 2004 to 2014. Currently, there are thirty-five (35) companies listed on the Ghana Stock Exchange made up of financial and non-financial firms. Thus, the

study considered the target population of twenty-three (23) non-financial companies listed for the period 2004 to 2014. Accordingly, this dataset is expected to have 253 (23 x 11) observations and this is denoted as being i 23 selected firms and t 11 years.

The Sample and Sampling Procedure

The term sampling is a popular concept in research. Sampling techniques are often employed when the study cannot cover the whole study population and sample can be taken to represent the entire population. Thus, census sampling technique was used to select fifteen (15) firms out of twenty-three (23) non-financial firms listed on the GSE between the periods 2004 to 2014. This is because other companies were not qualified for inclusion. The final sample of 15 non-financial listed firms selected was based on the assumption that the non-financial firms should be listed before 2004, be activated during the period 2004 to 2014, and the firms' availability of required financial data. Thus, the study has selected only those firms whose financial data or information is available for the period 2004 to 2014. The selected firms are shown in Appendix A. However, the choice of eleven (11) years period was based on regression assumption that the larger the data in terms of time frame, the more suitable the model for prediction or forecasting. More so the financial data available effectively covered eleven (11) years period.

The census approach of selecting firms was appropriate because six (6) of the non-financial listed firms namely, Ayrton Drug Manufacturing Company, Ghana Oil Company, Golden Star Resources, Golden web, Transol Solutions Ltd

and Tullow Oil were not listed before 2004, and therefore, they are not included in the sample . Whereas Ayrton Drug Manufacturing Company and Transol Solutions Ltd were listed in 2006, Golden Web in 2005, Ghana Oil Company, Golden Star Resources and Tullow Oil were also listed in 2007, 2008 and 2011 respectively. Clydestone (Ghana) Limited and Sam Woode Ltd were listed in 2004 and 2002 respectively; some of their financial data were not available and therefore were also not included in the sample.

Data Collection Procedures

This study involved only secondary data; specifically, the annual audited financial statement of non-financial listed firms and annual data for macroeconomic variables of Ghana between the periods of 2004 to 2014. The secondary data according to Saunders, Lewis, and Thornhill (2007) are made of three groups, which are survey-based data, documentary data, and those compiled from multiple sources. The survey-based data describes data, which has been collected through survey strategies, such as the use of questionnaires. Therefore, survey-based secondary data is useful for studies that require data that has already been collected for similar studies. Documentary data comprises memo, news' reports and administrative correspondence that hold information that is critical for the study.

On the other hand, Cheng, Chien and Liu (2010) said that, multiple source secondary data relate to data collected through the combination of survey-based data and documentary data. Three reasons informed the choice for secondary data for the study. Firstly, the data required for the study could not be procured

through primary sources as the secondary data are independently reviewed by accounting experts such as auditors. Secondly, the financial performance data of most companies can be obtained from either published or unpublished financial statements, which offered a basis for their analysis. Finally, an authentic overview of the capital structure of a given company emanates from the appropriate capital structure ratios, which can only be computed from financial statement for a given period, and also data for macroeconomic variables of Ghana. The data set for the study is financial data from GSE and individual non-financial listed firms' website and macroeconomic data from BOG and world development indicator of World Bank.

Panel Data

Panel data involves the pooling of observations on cross-section of units over several time periods. Therefore, a balanced panel data was used in this study. This is because the data used in this study involves both cross-sectional data and time series of regular frequency panel data structure. In other words, a balanced data contains all selected firms observed in all time frames. Panel data approach is more useful than either cross-section or time series data alone. According to Gujarati and Sangeeti (2003) panel data analysis is a comprehensive technique that provides more informative data in a combined set of cross-section and time series data set. The use of panel data is advantageous because of the several data points, degrees of freedom are increased and collinearity among the explanatory variables is reduced leading to an improvement of economic efficiency. In other words, panel data is helpful in minimizing the errors or biases in the data set.

Data Processing and Analysis

The quantitative data for selected macroeconomic factors and data from the financial statements of the fifteen (15) non-financial listed firms from 2004 to 2014 were used for the study. Two main issues measured are capital structure and macroeconomic indicators. The capital structure indicators computed using the raw data from the financial statements and macroeconomic indicators of Ghana were provided under measurement of variables section. The capital structure ratios computed were short term debt to total capital, long term debt to total capital and total debt to total capital while macroeconomic variables identified were inflation rate, interest rate and GDP growth rate. The sample of the computations of leverage ratios and control variables are shown in Appendix B. Likewise, macroeconomic data are also extracted from Bank of Ghana and World Development Indicator of World Bank for the period 2004 to 2014 (11years). The summary of the computation of ratios of selected firms and macroeconomic variables for the period 2004 to 2014 are shown in Appendix C. For the purpose of estimation, a panel regression model is applied to empirically analyze the given samples based on the balanced panel of fifteen (15) non-financial listed firms. The observations included in the sample data are pooled together in a cross-sectional framework. Using Least Squares approach, panel data analysis technique is applied. According to Gujarati and Sangeeti (2003) panel data analysis is a comprehensive technique that provides more informative data in a combined set

of cross-section and time series data set. In other words, panel data is helpful in minimizing the errors or biases in the data set.

Again, for the purpose of estimation, the macroeconomic data and the computations of the leverage ratios were combined and aligned into an Excel programme. This was then imported into software called EViews version 7 for model estimations to establish the effect and relationship between three (3) dependent variables and four (4) independent variables as well as control variables. Since the study was quantitative in nature, the descriptive statistics of the variables, correlation matrix and panel regression analysis were considered for discussion under the analysis column.

Model Specification and Estimation

In answering the research question of the extent to which macroeconomic variables influence capital structure of selected firms on the GSE, the study employs balanced panel regression model for the estimation. Panel data regression model is mostly used for pooling of observations on a cross-section of units over several time periods and facilitate identification of effects that are otherwise not detected in pure cross-section or time series regression (Bokpin, 2009). Also, panel regression equation differs from regular time series or cross-section regression by the double subscript attached to each variable. The general form of the model can be written as;

$$Y_{it} = \alpha + \beta_1 X_{it} + U_{it} \dots\dots\dots (1)$$

$$U_{it} = U_i + V_{it}$$

Here, Y is the dependent variable and X the independent variable; where subscripts i and t denote selected firms and time period respectively. Also, β_1 is the regression coefficient of explanatory variable and U is the error term, assumed to have zero mean and constant variance. However, since the study employs balanced panel regression model the error term is $U_{it}=U_i + V_{it}$, where U_i is a mean random error distribution that represents firms' specific effect, and V_{it} is random error.

However, the estimation of panel data regression involved two models, that is fixed and random effects models. The fixed effects model assumes that the error, U_i is individual-specific, time invariant effects. That is, time invariant effects means the variable has the same effect across time, whereas random effects model assumes that the two error components, U_i and V_{it} are independent from each other. Thus, the study assumes that if the error component and the independent variables are correlated, fixed effects model may be appropriate, whereas if they are uncorrelated, random effects model is appropriate. In this regard, the choice between fixed and random effects model per that assumption, depends on common method for testing this assumption is to employ a Hausman (1978) tests to compare the fixed effects and random effects estimates of coefficients.

In line with normal practice in literature, the current study adopted the model used by You and He, (2011), Pervaiz et al., (2014), Hackbarth et al., (2006), Booth et al. (2001), Mokhova and Zinecker, (2014) to examine firms' specific variables and macroeconomic conditions on capital structure. According

to Hackbarth et al., (2006); Booth et al., (2001); You and He, (2011) and Pervaiz et al., (2014) explanations, combining firms' specific data with time series in the same model is possible provided that firms' specific data and time series have same frequency; otherwise the economic meaning of the study will not be achieved. In other words, if the firms' specific data is quarterly or annually, the time series data must also be quarterly or annually. Therefore, it is reasonable to note that the value of one macroeconomic variable is same for all firms at one specific time period, t. For this reason, Hackbarth et al., (2006) and Booth et al., (2001) studies were some of the first papers to demonstrate that macroeconomic conditions influence financing policies of firms. Other researchers such as Axelson et al.(2013); Bokpin, (2009); Frank and Goyal, (2009); Lemma and Negash, (2013) and Gohhan and Cifter, (2014) in one way or the other considered GDP, inflation, exchange rate and interest rates for macroeconomic conditions in one particular country as against firm's capital structure. Mokhava and Zinecker, (2014) demonstrate in the study by combining external factors with capital structure. They have found that external determinants of capital structure play a substantial role in financial decision making process and knowledge about the power and direction of such influence support managers to make effective and accurate financial decision for stable and successful development.

Considering the dependent variable, the study employs Short Term Debt (STD), Long Term Debt (LTD) and Total Debt (TD) as the three dependent variables that represent capital structure. This choice of variables is in line with previous studies conducted by Booth et al (2001), Abor (2005), Bokpin (2009)

and Gatsi and Akoto (2010) among others that used these variables in one way or the other as proxies for capital structure.

The main independent variable considered in this study is the macroeconomic indicators such as inflation (INF), interest rates (INT) and GDP growth rate (GDP). However, there are a number of other factors that influence the capital structure considered to be controlled variables and included in this study, though that is not the main focus. These controlled variables are treated as the explanatory variables. The controlled variables used in this model include return on asset (ROA), return on equity (ROE), asset structure (AS) and firm size (FS). Therefore, the relationship between macroeconomic indicators and control variable and non-financial listed firms' debt in Ghana is thus modelled as;

$$D_{it} = \alpha + \beta_1 \text{MACRO}_t + \beta_2 Z_{it} + \mu_{it} \dots\dots\dots (2)$$

The model for estimating macroeconomic indicators and capital structure based on the variables discussed is specified as; D_{it} is the dependent variables, represents STD, LTD and TD; MACRO_t is the independent variables such as INF, INT and GDP and Z_{it} is the controlled variables and μ_{it} is the error term, assumed to have zero mean and constant variance. Thus, to estimate and empirically analyze the effect and expected relationship between dependent and independent variables, the equation above can be further stated as;

$$\text{STD}_{it} = \alpha + \beta_1(\text{INF}_t) + \beta_2(\text{INT}_t) + \beta_3(\text{GDP}_t) + \beta_4(\text{ROA}_{it}) + \beta_5(\text{ROE}_{it}) + \beta_6(\text{AS}_{it}) + \beta_7(\text{FS}_{it}) + \mu_{it} \dots\dots\dots (3)$$

$$LTD_{it} = \alpha + \beta_1(INF_t) + \beta_2(INT_t) + \beta_3(GDP_t) + \beta_4(ROA_{it}) + \beta_5(ROE_{it}) + \beta_6(AS_{it}) + \beta_7(FS_{it}) + \mu_{it} \dots\dots\dots (4)$$

$$TD_{it} = \alpha + \beta_1(INF_t) + \beta_2(INT_t) + \beta_3(GDP_t) + \beta_4(ROA_{it}) + \beta_5(ROE_{it}) + \beta_6(AS_{it}) + \beta_7(FS_{it}) + \mu_{it} \dots\dots\dots(5)$$

Where:

STD Represents Short Term Debt for firm i in time t

LTD Represents Long Term Debt for firm i in time t

TD Represents Total Debt for firm i in time t

INF Represents Annual Inflation Rate for time t

INT Represents Annual Nominal Interest Rate for time t

GDP Represents Annual Gross Domestic Product Growth Rate for time t

β_s Represents the regression coefficients of explanatory variables

α Represents the Constant Term

μ_{it} Represents the error term

The error term represents other factors that might have influence on the dependent variable, but for the purpose of the study were not accounted for. ROA and ROE

is return on asset and equity respectively for firm i in time t , AS is asset structure and FS is firm size all for firm i in time t .

Variables Definition and Measurement

Measure of Capital Structure

Currently, there is no universally accepted definition of capital structure in the literature (Lemma & Negash, 2013). They argued that the purpose of analysis or of the study should determine the measures of capital structure used. In order to navigate around these differences of views on what measure of capital structure is most appropriate, a lot of the researchers employ more than one measure of capital structure (Bokpin, 2009; Frank & Goyal, 2009). Often the measures employed will include a combination of short-term debt, long-term debt and total debt measures (Bokpin, 2009; Frank & Goyal, 2009); sometimes, both book value and market value leverage measures are used.

In line with normal practice in literature the current study employed book leverage as a measure of capital structure. The dependent variables adopted in this study were therefore book leverage measures of (that is short-term debt, long-term debt and total debt). The reason for choosing book leverage is that book value information is more readily available than market information (Lemma & Negash, 2013; Titman & Wessels, 1988). Numerous researchers have adopted book leverage for this reason; this makes the study more comparable to many others in the literature.

The dependent variable in this study as previously stated is book leverage. The three dependent variables, namely the ratio of Short Term Debt to Total Capital, the ratio of Long Term Debt to Total Capital and Total Debt to Total Capital were used. This is because some firms use short-term debt while others use long-term debt to finance their operations, and the four independent variables, namely Inflation Rate, Interest Rate and GDP Growth Rate as well as controlled variables was used.

Dependent Variable:

Short term debt (STD) ratio

Short term debt to total capital ratio refers to the portion of a firm's debt financing as a proportion of total capital provided by the firm. It is explained as the ratio that measures the extent to which the firms under study use short term debt to finance their operations and the settlement of the short term debt is within a period of one year. That is debt finance payable within one accounting period. Thus, short term debt (STD) is measured or calculated by dividing short term debt or current liability (CL) of the firm by its total capital (TC). That is;

$$\text{STD} = \frac{\text{CL}}{\text{TC}}$$

Long term debt (LTD) ratio

The ratio of Long term debt to total capital refers to the portion of a firm's debt financing as a proportion of total capital provided by the firm. It is explained as the ratio that measures the extent to which the firms under study use long term debt to finance their operations and that settlement of the long term debt is within

a period of two to five years. Thus, long term debt (LTD) is measured or calculated by dividing long term debt or long term liability (LTL) of the firm by its total capital (TC). That is;

$$\text{LTD} = \frac{\text{LTL}}{\text{TC}}$$

Total debt (TD) ratio

This is the ratio of total liabilities to total capital. Basically, it is the summation of Short term debt and long term debt of the firms to their total capital. This ratio measures the extent to which the operations of the firms have been funded with total debt relative to equity and also how leverage associates with the country's macroeconomic factors in Ghana for the chosen period of the study. Thus, total debt (TD) is measured or calculated by dividing total liability (TL) that is short term debt plus long term debt of the firm by its total capital (TC) or total assets. That is;

$$\text{TD} = \frac{\text{TL}}{\text{TC}}$$

Macroeconomic Variable:

Inflation rate

In any economy, inflation is regarded as an important economic indicator which provides an insight about the trends in an economy as well as the sound economic policies. Inflation refers to changes in the general level of prices of goods and services in an economy over a given period of time. In other words, inflation rate is the quantitative measure of inflation. Thus, it is measured by calculating the percentage change in the prices of a group of commodities during

a year with respect to the previous year. The inflation rate data is available on Bank of Ghana website on yearly basis and long-established with World Development Indicator of World Bank.

Interest rates

Interest rates are offered by Central bank through Commercial banks of Ghana for the firms to obtain loans from banks, and it serves as cost of borrowing or debt. A sudden rise or fall in the percentage of interest rate affects the debt policy and financial decisions of the firms. Therefore, this variable is rated each year by Bank of Ghana and it is one of the policies of Bank of Ghana, hence the interest rate is available in Bank of Ghana on annual basis and long-established with World Development Indicator of World Bank.

GDP growth rate

Gross Domestic Product (GDP) of a country is the cumulative total of goods and services produced in a country during a given year. The growth rate (GDP rate) of Ghana is calculated as the percentage change in the aggregate value of total number of goods and services produced in the country during one year with respect to the value in the previous year. The growth rate of Ghana is available in published data of Bank of Ghana on annual basis and long-established with World Development Indicator of World Bank.

Controlling Variables:

Return on assets (ROA)

This is a ratio of earnings before interest and tax to total assets. It is measured or calculated by dividing earnings before interest and tax or pre-tax profit by total assets. That is;

$$\text{ROA} = \frac{\text{Pre-Tax Profit}}{\text{Total Assets}}$$

Return on equity (ROE)

This is a ratio of earnings before interest and tax to total equity. It is measured or calculated by dividing earnings before interest and tax or pre-tax profit by total equity. That is;

$$\text{ROE} = \frac{\text{Pre-Tax Profit}}{\text{Total Equity}}$$

Asset structure (AS)

This is also known as fixed assets ratio. It is measured as book value of fixed tangible assets to total assets. That is;

$$\text{AS} = \frac{\text{Fixed Asset}}{\text{Total Assets}}$$

Firm size (FS)

This is the size of the firm, and it is measured as natural log of total assets. That is;

$$\text{FS} = \text{Log (total assets)}$$

Unit root tests

The use of EViews software provides a variety of powerful tools for testing data series that is performing a test on data at levels, first or second difference for the presence of a unit root (nonstationary). In other words, the software provides tools for performing a test on data series to check or verify

whether the data is stationary or not before using it for regression analysis. This means that the data must be stable before it can be used for decision making.

The study employed EViews version 7 packages to carry out panel unit root test in order to check or verify whether the data series used are stationary. To perform these tests the Levin, Lin and Chu (2002), Im, Peseran and Shin W-stat (2003), ADF – Fisher Chi-square and PP – Fisher Chi-square (Maddala and Wu, 1999) tests were used to determine the integrated levels of each data series.

The stationary data series is a precondition for drawing meaningful conclusions in data analysis and to enhance the accuracy and reliability of the models constructed if its mean and variance are constant over a given period of time. In other words, data is stationary if its properties, such as mean and variance, do not change over time. The purpose or idea of testing for stationarity of the data is to verify whether the effect of shock (up and down) is permanent or temporary. If the effect of shock is permanent after the tests are performed at levels, first or second difference and the data is still not stationary (unit root), then the data cannot be used for any economic decisions. In other words, applying regression to data or variables that are not stationary becomes ‘spurious’, that is will have no economic meaning, especially when the variables involved exhibit consistent upward trend and downward trend (Geda et al.,2012). But if the effect of shock (consistent upward trend and downward trend) is temporary, that is performing the tests at levels and the data is not stationary but further test is performed at 1st or 2nd difference, and the data is stationary, it means that the data or variable has returned to its long-run equilibrium, and therefore, the data is

considered to be stable which can be used for economic decisions even with the effect of shock, the variable still goes back to its long-run mean, that is mean reverting, Thus, this is rational for checking data stationarity (unit root test). More so, performing a panel unit root test using the EViews software to check whether a variable is stationary or not, the null hypothesis (H_0) states that the variable has a unit root (non-stationary) and alternative (H_1) is that the variable has no unit root. If the test shows the p-value less than 0.05(5%) then we reject the null hypothesis and accept the alternative that the variable has no unit root. In other words, the variable is stationary at 5 percent level of significance.

Chapter Summary

This chapter of the study described how the research was undertaken. It started with the research design of the study. The population and its respective sampling size were also described after which the data collection procedures and variables measurement were followed suit. The section ended with the data processing and analysis and estimation models used for the study.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

The main focus of this chapter is to present the results of the study and discuss the findings in relation to theoretical and empirical evidences. The findings are based on the panel data methodology discussed in chapter three. The results and discussions are limited to the effects of macroeconomic variables on capital structure of non-financial listed firms on the GSE. Implications of the findings are also presented in this chapter. The chapter is specifically presented in the following order; descriptive statistics, and correlation matrix and panel data regression results.

Descriptive Statistics

Table 1 provides descriptive statistics for the full sample of the study. The mean, median, minimum, maximum, standard deviation and number of observations of the variables of interest are presented. The mean values of variables demonstrate the average value of all firms included in the sample in each year. Standard deviation among the variables represents the extent of dispersion in the data from the mean, and the number of observations is also indicated. Therefore, the description of data shows the average indicators of variables computed from the financial statements of fifteen (15) non-financial

firms listed on the Ghana Stock Exchange (GSE) and macroeconomic variables obtained from Bank of Ghana (BoG) and World Development Indicator from 2004 to 2014. As indicated in the methodology, dependent variables such as Short-Term Debt (STD), Long-Term Debt (LTD) and Total Debt (TD) and the independent variables such as Inflation (INF), Interest Rate (INT) and Gross Domestic Product Growth Rate (GDP) and control variables were considered for the study.

Table 1

Descriptive statistics of the dependent and independent variables

Variables	STD	LTD	TD	INF	INT	GDP	ROA	ROE	AS	FS
Mean	48.46	12.4	59.40	12.80	21.88	7.18	1.77	14.39	53.98	6.78
Median	43.42	4.88	56.27	11.60	23.75	6.46	4.74	12.23	54.43	7.08
Max	27.74	75.04	209.38	19.25	28.75	14.05	39.47	374.14	95.77	9.99
Min	4.93	-14.59	4.93	8.73	10.67	3.45	-564.87	-189.75	3.75	3.96
Std. Dev.	31.21	17.25	31.13	3.19	5.47	2.73	46.46	47.78	20.73	1.33
No. of obs	165	165	165	165	165	165	165	165	165	165

Source: Generated from Eviews 7.0 package

From table 1, the mean value as expressed in percentage for the STD, LTD and TD to Total Capital (TC) of the selected firms were 48.46%, 12.40% and 59.40% respectively. This means that whereas 59.40% of the total capital (TC) of the firms is financed by debts, 40.06% was generated from either equity finance or other internal sources. The above position suggests that the selected firms are

greatly financed by leverage, with a larger percentage of the total debt to total capital being Short-term debts. This attests to the fact that selected firms listed largely depend more on debts, especially short-term debt as compared to long-term debt. This explains why most of the firms find it difficult to expand their operations and profitability as there is always pressure on them to pay off their short-term liabilities within one year (short period). The 12.40% average long-term debt recorded, which is lower as compared to short-term debt might be due to inability of the firms to provide the needed collateral to access the long-term facility and the fear of financial institutions to exceptional risk associated with the firms. It may also be due to high cost associated with long-term debts as a result of economic down-turn.

The descriptive statistics among the macroeconomic variables such as inflation, interest rates and gross domestic product growth is also presented. From table 1, the inflation and interest rates showed an average value of 12.80% and 21.88% respectively whereas 7.18% mean value of GDP growth for the period 2004 to 2014. The descriptive data shows that on average, when inflation, interest rates and GDP growth were 12.80%, 21.88% and 7.18% respectively, the firms' STD, LTD and TD gave an average value of 48.46%, 12.40% and 59.40% respectively. With respect to the control variables, the mean value of return on assets (ROA), return on equity (ROE), assets structure (AS) and firm size (FS) of the selected firms were 1.77%, 14.39%, 53.98% and 6.78% respectively. This means that the performance of the firms' measured by ROA, ROE, AS and FS registered a mean of 1.77%, 14.39%, 53.98% and 6.78% respectively.

Correlation matrix

Correlation is a technique for investigating the relationship between variables. Thus, in answering the research question in respect of the relationship or association between macroeconomic variables and capital structure, the Pearson's Correlation Coefficient is used to measure the relationship or the strength of association between the variables.

Table 2 reports the Pearson's correlation coefficients between the variables. Asteriou and Hall (2007) state that many researchers appear to consider that correlation coefficient of more than 0.90 may cause the problems in estimation. Therefore, considering this as the benchmark, the table shows that correlations among the variables are comparatively small and thus there should not be the concerns for multicollinearity.

Table 2

Correlation matrix of the variables

	STD	LTD	TD	INF	INT	GDP	ROA	ROE	AS	FS
STD	1.00									
LTD	-0.21	1.00								
TD	0.87	0.23	1.00							
INF	-0.07	-0.03	-0.06	1.00						
INT	-0.03	-0.06	-0.07	0.48	1.00					
GDP	0.03	0.01	0.09	-0.67	-0.68	1.00				
ROA	-0.49	0.01	-0.49	-0.09	-0.05	0.11	1.00			

ROE	0.16	-0.22	0.06	-0.20	-0.15	0.28	0.07	1.00		
AS	-0.31	0.39	-0.10	0.02	-0.05	0.01	0.09	-0.19	1.00	
FS	0.12	-0.01	0.09	0.05	0.31	-0.09	0.02	-0.17	-0.14	1.00

Source: Generated from Eviews 7.0 package

Table 2 provides the correlations between each of the dependent variables such as Short-Term Debt (STD), Long-Term Debt (LTD) and Total Debt and each of the independent variables such as Inflation (INF), Interest Rates (INT) and Gross Domestic Product Growth Rate (GDP) and control variables. The report shows that short term debt has a negative relationship or association with inflation and interest rates but has a positive correlation with gross domestic product growth. The long term debt and total debt also showed a negative relationship with inflation, and interest rates but has a positive correlation with gross domestic product growth rate. This means that when a country's inflation and interest rates increase, it decreases the firms' short term debt, long term debt and total debt. This indicates that there is an inverse relationship between short term debt, long term debt and total debt with inflation and interest rates in Ghana. This confirms the view of Booth et al. (2001) and Camara (2012). According to them, the negative relationship between inflation and interest rates and leverage implies that rising level of inflation and interest rates in a country bring down the level of borrowing (external debt). With respect to GDP growth rate, when there is increased growth in the Ghanaian economy, it helps the companies to acquire debt to finance their operations; hence there is positive relationship between firms' debt and GDP growth rate.

With respect to the control variables, comparing short term debt, long term debt and total debt to return on assets (ROA), return on equity (ROE), assets structure (AS) and firm size (FS), the relationship between them are also established. As shown in table 2, both short -term and total debt is negatively correlated with return on assets and assets structure and positively correlated with return on equity and firm size. Whereas long term debt revealed negative relationship with return on equity and firm size and positively correlated with return on assets and assets structure.

Panel Unit Root Test (Stationarity of data)

The panel unit root test was conducted to check or verify whether the data or variables used for regression are stationary. To perform these tests the Levin, Lin & Chu (2002), Im, Peseran and Shin W-stat (2003), ADF – Fisher Chi-square and PP – Fisher Chi-square (Maddala and Wu, 1999) tests were used to determine the integrated levels of each data series.

The panel unit root test was applied to dependent and independent variables and the problem of non-stationarity was not seen among the variables. The dependent variables such as short term debt (STD), long term debt (LTD) and total debt (TD) were all stationary at first difference and therefore they are integrated of order one I (1) stochastic process. With regard to the independent variables such as inflation (INF), interest rates (INT), and GDP growth rate (GDP), the variables are all stationary at levels and therefore they are integrated

of order zero I (0). More so panel unit root test was also applied to control variables and they are stationary but not reported in the study. However, the summary of the tests for dependent and the main independent variables were presented in Appendix D and majority of the tests confirmed stationarity of the variables under consideration, since the tests show that the variables are stationary at 5 percent level of significance.

Fixed and Random Effect Models

In order to estimate panel data regression model which involved two models, that is fixed and random effects models, Hausman Chi -square test was applied. The test was conducted in each model or equation and the results show that the test is significant at 5% level in all the three (3) equations used in the study. This implies that the two (2) estimates fixed and random effects differ significantly and hence the fixed effect is preferable to the random effect estimate. However, the results of the OLS estimated and reported in Appendix F do not differ significantly from the fixed effects estimates. It is reported to serve as robustness check (sensitivity analysis). Hence, the conclusions are based on the results of the fixed effect estimates due to the panel data structure. The results of the tests are reported in Appendix E. The fixed effects model is used in this study because p-values of Random Effects – Hausman tests for three (3) equations are more than 0.05 (5%) significant level. Based on these tests, a fixed effect model is preferred.

Regression Results

In order to examine the effect and relationship between capital structure and macroeconomic variables, regression analysis was made. Measures of debts such as short-term debt (STD), long term debt (LTD) and total debt (TD) were regressed against measures of macroeconomic variables such as inflation (INF), interest rates (INT) and GDP growth rate (GDP) and the control variables such as return on assets (ROA), return on equity (ROE), assets structure (AS) and firm size (FS). The results of the fixed effects regression are presented in Table 3, 4 and 5.

Table 3

Regression Model Results for Short-Term Debt (STD)

Dependent Variable: STD

Method: Panel Least Squares

Date: 07/06/16 Time: 22:02

Sample: 2004 2014

Periods included: 11

Cross-sections included: 15

Total panel (balanced) observations: 165

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	68.45819	21.03006	3.255254	0.0014

INF	-0.721691	0.688453	-1.048279	0.2963
INT	-0.457847	0.447187	-1.023837	0.3076
GDP	-0.451716	1.003817	-0.449999	0.6534
ROA	-0.295776	0.042502	-6.959111	0.0000
ROE	0.067857	0.040084	1.692866	0.0927
AS	-0.298694	0.160270	-1.863688	0.0644
FS	2.680608	1.567570	1.710040	0.0894

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.618276	Mean dependent var	48.46576
Adjusted R-squared	0.562219	S.D. dependent var	31.20956
S.E. of regression	20.64982	Akaike info criterion	9.016856
Sum squared resid	60977.34	Schwarz criterion	9.430982
Log likelihood	-721.8906	Hannan-Quinn criter.	9.184964
F-statistic	11.02934	Durbin-Watson stat	1.390663
Prob(F-statistic)	0.000000		

Source: Generated from Eviews 7.0 package

Note: The table reports fixed effects panel estimates for STD. Significance at the 10%, 5% level.

From Table 3, inflation rate with probability value of 0.29 was found to be statistically insignificant since the prob – value is far more than 0.05 (5%) level of significance and negatively associated with short term debt (STD). The negative

association between inflation and STD found in the study is in line with the view of Booth et al. (2001) and Camara (2012). According to them, the negative relationship between inflation and leverage implies that rising level of inflation in a country brings down the level of borrowing (external debt).

However, the findings contradict the views of Frank & Goyal (2009) and Bokpin (2009) whose views suggest that firms are likely to issue more debt under an inflationary environment because inflationary situations have the effect to both decrease the real value of debt and increase the real tax advantage of debt to firms. Therefore, the negative relationship between inflation and short term debt found in the study suggests that when inflation increases in the country, firms' level of borrowing (external debt) decreases. However, the inflation rates turn out to be insignificant in the model.

The interest rate with prob – value of 0.30 was also found to be insignificant and negatively associated with short term debt. The negative association between interest rates and short term debt found in the study contradict the views of Bokpin (2009). He presented empirical evidence that interest rates positively influence the choice of short term debt, but the effect of interest rates was found to be insignificant in determining the short term debt (leverage).

However, the negative relationship found in the study appears to be in line with Axelson et al., (2013). Thus, the negative relationship found suggests that

firms plan to borrow funds when interest rates in the economy are lower since interest rate is the cost of borrowing.

The GDP growth rate with prob – value of 0.65 was found not statistically significant in determining the short term debt (leverage) but negatively associated with short term debt. The negative sign on GDP growth rate contradicts the views of the Booth et al. (2001) and Frank & Goyal (2009). According to them, GDP growth rate influences leverage positively because firms in countries with higher GDP growth rate are willing to increase their leverage in order to finance future investments. In other words, GDP growth rate relates positively with firm's leverage, advocating that as countries become richer and richer, firms operating in those countries are able to find out several opportunities to invest their additional funds. Therefore, negative relationship between GDP growth rate and short term debt found in the study suggests that Ghana's growth rate is low and unstable to determine firms' leverage.

From Table 3, the results of this model reveal that the inflation, interest rates and GDP growth rates all turn out to be insignificant in determining short term debt but have negative relationships which confirm the views of Booth et al. (2001) and Camara (2012) that the negative relationship between inflation and interest rates and leverage implies rising level of inflation and interest rates in a country, bring down the level of borrowing (external debt). However, while the study considered entering firm specific variables as control variables such as firms' performance measured by return on asset (ROA) and return on equity (ROE), asset tangibility (AS) and firm size (FS) in analysis, the result indicates

that the return on assets and return on equity, assets structure and firm size are statistically significant at 5% and 10% significant level in determining short term debt (leverage). This suggests that internal factors such as firms' performance measured by return on asset (ROA) and return on equity (ROE), asset tangibility (AS) and firm size (FS) considered in previous studies mentioned in the literature confirmed its significant impact on firms' leverage and therefore, their impact can be managed by the firms, while macroeconomic factors such as inflation rate, interest rate and GDP growth rate revealed to be insignificant cannot be controlled by managers of the firms. This showed that there is instability in macroeconomic indicators of Ghana during the period under which the study was conducted.

The bottom portion of Table 3 results shows the main statistics of the fixed effects panel regression results. The significance of the Short term debt model is determined by R-square (R^2) and F-statistic. The R^2 measures the extent to which the explanatory variables explain the variations in the dependent variable. Statistically the greater the co-efficient of determination (R^2) value is to 100%, the more powerful the regression equation. From Table 3, the R^2 value of 0.6183 was recorded. This indicates that the R^2 of the fixed effect estimation of 0.6183 suggests that 61.83% of the variations in the dependent variable are explained by the explanatory variables in the model. The F-statistic measures the joint significance of the explanatory variables on the dependent variable. Statistically, F-statistics value of 11.03 with prob-value of 0.0000 indicates that the explanatory variables are significant to explain the dependent variable since the prob-value is far less than 0.05(5%) significance level. Furthermore, the

Durbin-Watson statistics shows dependency of errors and the value of Durbin-Watson statistics of 1.390663 does not show any serious autocorrelation in residuals, and therefore no serious serial correlation between variables. This is because, for the DW test stats to be valid three conditions need to be met (Durbin and Watson, 1951). First, a constant term needs to be included in the regression equation. Second, the independent variables need to be non-stochastic. Finally, no lag of the dependent variable needs to be independent variable. Furthermore, fulfilling these requirements, the Durbin and Watson (1951) suggests that DW statistic can reach values from zero (0) to four (4). A value near two (2) implies non-autocorrelation. A value approaching zero (0) indicates positive autocorrelation and value getting closer to four (4) suggests negative autocorrelation. Considering the conditions outlined above, the regression equation is well specified with constant term and no lag of the dependent variable and therefore, the value of Durbin-Watson statistics of 1.390663 which is far from zero (0) and four (4) does not show any serious autocorrelation in residual, since the value is approaching two (2). Hence, the results are valid.

Table 4

Regression Model Results for Long-Term Debt (LTD)

Dependent Variable: LTD

Method: Panel Least Squares

Date: 07/06/16 Time: 22:07

Sample: 2004 -2014

Periods included: 11

Cross-sections included: 15

Total panel (balanced) observations: 165

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	21.08059	10.76256	1.958696	0.0521
INF	-0.330815	0.352330	-0.938935	0.3493
INT	0.093087	0.228857	0.406749	0.6848
GDP	-0.163852	0.513724	-0.318949	0.7502
ROA	-0.012691	0.021751	-0.583473	0.5605
ROE	-0.009529	0.020514	-0.464503	0.6430
AS	0.279752	0.082022	3.410719	0.0008
FS	-2.994377	0.802236	-3.732539	0.0003

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.672873	Mean dependent var	12.33697
Adjusted R-squared	0.624833	S.D. dependent var	17.25358
S.E. of regression	10.56796	Akaike info criterion	7.677097
Sum squared resid	15970.51	Schwarz criterion	8.091223
Log likelihood	-611.3605	Hannan-Quinn criter.	7.845205
F-statistic	14.00662	Durbin-Watson stat	1.112957
Prob(F-statistic)	0.000000		

Source: Generated from Eviews 7.0 package

Note: The table reports fixed effects panel estimates for LTD. Significance at the 10%, 5% level

From Table 4, inflation rate with probability value of 0.34 was statistically insignificant and negatively associated with long-term debt (LTD). The negative association between inflation and LTD found in the study followed the view of Booth et al. (2001) and Camara (2012). According to them, the negative relationship between inflation and leverage implies that rising level of inflation in a country brings down the level of borrowing (external debt).

However, the findings oppose the views of Frank & Goyal (2009) and Bokpin (2009) whose views suggest that a firm is likely to issue more debt under inflationary environment because inflationary situations have the effect to both decrease the real value of debt and increase the real tax advantage of debt to firms. Therefore, the negative relationship between inflation and long-term debt found in the study suggests that when inflation increases in the country, firms' level of borrowing (external debt) decreases. However, the inflation rates turn out to be insignificant in the model.

The interest rate with prob – value of 0.68 was found to be insignificant and positively related with long-term debt. The positive relationship between interest rates and long-term debt found in the study is in line with the views of Bokpin (2009). He presented empirical evidence that interest rates positively

influence the choice of leverage (long-term debt), but the effect of interest rates was found to be insignificant in determining the long-term debt (leverage).

The positive relationship found in the study appears to be in line with Axelson et al., (2013). Thus, the positive relationship found suggests that firms plan to borrow funds when interest rates in the economy are expected to be high in relation to long term securities.

The GDP growth rate with prob – value of 0.75 was found insignificant in determining the long-term debt (leverage) and negatively associated with long-term debt. The negative sign on GDP growth rate contradicts the views of Booth et al. (2001) and Frank and Goyal (2009). According to them, GDP growth rate impacts leverage positively because firms in countries with higher GDP growth rates are willing to increase their leverage in order to finance future investments. In other words, GDP growth rate relates positively with firm's leverage, advocating that as countries become richer and richer, firms operating in those countries are able to find out several opportunities to invest their additional funds. Therefore, negative relationship between GDP growth rate and long-term debt found in the study suggest that Ghana's growth rate is small and unstable to determine firms' leverage in the long period.

The results of this model reveal that the inflation and GDP growth rates turn out to be insignificant in determining long-term debt but have negative relationships whereas interest rates is also found to be insignificant but positively associated with long-term debt. However, while the study considered including

firm specific variables as control variables such as firms' performance measured by return on asset (ROA) and return on equity (ROE), asset tangibility and firm size in the model, the results indicate that only asset tangibility (AS) and firm size (FS) turn out to be positive and statistically significant at 5% level in determining long-term debt (leverage). This suggests that internal factors such as firms performance measured by asset tangibility (AS) and firm size (FS) considered in previous studies mentioned in the literature confirmed its significant impact on firms' leverage and therefore, their impact can be managed by the firms, while macroeconomic factors such as inflation, interest rates and GDP growth rate revealed to be insignificant cannot be controlled by managers of the firms. This means that the Ghanaian economy was unstable during the period under which the study was conducted, and for that reason, the managers of the firms during that period could not properly determine their financial decision.

The bottom portion of Table 4 results shows the main statistics of the fixed effects panel regression estimation. The significance of the long-term debt model is determined by R-square (R^2) and F-statistic. The R^2 measures the extent to which the explanatory variables explain the variations in the dependent variable. Statistically the greater the co-efficient of determination (R^2) value is to 100%, the more powerful the regression equation. From Table 4, the R^2 value of 0.6729 was recorded. This indicates that the R^2 of the fixed effect estimation of 0.6729 suggests that 67.29% of the variations in the dependent variable are explained by the explanatory variables in the model. The F-statistic measures the joint significance of the explanatory variables on dependent variable. Statistically,

F-statistics value of 12.59 with prob-value of 0.0000 indicates that the explanatory variables are significant to explain the dependent variable since the prob-value is far less than 0.05(5%) significance level. Furthermore, the Durbin-Watson shows dependency of errors and the value of Durbin-Watson statistics of 1.112957 does not show any serious autocorrelation in residuals, and therefore no serious serial correlation between variables. This is because, for the DW test stats to be valid three conditions need to be met (Durbin and Watson, 1951). First, a constant term needs to be included in the regression equation. Second, the independent variables need to be non-stochastic. Finally, no lag of the dependent variable needs to be independent variable. Furthermore, fulfilling these requirements, the Durbin and Watson (1951) suggests that DW statistic can reach values from zero (0) to four (4). A value near two (2) implies non-autocorrelation. A value approaching zero (0) indicates positive autocorrelation and value getting closer to four (4) suggests negative autocorrelation. Considering the conditions outlined above, the regression equation is well specified with constant term and no lag of the dependent variable and therefore, the value of Durbin-Watson statistics of 1.112957 which is far from zero (0) and four (4) does not show any serious autocorrelation in residual, since the value is approaching two (2). Hence, the results are valid.

Table 5

Regression Model Results for Total Debt (TD)

Dependent Variable: TD

Method: Panel Least Squares

Date: 07/06/16 Time: 22:09

Sample: 2004 2014

Periods included: 11

Cross-sections included: 15

Total panel (balanced) observations: 165

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	88.14825	20.11696	4.381788	0.0000
INF	-0.697053	0.658561	-1.058449	0.2916
INT	-0.484854	0.427771	-1.133444	0.2589
GDP	-0.653601	0.960232	-0.680669	0.4972
ROA	-0.298304	0.040657	-7.337165	0.0000
ROE	0.067447	0.038343	1.759028	0.0807
AS	-0.074865	0.153311	-0.488316	0.6261
FS	-0.135224	1.499508	-0.090179	0.9283

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.649018	Mean dependent var	59.40424
Adjusted R-squared	0.597476	S.D. dependent var	31.13450
S.E. of regression	19.75323	Akaike info criterion	8.928077
Sum squared resid	55797.18	Schwarz criterion	9.342203
Log likelihood	-714.5663	Hannan-Quinn criter.	9.096185

F-statistic	12.59184	Durbin-Watson stat	1.492046
Prob(F-statistic)	0.000000		

Source: Generated from Eviews 7.0 package

Note: The table reports fixed effects panel estimates for TD. Significance at the 10%, 5% level

From Table 5, inflation rate with probability value of 0.29 was found to be insignificant since the prob – value is far more than 0.05 (5%) level of significance and negatively associated with total debt (TD). The negative association between inflation and TD found in the study followed the views of Booth et al. (2001) and Camara (2012). According to them, the negative relationship between inflation and leverage implies that rising level of inflation in a country brings down the level of borrowing (external debt).

However, the findings oppose the views of Frank & Goyal (2009) and Bokpin (2009) whose views suggest that a firm is likely to issue more debt under inflationary environment because inflationary situations have the effect to both decrease the real value of debt and increase the real tax advantage of debt to firms. Therefore, the negative relationship between inflation rate and total debt found in the study suggests that when inflation increases in the country, firms' level of borrowing (external debt) decreases, but the inflation rate found to be statistically insignificant in determine total debt.

The interest rate with prob – value of 0.25 was also found to be insignificant and negatively associated with total debt. The negative association between interest rates and total debt found in the study disagree with the views of Bokpin (2009). He presented empirical evidence that interest rates positively influence the choice of leverage (total debt), but the effect of interest rates was found to be insignificant to impact the total debt (leverage).

However, the negative relationship found in the study appears to be in line with Axelson et al., (2013). Thus, the negative relationship found suggests that firms plan to borrow funds when interest rates in the economy are lower since interest rate is the cost of borrowing.

The GDP growth rate with probability value of 0.49 was found to be statistically insignificant in determining the total debt (leverage) and negatively associated with total debt. The negative sign on GDP growth rate contradicts the views of the Booth et al. (2001) and Frank & Goyal (2009). According to them, GDP growth rate influences leverage positively because firms in countries with higher GDP growth rate are willing to increase their leverage in order to finance future investments. In other words, GDP growth rate relates positively with firm's leverage, advocating that as countries become richer and richer, firms operating in those countries are able to find out several opportunities to invest their additional funds. Therefore, negative relationship between GDP growth rate and total debt found in the study suggests that Ghana's growth rate is small and uncertain to determine firms' leverage.

From Table 5, the results of this model reveal that the inflation rate, interest rate and GDP growth rate found to be insignificant in determining total debt but have negative relationships. However, while the study considered entering firms' specific variables as control variables such as firms performance measured by return on asset (ROA) and return on equity (ROE), asset tangibility (AS) and firm size (FS) in analysis, the result indicates that the return on assets and return on equity are statistically significant at 5% and 10% level in determining short term debt (leverage). This suggests that internal factors such as firms' performance measured by return on asset (ROA) and return on equity (ROE) considered in previous studies mentioned in the literature confirmed its significant impact on firms' leverage and therefore, their impact can be managed by the firms, while macroeconomic factors such as inflation rate, interest rate and GDP growth rate revealed to be insignificant cannot be controlled by managers of the firms. This showed that there is instability in macroeconomic indicators of Ghana during the period under which the study was conducted. Therefore, financial managers of the firms during that period cannot properly determine their financial decision.

The bottom portion of Table 5 results shows the main statistics of the fixed effects panel regression estimation. The significance of the total debt model is determined by R-square (R^2) and F-statistic. The R^2 measures the extent to which the explanatory variables explain the variations in the dependent variable. Statistically, the greater the co-efficient of determination (R^2) value is to 100%, the more powerful the regression equation. From Table 5, the R^2 value of 0.6490

was recorded. This indicates that the R^2 of the fixed effect estimation of 0.6490 suggests that 64.90% of the variations in the dependent variable are explained by the explanatory variables in the model. The F-statistic measures the joint significance of the explanatory variables on dependent variable. Statistically, F-statistics value of 12.59 with prob-value of 0.0000 indicates that the explanatory variables are significant to explain the dependent variable since the prob-value is far less than 0.05(5%) significance level. Furthermore, the Durbin-Watson shows dependency of errors and the value of Durbin-Watson statistics of 1.492046 shows no autocorrelation in residuals. In other words, the errors are dependent and therefore, no serial correlation between variables. This is because, for the DW test stats to be valid three conditions need to be met (Durbin and Watson, 1951). First, a constant term needs to be included in the regression equation. Second, the independent variables need to be non-stochastic. Finally, no lag of the dependent variable needs to be independent variable. Furthermore, fulfilling these requirements, Durbin and Watson (1951) suggests that DW statistic can reach values from zero (0) to four (4). A value near two (2) implies non-autocorrelation. A value approaching zero (0) indicates positive autocorrelation and value getting closer to four (4) suggests negative autocorrelation. Considering the conditions outline above, the regression equation is well specified with constant term and no lag of the dependent variable and therefore, the value of Durbin-Watson statistics of 1.492046 which is far from zero (0) and four (4) does not show any serious autocorrelation in residual, since the value is approaching two (2). Hence, the results are valid.

Chapter Summary

This chapter has discussed the statistical results of the study variables including descriptive statistics, correlation matrix and panel unit root tests analysis. The panel regression results have been interpreted and discussed. Each of the study objectives has been analyzed through the regressions and compared with other prior studies. Possible reasons have been assigned to specific relationship direction.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter is the concluding part of the study. It has five main sections. The first section provides the summary of the results of the study. Specifically, this section presents the overview of the scope of the work undertaken, the methodology and the major empirical findings reported by the study. The second aspect is the conclusion. It attempts to relate the summarized findings to the general entire non-financial firms listed on the Ghana Stock Exchange (GSE). This section provides detailed remarks as to whether or not the specific objectives outlined in chapter one are achieved and the implications of such results to players and stakeholders of the non-financial listed firms on the GSE. The third part of this chapter presents the identified recommendations throughout the study with reference to the findings. The recommendations are presented to specifically named stakeholders. The recommendations cover issues of interest to policy makers, management of the non-financial listed firms and further researchers. The fourth section presents the limitations of the study and finally the last section discusses the direction for future studies.

Summary of the Study

This study examined the effect and relationship between capital structure and macroeconomic variables in Ghana from 2004 to 2014. Annual data were collected from the GSE and individual websites of non-financial listed firms and

data for macroeconomic variables from Bank of Ghana and World Indicator of World Bank websites. Annual audited financial statements were used mainly to obtain data for measuring capital structure ratios and control variables. The study estimated regression model using balance panel data. The dependent variable for the study was capital structure ratios represented by short term debt to total capital, long term debt to total capital and total debt to total capital and the main independent variable was macroeconomic variables represented by inflation rate, interest rate and GDP growth rate.

The study used pure quantitative method as it explained the cause-effect relationships between capital structure and macroeconomic variables. The study performed panel unit root tests such as the Levin, Lin & Chu (2002), Im, Peseran and Shin W-stat (2003), ADF – Fisher Chi-square and PP – Fisher Chi-square (Maddala and Wu, 1999) to assess the stationarity levels of the variables. More so Hausman test was applied on each model or equation to choose between random effects and fixed effects models. Thus, panel least square regression method was used to analyze panel data to establish the effect and relationship between the two sets of variables. The findings of the study are summarized below:

Firstly, it was observed that 59.40% of the total debt to total capital of the non-financial firms in Ghana is made up of debts. Of this, 48.46% constitutes short-term debt while 12.40% is made up of long-term debt to total capital. Secondly, at 5% significance level for macroeconomic variables, leverage ratios and control variables the results of the study indicated that inflation rate, interest rate and GDP growth rate were found to be negatively associated with short term

debt, and total debt. Interest rates found to be positively related with long term debt while inflation rate and GDP growth rate were found to be negatively related with long term debt. However, the results show that macroeconomic variables are statistically insignificant. In other words, changes in macroeconomic variables do not influence firms' management decisions with regard to changes in firms' debts. This implies that macroeconomic variables do not impact or have effect on leverage of non-financial listed firms in Ghana. This shows that Ghana's economy is small and economic fundamentals are not stable to influence firms' leverage of non-financial firms listed on the Ghana Stock Exchange. Thirdly, while the study considered including firms' specific variables as control variables such as firms' performance measured by return on asset (ROA) and return on equity (ROE), asset tangibility (AS) and firm size (FS) in the model and estimation, the results indicate that the return on assets and return on equity, assets structure and firm size are statistically significant at 5% and 10% significance levels respectively in determining short term and total debts (leverage), while assets structure and firm size are statistically significant at 5% level in determining long term debt. This suggests that internal factors such as firms' performance measured by return on asset (ROA) and return on equity (ROE), asset tangibility (AS) and firm size (FS) considered in previous studies mentioned in the literature confirmed its significant impact on firms' leverage and therefore, their impact can be managed by the firms, while macroeconomic factors such as inflation, interest rates and GDP growth rate revealed to be insignificant cannot be controlled by managers of the firms. This showed that there is instability or uncertainty of macroeconomic

indicators in Ghana during the period under which the study was conducted. Thus, financial managers of the firms during the period of study cannot properly estimate their financial decisions as a result instability of economic indicators.

Conclusions of Study

Conclusions are made from the study findings resulting from the analysed data. These are based on the variables studied and the influence on capital structure of non-financial firms on the Ghana Stock Exchange (GSE). The objective of the study was to establish the effect of inflation rate, interest rate and gross domestic product growth rate as well as the relationships they have on capital structure choice of non-financial firms on the GSE.

The result findings indicated that inflation rate, interest rate and gross domestic product growth rate (GDP) had a negative relationship with short term debt and total debt. Interest rate had a positive relationship while inflation rate and GDP growth rate had a negative relationship with long term debt. The overall results show that inflation rate, interest rate and GDP growth rate had no statistically significant effect on capital structure of non-financial firms on the GSE. In other words, the selected macroeconomic indicators are not in any position to influence capital structure of non-financial firms on the GSE during the period of study (2004-2014). While, by entering controlling variables such as return on assets, return on equity, asset tangibility and firm size, the impact becomes significant in determining capital structure of non-financial firms on the GSE.

Suggestions and Recommendations of Study

The findings of this study illustrated that changes in macroeconomic variables such as inflation rate, interest rate and GDP growth rate does not have impact or influence on capital structure of non-financial listed firms on the Ghana Stock Exchange. While, by entering control variables such as return on assets, return on equity, asset tangibility and firm size the relationship and impact become significant in relation to short-term debt and total debt while assets structure and firm size become significant to long term debt. Thus, the following recommendations would be useful to the management of non-financial firms and policy makers in general.

1. Non-financial firms in Ghana should focus on debt policy as it constitutes a large percentage of capital structure choice so as to benefit from the use of debt financing.
2. The government and authority of Bank of Ghana must ensure that both fiscal and monetary policies are strengthened to stabilize the macroeconomic fundamentals so that non-financial firms can benefit from that so as to continue providing job opportunity, goods and services and other social responsibility to the people of Ghana.

Limitations of the Study

Just like any other studies, this current study has some limitations to the results of the study. The following are some of the limitations to the study:

1. The main observable limitation of the study is the use of fifteen (15) non-financial listed firms on the GSE. Therefore the findings here cannot be generalized to the entire listed firms on the GSE.
2. Another limitation of the study is the quantity of the data. This is because some companies did not separate long-term liabilities from short-term liabilities. To obtain accurate data, the researcher had tedious task of re-arranging the financial data of those companies. It was also observed that some of the firms were not listed in 2004, others were listed but financial statements for some of the firms had either been omitted or not published. For this reason, those firms whose data are not available could not be included in the study. Thus, a more robust result may be ascertained if the data span increases.
3. The effect and relationship between capital structure and selected macroeconomic variables are not clear cut. Therefore the choice of the explanatory and response variables is selected arbitrarily.

Areas for Further Study

Considering the findings of this study, it would be useful to also consider the following direction for future research:

1. A study of financial listed firms on the Ghana Stock Exchange (GSE) in terms of capital structure and macroeconomic conditions.
2. A comparative study of financial and non-financial firms listed on the GSE in terms of capital structure and macroeconomic conditions.

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APPENDICES

Appendix A

Non-Financial Companies covered in the study

NO	Non-Financial Companies	Number of years Financial Data is Obtained
1	African Champoin Industries	11years (2004-2014)
2	AngloGold Ashanti Limited	11years (2004-2014)
3	Aluworks Ltd	11years (2004-2014)
4	Ayrton Drug Manufacturing Ltd	11years (2004-2014)
5	Benso Oil Palm Plantation Ltd	11years (2004-2014)
6	Clydestone (Ghana) Limited	11years (2004-2014)
7	Camelot Ghana Ltd	11years (2004-2014)
8	Cocoa Processing Company	11years (2004-2014)
9	Fan Milk Ltd	11years (2004-2014)
10	Ghana Oil Company	11years (2004-2014)
11	Golden Star Resources	11years (2004-2014)
12	Golden Web Limited	11years (2004-2014)
13	Guinness Ghana Breweries Ltd	11years (2004-2014)
14	Mechanical Lyod Company	11years (2004-2014)
15	Produce Buying Company	11years (2004-2014)
16	Pioneer Kitchenware Ltd	11years (2004-2014)
17	PZ Cussons Ghana Ltd	11years (2004-2014)
18	Sam Woode	11years (2004-2014)
19	Starwin Products Ltd	11years (2004-2014)
20	Total Petroleum Ghana	11years (2004-2014)
21	Transol Solution (Ghana) Ltd	11years (2004-2014)
22	Tullow Oil	11years (2004-2014)
23	Unilever Ghana Limited	11years (2004-2014)

Source: Ghana Stock Exchange

APPENDIX B

Sample of the computation of ratios

Firm: African Champion Industries Ltd

Year: 2004 (values in Ghana Cedis)

NB: Figures used for computation are in financial statements of the selected firms.

Leverage Ratios:

1. Short-Term Debt to Total Capital:

$$\begin{aligned} &= \frac{(\text{Short-term debt})}{\text{Total capital}} \times 100 \\ &= \frac{7,123,151}{13,542,751} \times 100\% = 52.60\% \end{aligned}$$

2. Long-Term Debt to Total Capital:

$$\begin{aligned} &= \frac{(\text{Long-term debt})}{\text{Total capital}} \times 100 \\ &= \frac{2,580,411}{13,542,751} \times 100\% = 19.05\% \end{aligned}$$

3. Total Debt to Total Capital:

$$\begin{aligned} &= \frac{(\text{Short-term debt} + \text{Long-term debt})}{\text{Total capital}} \times 100 \\ &= \frac{7,123,151 + 2,580,411}{13,542,751} \times 100\% = 71.65\% \end{aligned}$$

Control Variables: ROA, ROE, AS and FS

A. Return on Assets (ROA):

$$= \frac{\text{Pre-tax profit}}{\text{Total assets}} \times 100 = \frac{-340,777}{13,542,751} \times 100\% = -2.52\%$$

B. Return on Equity (ROE):

$$= \frac{\text{Pre-tax profit}}{\text{Total equity}} \times 100 = \frac{-340,777}{3,839,189} \times 100\% = -8.88\%$$

C. Asset structure (Fixed Assets Ratios):

$$= \frac{\text{Fixed assets}}{\text{Total assets}} \times 100 = \frac{6,181,255}{13,542,751} \times 100\% = 45.64\%$$

D. Firm Size (FS) = Log of Total Assets

$$\begin{aligned} \text{Total Assets} &= \text{Fixed Assets} + \text{Current Assets} \\ &= 6,181,255 + 7,361,496 = 13,542,751 \\ \text{Therefore, Log (13542751)} &= 7.13 \end{aligned}$$

Appendix C

Summary of Computations of Ratios for 15 Non-Financial Listed Firms on the Ghana Stock Exchange and Macroeconomic Variables (2004-2014)

African Champion Industries	Year										
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Leverage Ratios											
STD	52.60	29.72	37.88	46.15	29.87	37.26	42.36	36.09	55.76	139.52	206.86
LTD	19.05	6.70	7.80	0.00	0.00	0.00	0.00	12.62	17.41	26.43	0.00
TD	71.65	36.42	45.36	45.15	29.87	37.26	42.36	48.71	73.17	165.95	206.86
Control Variables											
ROA	-2.52	-11.60	-16.26	1.81	-7.89	-5.20	-3.10	-10.07	1.34	-16.01	-564.87
ROE	-8.88	-18.24	-29.75	3.36	-11.25	-8.29	-5.38	-20.02	4.98	24.27	28.07
AS	45.64	78.56	85.51	80.91	83.43	79.36	76.21	74.99	84.58	84.64	3.75
FS	7.13	7.59	6.54	6.56	6.93	6.94	6.96	7.02	7.00	6.69	5.51
Macroeconomic Variables											
INF	12.62	15.12	10.92	10.73	16.52	19.25	10.71	8.73	9.16	11.60	15.49
INT	28.75	26.00	24.25	23.75	25.02	22.50	12.26	10.67	22.90	18.80	25.79
GDP	5.60	5.90	6.40	6.46	8.43	3.35	7.90	14.05	9.29	7.33	4.18
AngloGold Ashanti											
	Year										
Leverage Ratios	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
STD	43.42	53.99	53.59	64.43	61.19	46.42	10.22	8.68	15.37	12.19	10.77

LTD	16.45	13.92	12.33	10.70	7.66	22.55	46.60	43.49	41.50	55.11	57.80
TD	59.87	67.91	65.92	75.13	68.85	68.97	56.82	52.17	56.87	67.30	68.57
Control Variables											
ROA	0.73	-2.36	1.88	-5.01	-17.08	-1.24	4.25	21.49	9.90	26.18	1.86
ROE	1.83	-7.36	5.51	-20.15	-54.84	-3.99	9.85	44.93	22.95	81.53	5.92
AS	76.879	81.32	76.48	80.91	76.64	74.87	81.75	76.10	79.50	76.54	81.95
FS	9.91	9.92	9.95	9.99	9.91	3.99	3.98	4.03	4.11	3.99	3.96
Macroeconomic Variables											
INF	12.62	15.12	10.92	10.73	16.52	19.25	10.71	8.73	9.16	11.60	15.49
INT	28.75	26.00	24.25	23.75	25.02	22.50	12.26	10.67	22.90	18.80	25.79
GDP	5.60	5.90	6.40	6.46	8.43	3.35	7.90	14.05	9.29	7.33	4.18
Aluworks											
Leverage Ratios	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
STD	35.95	53.33	43.53	58.19	50.19	57.70	37.96	32.68	31.82	17.52	27.53
LTD	7.32	2.76	8.79	25.18	18.29	17.15	12.68	23.19	39.18	30.78	29.82
TD	43.27	56.09	52.32	83.37	68.48	74.85	50.64	55.87	71.00	48.30	57.35
Control Variables											
ROA	12.50	10.70	8.74	-7.64	-5.14	-9.91	-14.07	-6.20	-3.17	-0.05	-3.42
ROE	22.04	24.36	18.32	-45.92	-16.32	-39.39	-28.50	-14.04	-10.94	-0.10	-8.01
AS	34.52	24.03	42.13	52.25	63.69	75.12	75.82	73.98	61.11	83.54	82.71
FS	7.31	7.42	7.46	7.66	7.85	4.78	4.74	4.73	4.87	5.11	5.16
Macroeconomic Variables											
INF	12.62	15.12	10.92	10.73	16.52	19.25	10.71	8.73	9.16	11.60	15.49
INT	28.75	26.00	24.25	23.75	25.02	22.50	12.26	10.67	22.90	18.80	25.79

GDP	5.60	5.90	6.40	6.46	8.43	3.35	7.90	14.05	9.29	7.33	4.18
Benso Oil Palm Plantation											
Leverage Ratios	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
STD	10.55	7.32	9.22	6.13	8.74	8.39	8.67	6.29	6.30	4.93	4.98
LTD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TD	10.55	7.32	9.22	6.13	8.74	8.39	8.67	6.29	6.30	4.93	4.98
Control Variables											
ROA	4.04	0.16	5.51	4.19	2.25	7.19	11.17	31.01	31.70	13.35	21.54
ROE	4.52	0.14	6.06	4.46	2.47	7.85	12.23	33.09	33.83	14.04	22.67
AS	74.96	79.40	76.84	68.14	66.33	70.83	68.46	58.08	51.58	66.43	67.56
FS	7.10	6.98	7.09	7.25	7.34	4.35	4.39	4.50	4.64	4.66	4.76
Macroeconomic Variables											
INF	12.62	15.12	10.92	10.73	16.52	19.25	10.71	8.73	9.16	11.60	15.49
INT	28.75	26.00	24.25	23.75	25.02	22.50	12.26	10.67	22.90	18.80	25.79
GDP	5.60	5.90	6.40	6.46	8.43	3.35	7.90	14.05	9.29	7.33	4.18
Camelot (Ghana)											
Year											
Leverage Ratios	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
STD	71.61	38.01	33.13	35.44	35.04	38.54	70.01	70.01	56.84	58.16	69.78
LTD	0.00	38.38	57.48	55.52	48.98	48.65	16.54	17.34	8.13	7.91	4.45
TD	71.61	76.39	90.61	90.96	84.02	87.19	86.55	87.35	64.97	66.07	74.23
Control Variables											
ROA	0.68	2.52	1.06	0.68	4.56	2.33	6.46	5.95	9.29	-3.48	0.58
ROE	2.38	10.68	11.26	5.00	28.53	11.73	28.58	26.34	26.52	-10.26	2.26
AS	52.20	51.21	60.50	62.30	67.64	57.55	50.08	52.00	52.16	54.23	51.13

FS	6.04	6.18	6.59	6.36	6.51	6.56	6.60	6.67	6.65	6.63	6.66
Macroeconomic Variables											
INF	12.62	15.12	10.92	10.73	16.52	19.25	10.71	8.73	9.16	11.60	15.49
INT	28.75	26.00	24.25	23.75	25.02	22.50	12.26	10.67	22.90	18.80	25.79
GDP	5.60	5.90	6.40	6.46	8.43	3.35	7.90	14.05	9.29	7.33	4.18
Cocoa Processing Company											
Leverage Ratios	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
STD	46.78	40.68	52.66	28.69	6.87	23.47	33.74	71.82	75.04	50.65	50.60
LTD	22.14	34.86	26.33	44.00	46.96	63.79	66.17	26.40	24.58	31.84	35.39
TD	68.92	75.54	78.99	70.69	53.83	87.26	99.91	98.22	99.62	82.49	85.99
Control Variables											
ROA	1.26	1.14	1.03	0.61	6.60	-8.60	-6.67	-6.35	-7.67	-7.30	-11.33
ROE	4.07	4.68	4.88	2.07	1.51	-67.52	-80.69	35.63	-20.59	-41.68	-132.10
AS	50.41	61.98	60.96	57.45	79.57	69.88	72.99	65.73	68.41	79.36	85.85
FS	7.71	7.82	7.90	8.03	8.26	8.29	8.27	8.31	8.13	8.21	8.16
Macroeconomic Variables											
INF	12.62	15.12	10.92	10.73	16.52	19.25	10.71	8.73	9.16	11.60	15.49
INT	28.75	26.00	24.25	23.75	25.02	22.50	12.26	10.67	22.90	18.80	25.79
GDP	5.60	5.90	6.40	6.46	8.43	3.35	7.90	14.05	9.29	7.33	4.18
Fan Milk											
Leverage Ratios	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
STD	50.49	43.62	36.80	32.03	32.38	28.76	21.25	21.53	32.32	19.57	29.73
LTD	0.00	0.00	0.00	2.06	2.46	2.60	2.54	3.40	3.79	4.94	4.88
TD	50.49	43.62	36.80	34.09	34.84	31.36	23.79	24.93	36.11	24.51	34.61

Control Variables											
ROA	32.50	30.76	24.35	25.33	28.57	39.47	37.74	30.39	37.74	29.41	17.53
ROE	65.64	56.35	40.54	38.75	43.84	57.51	49.52	40.48	104.50	119.98	26.82
AS	60.28	60.78	58.46	56.94	45.91	45.52	43.18	52.68	53.76	61.53	49.29
FS	7.08	7.20	7.26	7.37	7.52	4.71	4.83	4.92	4.98	5.01	5.09
Macroeconomic Variables											
INF	12.62	15.12	10.92	10.73	16.52	19.25	10.71	8.73	9.16	11.60	15.49
INT	28.75	26.00	24.25	23.75	25.02	22.50	12.26	10.67	22.90	18.80	25.79
GDP	5.60	5.90	6.40	6.46	8.43	3.35	7.90	14.05	9.29	7.33	4.18
Guinness Ghana Breweries											
	Year										
Leverage Ratios	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
STD	51.28	46.25	53.87	30.42	42.47	65.81	48.46	63.50	32.94	41.34	24.36
LTD	19.41	10.03	2.95	21.03	17.52	4.16	27.65	14.12	10.13	7.38	42.11
TD	70.69	56.28	56.82	51.45	59.99	69.97	76.11	77.62	43.07	48.72	66.47
Control Variables											
ROA	16.82	13.55	15.84	11.46	14.82	7.56	-2.33	0.23	13.61	9.35	-2.74
ROE	57.38	30.99	36.68	23.60	37.13	25.17	-9.76	1.01	23.91	18.24	-8.16
AS	69.30	80.26	78.48	76.94	62.37	53.53	79.84	79.36	67.57	76.87	70.27
FS	7.66	8.00	8.08	8.12	8.19	5.33	5.28	5.31	5.39	5.47	5.62
Macroeconomic Variables											
INF	12.62	15.12	10.92	10.73	16.52	19.25	10.71	8.73	9.16	11.60	15.49
INT	28.75	26.00	24.25	23.75	25.02	22.50	12.26	10.67	22.90	18.80	25.79
GDP	5.60	5.90	6.40	6.46	8.43	3.35	7.90	14.05	9.29	7.33	4.18
Mechanical Llyod Company											
	Year										

Leverage Ratios	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
STD	38.22	42.62	38.53	36.72	43.94	33.61	32.98	43.69	42.66	41.33	48.90
LTD	8.39	5.76	8.69	5.87	8.44	16.08	12.86	6.84	8.16	9.68	8.46
TD	46.61	48.38	47.22	42.59	52.38	49.69	45.84	50.53	50.82	51.01	57.36
Control Variables											
ROA	5.77	6.74	5.63	9.62	5.73	4.07	9.13	11.16	9.52	-1.86	-5.05
ROE	10.80	13.05	10.67	17.34	12.37	8.08	16.85	22.55	19.36	-3.81	-11.85
AS	43.16	42.05	41.38	17.87	45.63	49.10	57.32	51.38	55.56	42.92	42.35
FS	7.12	7.17	7.19	7.35	7.47	7.45	7.43	7.55	7.91	7.89	7.91
Macroeconomic Variables											
INF	12.62	15.12	10.92	10.73	16.52	19.25	10.71	8.73	9.16	11.60	15.49
INT	28.75	26.00	24.25	23.75	25.02	22.50	12.26	10.67	22.90	18.80	25.79
GDP	5.60	5.90	6.40	6.46	8.43	3.35	7.90	14.05	9.29	7.33	4.18
Pioneer Kitchenware Ltd											
Leverage Ratios	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
STD	18.51	36.44	57.26	69.42	45.89	52.24	77.90	107.90	139.42	207.74	39.78
LTD	1.13	1.08	0.95	1.17	1.48	0.66	0.76	0.57	0.60	1.64	0.24
TD	19.64	37.52	58.21	70.59	47.37	52.90	78.66	108.47	140.02	209.38	40.02
Control Variables											
ROA	2.53	16.74	-9.57	-6.91	-15.30	-15.42	-36.98	-31.69	-33.36	-62.41	-12.06
ROE	3.15	26.80	22.91	-23.50	-29.07	-32.73	-173.24	374.14	83.38	57.06	-20.06
AS	72.18	72.06	60.49	55.93	65.84	70.40	80.79	80.23	55.89	58.28	95.77
FS	6.44	6.42	6.48	6.49	6.39	6.32	6.23	6.20	6.32	6.27	7.09
Macroeconomic Variables											

INF	12.62	15.12	10.92	10.73	16.52	19.25	10.71	8.73	9.16	11.60	15.49
INT	28.75	26.00	24.25	23.75	25.02	22.50	12.26	10.67	22.90	18.80	25.79
GDP	5.60	5.90	6.40	6.46	8.43	3.35	7.90	14.05	9.29	7.33	4.18
Produce Buying Company Ltd											
Leverage Ratios	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
STD	73.06	82.22	77.49	92.86	100.51	78.11	81.01	76.93	76.83	82.45	88.67
LTD	0.00	0.00	0.00	-9.08	-14.59	10.17	5.01	5.80	6.26	5.45	7.13
TD	73.06	82.22	77.49	83.78	85.92	88.28	86.02	82.73	83.09	87.90	95.80
Control Variables											
ROA	17.90	10.18	-6.64	1.07	4.37	7.43	11.39	13.64	4.74	-3.32	-7.98
ROE	67.07	57.29	29.51	7.77	40.11	63.42	81.51	79.02	28.06	-27.47	-189.75
AS	10.62	10.32	13.96	15.05	21.85	27.06	18.29	14.26	19.97	26.25	40.94
FS	7.50	7.48	7.28	7.56	7.83	7.98	8.23	8.44	8.46	8.51	8.52
Macroeconomic Variables											
INF	12.62	15.12	10.92	10.73	16.52	19.25	10.71	8.73	9.16	11.60	15.49
INT	28.75	26.00	24.25	23.75	25.02	22.50	12.26	10.67	22.90	18.80	25.79
GDP	5.60	5.90	6.40	6.46	8.43	3.35	7.90	14.05	9.29	7.33	4.18
PZ Cussons Ghana Ltd											
Leverage Ratios	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
STD	33.66	29.20	33.50	33.93	41.34	40.11	35.75	41.93	48.64	43.87	55.45
LTD	4.43	4.81	5.72	4.99	3.99	4.16	3.98	3.29	1.06	2.38	1.49
TD	38.09	34.01	39.22	38.92	45.33	44.19	39.73	45.22	49.70	46.25	56.94
Control Variables											
ROA	11.51	8.56	14.42	12.67	12.27	2.62	12.08	13.30	0.99	13.73	-2.99

ROE	18.59	12.97	23.73	24.01	22.44	4.70	20.04	24.28	1.97	25.55	-6.95
AS	41.87	44.94	38.46	32.68	29.50	30.60	27.70	20.91	20.03	16.52	15.29
FS	7.27	7.27	7.38	7.46	7.58	7.58	7.62	7.76	7.79	7.86	7.93
Macroeconomic Variables											
INF	12.62	15.12	10.92	10.73	16.52	19.25	10.71	8.73	9.16	11.60	15.49
INT	28.75	26.00	24.25	23.75	25.02	22.50	12.26	10.67	22.90	18.80	25.79
GDP	5.60	5.90	6.40	6.46	8.43	3.35	7.90	14.05	9.29	7.33	4.18
Starwin Products Ltd											
Leverage Ratios	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
STD	20.93	10.28	28.63	29.74	32.30	49.84	39.45	36.32	41.88	39.90	22.47
LTD	2.15	1.92	3.34	6.39	9.75	2.52	10.73	0.91	1.03	1.80	0.56
TD	23.08	12.20	31.97	36.13	42.05	52.36	50.18	37.23	42.91	41.70	23.03
Control Variables											
ROA	0.73	13.07	6.36	-1.00	-5.01	-5.47	4.26	18.14	10.24	14.11	2.05
ROE	0.95	14.48	9.40	-1.57	-8.64	-11.47	8.55	28.90	17.94	24.20	2.67
AS	5.55	37.46	50.79	55.35	54.27	45.98	42.06	44.23	34.84	30.97	14.36
FS	7.43	7.37	6.50	6.53	6.52	6.57	6.57	6.57	6.65	6.72	7.03
Macroeconomic Variables											
INF	12.62	15.12	10.92	10.73	16.52	19.25	10.71	8.73	9.16	11.60	15.49
INT	28.75	26.00	24.25	23.75	25.02	22.50	12.26	10.67	22.90	18.80	25.79
GDP	5.60	5.90	6.40	6.46	8.43	3.35	7.90	14.05	9.29	7.33	4.18
Total Petroleum Ghana Ltd											
Leverage Ratios	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
STD	81.88	80.08	56.13	56.80	58.77	55.20	60.04	65.85	68.58	69.24	68.39

LTD	0.41	0.16	0.05	4.91	3.71	2.80	2.11	1.92	1.28	0.26	1.64
TD	82.29	80.24	56.18	61.71	62.48	58.00	62.15	67.77	69.86	69.50	70.03
Control Variables											
ROA	-3.03	5.23	4.06	8.19	5.46	11.23	16.23	13.73	14.31	13.77	10.91
ROE	-17.12	26.36	9.26	21.37	14.56	26.75	42.88	42.60	47.46	45.16	36.41
AS	35.65	36.23	39.19	41.10	38.87	40.75	39.88	35.44	32.03	35.03	36.80
FS	7.40	7.42	8.10	8.14	8.17	5.16	5.24	5.35	5.46	5.53	5.58
Macroeconomic Variables											
INF	12.62	15.12	10.92	10.73	16.52	19.25	10.71	8.73	9.16	11.60	15.49
INT	28.75	26.00	24.25	23.75	25.02	22.50	12.26	10.67	22.90	18.80	25.79
GDP	5.60	5.90	6.40	6.46	8.43	3.35	7.90	14.05	9.29	7.33	4.18
Unilever Ghana Limited											
Leverage Ratios	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
STD	49.50	46.19	45.50	31.62	43.84	54.52	54.04	56.30	149.88	137.55	82.39
LTD	2.79	3.24	2.92	5.53	4.37	3.53	5.23	4.48	-8.60	-7.81	3.58
TD	52.29	49.43	48.42	37.15	48.21	58.05	59.27	60.78	141.28	129.77	85.97
Control Variables											
ROA	17.86	21.25	20.41	13.92	23.04	2.37	17.97	29.84	13.20	9.79	-0.28
ROE	42.53	48.72	45.95	26.45	52.93	4.05	32.74	77.48	63.89	57.63	-2.01
AS	58.62	56.23	54.43	50.84	42.52	47.38	33.53	30.70	36.34	36.79	34.10
FS	7.81	7.79	7.81	7.98	8.11	5.07	5.14	5.10	5.19	5.28	5.35
Macroeconomic Variables											
INF	12.62	15.12	10.92	10.73	16.52	19.25	10.71	8.73	9.16	11.60	15.49
INT	28.75	26.00	24.25	23.75	25.02	22.50	12.26	10.67	22.90	18.80	25.79

GDP	5.60	5.90	6.40	6.46	8.43	3.35	7.90	14.05	9.29	7.33	4.18
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