An Empirical Analysis of Leverage and Financial Performance of Listed Non-Financial Firms in Ghana

Eric Kofi Boadi1,2 & Yao Li1

1 School of Management & Economics, University of Electronic Science & Technology of China (UESTC), Chengdu, China
2 Accountancy Department Koforidua Polytechnic, Koforidua

Correspondence: Eric Kofi Boadi, School of Management & Economics, University of Electronic Science & Technology of China (UESTC), No. 4 Section 2, North Jianshie Road, Chengdu, China. E-mail: boadikofieric@gmail.com

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Abstract
This research examines the nexus between leverage and profitability of non-financial firms listed on the Ghana stock exchange from 2004 to 2010 using panel data methodology. This study is exploratory in nature and uses Generalised Least Square Regression (GLS) with profitability indicators (Return on Asset, Return on Equity and Net Profit Margin) as dependent variables and inflation rate, exchange rate and gross domestic product as independent variables with firm size and sales growth as control variables. The data was edited, sorted and entered into Microsoft excel and exported into Eviews 7 and was then processed with GLS bearing in mind the dependent and independent variables.

On the average, the study found out that non-financial firms listed on the Ghana Stock Exchange used 55% debt and about 45% equity with 48% short term debt in the debt structure.

Keywords: leverage, profitability and capital structure

1. Introduction
The 2007-2008 financial crises in the world appears to have become a pivotal concern of the need for banks to manage debt. However, the same may not be said of measures instituted to curb financial crises in non-financial institutions in debt administration and management.

Financial capital consist of equity and debt capital which when proportionated is referred to as capital structure of firms (Pandey, 2010) and is used to finance assets show in the balance sheet of firms. From the plethora of definitions, capital structure may be seen as the ratio of how much money a firm should borrow from the public to how much shareholders should contribute to finance the operations of the firm. Ever since the seminal works by Modigliani and Miller in 1958 and 1967 corporate finance literature within the framework of capital structure on leverage has been expanded over the years. Capital structure of a firm financed equity is christened levered equity and firms finance their activities through borrowing by leveraging their operational activities. This is revealed in the statement of financial position of profit oriented organizations on how assets are financed by both equity and debt (bonds, bank loans, treasury bills and commercial paper among others).

Financial experts insightful information provided on financial statement analysis is never complete without analysing leverage ratios particularly debt to equity ratio, equity multiplier and liquidity ratios. Leverage also extends to the agency conflict, cost of capital, enterprise risk and margin trading.

These has necessitated an increasing studies on profitability of financial and non-financial firms in Ghana. Examples include, Abor (2005) on the profitability of listed firms in Ghana. Another study by Amidu (2007) again studied the determinants of capital structure of banks in Ghana. In respect to insurance, Boadi, Antwi and Lartey (2013) studied the determinants of profitability of insurance firms in Ghana and Lartey, Antwi and Boadi (2013) took a study on the relationship between liquidity and profitability of listed banks. Not much studies with respect to capital structure (leverage) and profitability relationship has been done. At the time of our study only Abor and Biekpe (2005) examined what determines the capital structure of Ghanaian firms and Gatsi & Akoto (2010) studied capital structure and profitability of banks in Ghana.
The novelty of this study was to investigate specifically the empirical relationships between capital structure (leverage) and profitability of non-financial firms listed on the Ghana stock exchange from 2004 to 2010. It also examined how the financing arrangements are influenced by key macroeconomic indicators since to the best of our knowledge not enough attention has been given to leverage and financial performance of listed non-financial firms in Ghana. This study seek to unearth the gap created.

Our study establishes that the capital structure of non-financial firms listed on the Ghana Stock Exchange constitute only 7 percent of long term debt. This was determined with the specific testable hypothesis that there is no statistical positive relationship between profitability and listed non-financial companies leverage.

2. Review of Related Literature

Varying works on capital structure have concluded that the determination of appropriate choice and mix of debt and equity stands to maximize the market value of non-financial firm. Again the proportion of debt to equity is a strategic choice by the firm. Finally, that capital structure is a mix or proportion of a firm’s permanent long-term financing represented by debts, preferred stock and common stock (Abor, 2005; Gatsi & Akoto, 2010; Van Horne & Wachowicz, 2008).

2.1 Theoretical Review

The theoretical review dwells mostly on the concept of capital structure and theories explaining capital structure.

2.1.1 The Concept of Capital Structure

Abor (2005) defined capital structure as the specific mix of debt and equity a firm uses to finance its operations and the firm has a choice from alternative capital structure. Ross et al. (2008) also indicated that capital Structure is a firm’s choice of how much debt it should have relative to equity. This is a question of how a firm should go about choosing its debt-equity ratio and that such a choice has many implications for a firm, and is far from being a settled issue in either theory or practice. Brealey and Myers (2003) opined that the choice of capital structure is fundamentally a marketing problem. Weston and Brigham (1992) noted that the optimal capital structure is the one that maximizes the market value of the firm’s outstanding shares.

In our opinion the choice of a firm capital structure depends on the source of it’s strengthen to raise its capital. A firm with a greater strength in obtaining internal financing may not be much interested in obtaining external financing. However, we must admit to some extent, it depends on the objective of the firm. It may be to avoid control or to develop public interest in profit sharing or probably lack of capacity to generate internally to support its expansion.

2.1.2 Theories of Capital Structure

A lot of theories of capital structure have been developed and discussed by renowned scholars and researchers in corporate finance. These include the Modigliani & Miller theory; the pecking order theory and the static trade-off theory. The others are asymmetric information; tax benefits associated with debt use; bankruptcy cost; agency cost; market timing theory and signalling theory.

Modigliani & Miller Theory (M &M Theory)

In corporate finance literature, Modigliani & Miller are the celebrated scholars in capital structure theories. In their contribution to theories on capital structure, they came out with M & M proposition I and M & M proposition II.

M & M proposition I states that it is absolutely irrelevant how a firm chooses to arrange its finances, implying the value of the firm is independent of its capital structure. Ross et al. (2008) cited the M & M proposition I by using the” pie” model with two identical firms on the left hand side of a balance sheet with exactly the same assets and operations, but different means of finance of the operations at the right hand side.

In the discourse, Modigliani & Miller Pie A had a total value of 100% with debts to equity slice of 60% to 40% respectively. Pie B however had 40% debt and 60% equity. Two identical firms may opt for different means of finance given the same assets and operations.
The proposition II of M & M however posit that although changing the capital structure of the firm may not change the firms' total value, it does cause important changes in the firms' debt and equity. Modigliani & Miller (1963) ignoring taxes, demonstrated it with a linear function as shown below.

From Figure 2, Cost of equity (RE) is given by a straight line with a gradient of (RA-RD) with y-intercept corresponding to a firm with a debt-equity ratio of zero, so RA = RE in that case. Diagram 2 shows that, as the firm raises its debt-equity ratio, the increase in leverage raises the risk of the equity and therefore the required return, or cost of equity (RE).

M & M Proposition II therefore tells us that the cost of equity depends on three things: the required rate of return on the firm’s assets; the firm’s cost of debts and the firm’s debt-equity ratio. This established the equation in figure 2, that is:

\[ RE = RA + (RA-RD) \times (D/E) \]

where RE is the cost of equity; RA is the required rate of return on the firm’s assets; RD is the firms cost of debt and D/E is the firm’s debt-equity ratio.

The equation means that there is a linear relation between RE and D/E represented by the capital structure. M & M proposition II therefore states that, a firm’s cost of equity capital is a positive linear function of its capital structure.

We can conclude from diagram 2, the change in the capital structure weights (E/V and D/V) is exactly offset by the change in the cost of equity (RE), so the WACC stays the same.

Gatsi and Akoto (2010) maintain that the principal theoretical model of capital structure centres on the idea that firms have information that investors do not have, and that the interest of managers, equity-holders and debt holders may not coincide.

Another theory is the pecking order theory. This theory explains how firms use internally generated funds to initially finance their operations instead of external borrowings (Myers & Majluf, 1984; Gatsi & Akoto, 2010). Abor (2008) supported this by saying that debt financing becomes essential when there is an inadequate amount
of internal funding available, and equity will only be used as a last resort. From our view, companies with few long term investment stands to have low debt ratio as cash is used to pay the debt with short periods. Our study unveil this which is consistence with Barclay and Smith (2005) which to the best of our ability is the first time a study in Ghana has replicated such a theory.

Mention can also be made of static trade-off theory. According to Ross et al. (2008), this is where firms borrow up to the point where the tax benefit from an extra dollar in debt is exactly equal to the cost that comes from the increased profitability of financial distress.

The static Trade–off theory has been questioned by many authors, including Miller (1977), who argued that the static trade–off model implies that firms should be highly leveraged than they really are, as the tax savings of debt seem large while the costs of financial distress seem minor. It implies that the tax benefit from leverage is obviously only important to firms that are in a tax–paying position. As a result, firms with substantial accumulated losses will get little value from the interest tax shield.

Information asymmetry cost

Myers (1984) and, Myers and Majluf (1984) contend that the concept of optimal capital structure is based on the notion of asymmetric information in that between the firm and its likely finance providers, the relative costs of finance vary among different sources of finance. Gatsi and Akoto (2010) also stated that the presence of this information “gap” between managers and investors has led to the formulation of two distinct but related theories of financial decisions, namely: market timing theory and signally theory.

It has also been suggested that firms should issue shares to invest in growth opportunities to avoid the cost of financial distress (Lucas & McDonald, 1990) and (Korajczyk, Lucas, & McDonald, 1992). They posit obviously that, astute managers would prefer to use internally generated funds rather than issuing new shares.

From the forgone discussion it can therefore be concluded that firms maximize value by steadily choosing to finance new investments with the “cheapest available” source of funds. It can also be seen that managers would prefer internally generated funds (retained earnings) to external fund and, if outside funds are needed, they prefer debt to equity because of the lower information costs associated with debt issues.

Signalling theory is based on the idea that managers have more superior information than outside investors on the performance of the firm, and would thus communicate this potential to investors by increasing leverage (Barclay & Smith, 2005; Gatsi & Akoto, 2010) Ross (1977) also argued that adding more debt to the company's capital structure can show as a credible signal of higher expected future cash flows.

From the fore-going discussion, it can be seen that higher–value firms would use more debt in their capital structure to signal this value relative to their low–value counterpart and this is based on the premise that inefficient firms cannot manage debt and any attempt to use more debt would jeopardize the financial health of the firm due to bankruptcy and its associated costs.

2.2 Empirical Review

The empirical perspectives cover issues mostly on the negative relationship between leverage and firm profitability, and the positive relationship between leverage and firm profitability.

2.2.1 Negative Relationship between Leverage and Firm Profitability

In examining the association between leverage and firm profitability, numerous studies have conducted revealed a negative relationship between profitability and leverage. These include Amidu’s (2007) study on determinants of the capital structure of banks in Ghana; Abor’s (2005) study on the effect of capital structure on the profitability of listed firms in Ghana and Graham’s (2004) study on how big are the tax benefits of debt?.

Amidu (2007) found an inverse relationship between short-term debt and firm profitability. Abor (2005) in his studies also found an inverse relationship between company profitability and long-term debt. Graham (2004) concluded by saying that there is an inverse relationship between total debt and profitability. He further indicated that big and profitable companies present low debt levels.

Titman and Wassels (1988) opined that firms with high profit levels, all things being equal, would maintain relatively lower debt levels since they can realize such funds from internal source. Cassar and Holmes (2003), and Hall et al. (2004) all found a negative association between profitability and both long-term debt and short-term debt ratios. Kester (1986) also found a significantly negative relationship between profitability and debt/asset ratios.

Furthermore, Rajan and Zingales (1995) also observed a significantly negative correlation between profitability
and leverage in their work. According to Fama and French (1998), debt usage does not necessary grant tax benefits; high leverage may rather generate agency problems among shareholders and debt-holders that predict negative relationship between leverage and profitability. The above empirical evidences, seems to be consistent with the pecking order theory.

2.2.2 Positive Association between Leverage and Firm Profitability

Despite the above, other researchers are of a different view. These researchers in their studies found a positive association between profitability and leverage. For example in a study designed to examine the effect of capital structure on profitability of listed firms in Ghana. Abor (2005) observed a significantly positive relationship between the ratio of short-term debt to total assets and profitability, but a negative association between the ratio of long term debt to total assets and profitability.

It should be noted however that, on average, Abor (2005) reported a significantly positive relationship between total debt and profitability thus supporting the above previous works.

Studies conducted by Peterson and Rajan (1994) to examine the relationship between profitability and leverage, also revealed a significantly positive association between profitability and debt ratio.

Taub (1975) in a regression analysis of four profitability metrics against debt ratio observed a significantly positive relationship between debt and profitability.

Champion (1999) and Leibenstein (1966), argue that companies can use more debt to enhance their financial performance because of debts capability to cause managers to improve productivity to avoid bankruptcy. Furthermore Roden and Leweller (1995) in a study to find the percentage of total debt in leverage buyout observed a significantly positive relationship between profitability and total debt. Nerlove (1968) and Baker (1973) also supported the notion that there exist a significantly positive relation between profitability and firm leakage.

Gatsi and Akoto’s study on capital structure and profitability of Ghanaian Banks, revealed a significantly negative association between short-term debts and net interest margin. This denotes that as deposits increase in the banking sector, net interest margin falls. In their study, long-term debts was negative but insignificant in determining net interest margin in the banking sector. Gatsi and Akoto (2010) concluded that short-term debts, long term-debts, and total debt are insignificant in determining returns on equity (ROE) in the banking sector of Ghana. They attributed this to increase cost of doing the business of banking in Ghana coupled with underutilization of deposits due to high lending rates.

The import of the review is that, there is still myth relating to leverage and profitability association and this create a chasm that academia’s must work hard to draw a lasting conclusion and hence the floodgate of this research.

2.3 Firms Profitability Indicators

Profitability indicators are the parameters used to access the financial viability in respect to gains made by profit oriented firms. Van Horne and Wachowicz (2008) classified profitability ratios in relation to sales and investment. The gross profit margin, return on investment and return on equity are normally considered and that profitability ratios measures management’s overall effectiveness as shown by returns generated on sales and investments.

Ross, Westerfield and Jordan (2008) also explained that return on assets and return on equity are key indicators for assessing the profitability of a company.

This aspect considers specific profitability ratios such as Return on Assets (ROA), Return on Equity (ROE) and Net Interest Margin (NIM) determinants used in this research work.

2.3.1 Return on Asset (ROA)

This is one of the widely held accounting ratio measure used to determine the earning capacity of a firms total assets. Ongore and Kusa (2013) in a study on determinants of financial performance of Commercial Banks in Kenya measured ROA as total income to its total asset. Similarly, Van Horne and Wachowicz (2008) stated that return on asset (ROA) is the ratio of net income that is pre-tax profit to total asset. Also Boadi et al (2013) used it as a profitability determinants of insurance firms in Ghana. This ratio measures after tax profit per cedi of assets.

2.3.2 Return on Equity (ROE)

Van Horne and Wachowicz (2008) also defined return on equity (ROE) as the ratio of net income to total stock of equity. It was also defined as the ratio of pre-tax profit to total equity capital. The use of ROE as a profitability measure is appropriate due to the fact that ROE represents the return that goes specifically to the owners of a
business as against returns to the whole firm. The use of ROA even though embedded in ROE (Saunders et al. 2004), is necessary to determine the profitability of the firm in terms of their investments and thus measure the profitability linked to the asset size of the firm.

2.3.3 Net Profit Margin (NPM)

The third dependent variable is the ratio of net profit margin. Gowthorpe (2003) stated that net profit margin (NPM) is the profit that is available from each cedi of sales after all expenses have been paid, including cost of goods, selling and administrative expenses, dependable interest and taxes. It is calculated as the ratio of pre-tax profit to total sales.

Literature on corporate finance indicates generally ROE is preferred to ROA and NPM as a profitability indicator. Nonetheless, as researchers we considered NPM as another dependent variables in the study since it reflects the profit that emanates from the core business or sales of the firms and thus the researcher will desire to see how the explanatory variables would influence it in the regression model.

2.4 Determinants of Leverage of Non-Financial Firms

There are two major determinants of leverage; micro determinants and macro determinants. This has been diagrammatically been showed in Figure 1.

2.4.1 Microeconomic Determinants

1) The ratio of short-term debt to total capital

Van Horne and Wachowicz (2008) explained the ratio of short-term debt to total capital as the ratio that measure the extent to which the listed firms under study use short-term debt to finance their operations and how this category of debt associates with the firm’s profitability for the chosen period of the study. They further indicated that settlement of the short-term debt is within a period of one year. In this study, we as researchers expects a significantly positive relationship between short-term debt and the three profitability matrices. This relationship is expected so as to meet the dictates of theoretical and durational matching perspectives in the non-financial firms in Ghana.

2) The ratio of long-term debt to total capital

Concerning the ratio of long-term debt to total capital, Van Horne and Wachowicz (2008) argue that, the ratio measures the extent to which the non-financial firms use long-term debt to finance their operations and how this category of debts associates with the firm’s profitability for the chosen period of the study. They further defined it as debt finance payable in more than one accounting period.

It is evident that whereas some studies revealed a positive relationship between profitability ratios and long-term debt, other results showed a negative relationship between firms’ profitability and long-term-debt. In this study, the researchers also expects a positive relationship between long-term debt and the three profitability matrices. 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 firms’ profitability in Ghana. Many studies have been inconclusive to determine the relationships between leverage (TD) and profitability. In this study, the researcher expects a negative relationship between total debt and firm’s profitability.

3) Firm size

Size has been viewed as a determinant of a firm’s capital structure (Abor, 2005). Larger firms tend to be more diversified and hence have lower variance of earnings, making them able to tolerate high debt ratios (Castanias, 1983; Wald, 1999). Smaller firms on the other hand may find it relatively more costly to resolve information asymmetries with lenders thus may present lower debt ratios (Castanias, 1983). Studies conducted on the relationship between firm size and capital structure revealed varying findings. Most of the studies support a positive relationship between firm sizes and leverage (Marsh, 1982; Friend & Lang 1988; Rajan & Zingales, 1995; Cassar & Holmes, 2003). It should be noted that, Fischer, Heinkel and Zechner (1989) however found a negative relationship between size and debt ratio.

Firm size has been taken as the logarithm of the total asset of selected non-financial firms. The use of logarithm enables us to get the real total asset of the firms due to its capabilities to normalized values. In this study, firm size and profitability relationship is expected to be positive.

4) Sales growth

Empirical evidence from studies conducted on sales growth and the dependent variables are quite varying with
respect to conclusions. Some researchers found positive relationship between sales growths and leverage (Kester, 1986; Titman & Wessels, 1988). Other evidence showed that higher growth firms use less debt, as such indicated negative relationship between growth and debt ratio (Kim & Sorensen, 1986; Rajan & Zingales, 1995; Al-Sikran, 2001). In the present study, a positive relationship is also expected between the dependent variables and sales growth. The positive relationship between the dependent variables and sales growth indicates that, non-financial firms in Ghana really gain much from their core businesses. Other researchers with similar views include Myers (1977), Marsh (1982) and Michaelas, Chittenden and Poutziouris (1999).

In the study, Pre-tax profit has been used instead of after tax profit or net income, for computation of the profitability ratio so as to prevent the result of the estimation from being distorted by the influence of tax payment. This presupposes that the higher the profit the higher the tax charge, and the lower the profit the lower the tax charged. In this research we used the after tax profit give a true reflection of their profit.

2.4.2 Macroeconomic Factors

5). Gross Domestic Product

The level of GDP has serious influence on sales and profitability and may be one of the reasons why firms contract debt to finance opportunities created by the GDP growth. In periods where there is a drop in GDP growth credits demands decline whiles economic boom increase GDP affecting the bank’s profitability negatively and positively respectively (Athanasoglou et al., 2005). Furthermore the relationship between GDP and ROA, ROE and NIM remain indecisive as ROA and ROE had an insignificant negative and positive correlation respectively with NIM having a significantly negative relationship with GDP on commercial banks (Ongore & Kusa, 2013) which reinforced the opinion of Flamini et al. (2009) that GDP does not always have optimistic effect on banks performance.

6). Inflation

Inflation drives the cost of borrowing and pricing of products hence can influence profitability. The same study by Ongore and Kusa (2013) resulted in inflation having a significantly negative correlation with commercial banks performance.

7). Exchange Rate

To mirror the effects of imports and exports receipts and their impact on profitability, exchange rate was considered. Exchange rate movements changes profits margins on export, since exporting firms automatically adjust prices when their currency falls hence the demand for their goods reduces Klitgaard (1999). This research intend to investigate the effect of exchange rate on non-financial institutions listed on the GSE performance.

2.5 Conceptual Framework

Following the mixed results from the reviewed literature the conceptual framework below was developed.

![Diagrammatic representation between dependent and independent variables](image-url)
3. Research Methodology

3.1 Study Area, Sources of Data, Data Collection and Management

This study made use of exploratory study based on secondary data obtained from Ghana Stock Exchange Fact book, African Financial Portals website and the listed non-financial companies’ websites and it was also quantitative in nature because it measured observed facts and used relevant models (Cooper & Schindler, 2001). In addition, scholarly articles from academic journals, relevant text books on the subject were also used not forgetting the internet search engines were used. The findings may not represent all the listed firms on the Ghana Stock Exchange as this study excluded banks, insurance and other financial firms. The purposive sampling method was employed in this selection. In all 15 non-financial companies were used and their financial data were used to compute their profitability and leverage ratios.

It also adopted the Generalised Least Square Panel data methodology due to the significant benefits its offers over time and across space (Baltagi, 1995; Boozer, 1997; Gujaruti, 2003). Thus panel data helps degrees of freedom to increased collinearity among the exploratory variable and to reduced and again control individual heterogeneity due to unforeseen factors which, if ignored in time series or cross section data will lead to prejudiced results (Baltagi, 1995).

3.2 Model Estimation and Specification

Three dependent variables made up of profitability ratios, six independent variables and two control variables firm size and sales growth were considered for the study (Table 1). The study also considered the macroeconomic effects using the inflation rate and exchange rate as other independent variables.

<table>
<thead>
<tr>
<th>Table 1. Dependent and independent variables used for the study</th>
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<tbody>
<tr>
<td><strong>Category</strong></td>
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<tr>
<td>Dependent Variables</td>
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<td>1.</td>
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<td>2.</td>
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<td>3.</td>
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<tr>
<td>Independent Variable and Control variable</td>
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The study employed Generalized Least Squares (GLS) panel model for the estimation. The baseline model Abor, (2005) and the capital structure theories published by Modigliani and Miller (1958; 1963) and others, serves as the basis for the empirical model to develop the study model. The 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:

\[ Y_{it} = \beta_0 + \beta_1 X_{it} + U_{it} \]

Here, \( U_{it} \) is a random term and \( U_{it} = U_i + V_{it} \) where \( U_i \) the firm specific effect is and \( V_{it} \) is the random term.

The random effect model was chosen based on the underlying postulate that model \( U_i \) and \( V_{it} \) are random with unknown disturbances. For most panel applications a major error compound model for the disturbances is adopted with \( U_{it} = U_i + V_{it} \) where \( U_i \) accounts for any unobserved firm-specific effect that is not included in the regression model, and \( V_{it} \) represents the remaining disturbances in the regression which varies with individual firms and time.

Considering the dependent variables (return on asset, return on equity and net profit margin), the independent variables (short-term debt, long-term debt and total debt) and the control variables sales growth and firm size, the relationship between debt and non-financial firms’ profitability in Ghana is thus estimated in the following regression models:
\[ Y_{i,t} = \beta_0 + \beta_1 TD_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 SG_{i,t} + \beta_4 EX_{i,t} + \varepsilon_{i,t} \]

Where:

- \( Y_{i,t} \) = ROE, ROA and NPM in time \( t \);
- \( STD \) = Short Term Debts for firm \( i \) in time \( t \);
- \( LTD \) = Long Term Debts for firm \( i \) in time \( t \);
- \( TD \) = Total Debt for firm \( i \) in time \( t \);
- \( SIZE \) = Firm Size for firm \( i \) in time \( t \);
- \( SG \) = Sales Growth;
- \( EX_{i,t} \) = GDP;
- \( \varepsilon_{i,t} \) = Is the disturbance term (factors that might have effect on the dependent variable, but for the purpose of the study were not accounted for).

The profitability ratios used were return on assets (ROA), return on equity (ROE) and net profit margin (NPM) and the leverage ratios are short–term debt to total capital, long–term debt to total capital, and total debt to total capital.

The data obtained after computation of the ratios, were fed into Excel programme. This was then imported into software called Eviews 5 for the model estimations to establish the relationship and significant volatility of dependent variables, independent variables and control variables.

4. Empirical Results Analysis

This section presents the empirical analysis of panel data extracted from the annual reports of listed Ghanaian non-financial firms as published in the Ghana Stock Exchange Fact Book from 2004 to 2010 and the African financial Portal website. The analysis was based on the generalized least square (GLS) regression with profitability ratios posits as dependent variables and leverage ratios such as short term debt to total capital, long term debt to total capital and total debt to total capital served as independent variables. Sales growth and firm size, GDP, inflation and exchange rate were used as control variables.

4.1 Descriptive Statistics

Table 2 provides a summary of the descriptive statistics of the dependent and independent variables average indicators based on the financial statements of the non-financial firms listed on the Ghana Stock Exchange from 2004 to 2010.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Observation</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on Asset</td>
<td>105</td>
<td>8.947</td>
<td>-17.080</td>
<td>43.890</td>
<td>11.145</td>
</tr>
<tr>
<td>Return on Equity</td>
<td>105</td>
<td>18.640</td>
<td>-57.290</td>
<td>82.950</td>
<td>26.188</td>
</tr>
<tr>
<td>Net Profit Margin</td>
<td>105</td>
<td>6.204</td>
<td>-38.050</td>
<td>29.070</td>
<td>9.536</td>
</tr>
<tr>
<td>Short-Term Debt</td>
<td>105</td>
<td>47.655</td>
<td>5.010</td>
<td>100.510</td>
<td>18.665</td>
</tr>
<tr>
<td>Long-Term Debt</td>
<td>105</td>
<td>7.337</td>
<td>-14.590</td>
<td>57.480</td>
<td>12.433</td>
</tr>
<tr>
<td>Total Debt</td>
<td>105</td>
<td>54.990</td>
<td>5.680</td>
<td>90.960</td>
<td>19.176</td>
</tr>
<tr>
<td>Firm Size</td>
<td>105</td>
<td>7.423</td>
<td>5.740</td>
<td>9.990</td>
<td>0.849</td>
</tr>
<tr>
<td>Sales Growth</td>
<td>90</td>
<td>24.989</td>
<td>-40.230</td>
<td>130.120</td>
<td>28.859</td>
</tr>
<tr>
<td>Gross Domestic Product</td>
<td>7</td>
<td>5.771</td>
<td>4.500</td>
<td>6.500</td>
<td>0.679</td>
</tr>
<tr>
<td>Inflation</td>
<td>7</td>
<td>15.300</td>
<td>10.900</td>
<td>23.600</td>
<td>4.060</td>
</tr>
<tr>
<td>Exchange Rate (GH₵ to US$)</td>
<td>7</td>
<td>0.948</td>
<td>0.840</td>
<td>1.200</td>
<td>0.112</td>
</tr>
</tbody>
</table>

Source: Researchers Regression Result (as at the time).

From table 2 the profitability of the firms’ measured by ROA, ROE, and NPM registered an average return of 8.95%, 18.64% and 6.2% respectively. The ratio of STD to TC, LTD to TC and TD to TC recorded averages of 47.65%, 7.34% and 54.99% respectively. This means that whereas 55% of the total assets of the firms are financed...
by debts, 45% was generated from either equity finance or other internal sources. The above position suggests that the companies are greatly financed by leverage, with a larger percentage of the total debts being short-term debts. This attest that, Ghanaian non-financial firms mostly depend more on debts, especially short-term debts (STD) as compare to equity and other internal sources to finance their operations. It again draw attention of non-financial firm’s obligations to settle their debts within a shorter period. This explains why most of the firms find it difficult to expand their operations and profitability as their unable to reinvest all their returns before paying their debts. This can leave the firms in a continuous cycle of financing pressure.

The 7.34% average long-term debts recorded, which is lower as compared to short-term debts (STD) might be attributed to the inability to provide collateral to assess the long-term facility and the fear of financial institutions to accommodate exceptional risk associated with the firms. It may also be due to high cost associated with long-term debts. Firm size and sales growth registered an average value of 7.42% and 24.98% respectively. The mean sales growth of 25% indicates that gradually the non-financial firms are catching up with the financial institutions since per the stock market statistics, the non-financial firms are far behind the financial firms in terms of growth. The mean values of the entire variables were at 5% significant level.

4.2 The Correlation Matrix

In order to examine the strength and relationships among the regressors, a correlation matrix of the variables for the sample firms is discussed in Table 3.

Table 3. Correlation matrix of the variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>ROA</th>
<th>ROE</th>
<th>NPM</th>
<th>STD</th>
<th>LTD</th>
<th>TD</th>
<th>Firm Size</th>
<th>Sales Growth</th>
<th>GDP</th>
<th>Inflation</th>
<th>Exchange Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROE</td>
<td>910</td>
<td>.786</td>
<td>.019</td>
<td>-.177</td>
<td>-220</td>
<td>-315</td>
<td>.082</td>
<td>.316</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.000)</td>
<td>(.000)</td>
<td>(.071)</td>
<td>(.024)</td>
<td>(.046)</td>
<td>(.002)</td>
<td>(.001)</td>
<td>(.002)</td>
<td>(.003)</td>
<td>(.004)</td>
<td>(.000)</td>
</tr>
<tr>
<td>NPM</td>
<td></td>
<td>.717</td>
<td></td>
<td>.269</td>
<td>.094</td>
<td>.784</td>
<td>.032</td>
<td>-.018</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STD</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LTD</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm Size</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales Growth</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Exchange Rate</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Correlation is significant at the 5% (2-tailed); Significant value in bracket.

From the table ROA is only significant with total debt and statistically with GDP, though it reveals positive relationship with sales growth and inflation rate. The relation between sales growth and ROA is significant while that between ROA and inflation rate is not significant. Implying that high inflation has the possibility of increasing ROA and a fall in inflation is likely to reduce ROA which is a measure of profitability.

ROE on the other hand is negatively related to short-term debt, long-term debt and total debt but not statistically significant. Exchange rate, firm size and GDP are negatively related to ROE. However, it is only
GDP which is significantly related to ROE. ROE is positively but less significantly related to inflation rate. NPM is significantly and negatively related to short term debt, total debt and GDP but not with exchange rate, firm size and long term debt. For instance an increase in short term debt precipitate a decrease in NPM. Thus a 10% decrease in short term debt in non-financial firms lead to a 10% increase in NPM.

4.3 Regression Results

In order to investigate the relationship between capital structure and profitability, regression analysis was made. Measures of profitability (ROA, ROE and NPM) were regressed against measures of debt (STD, LTD and TD) and the control variables FS, GDP, Exchange rate, inflation rate and SG. General least squares (GLS) regression results are presented in Tables 4, 5 and 6. It should be noted that the values of all the variables are at 5% significant level.

Table 4. Regression result for ROA

<table>
<thead>
<tr>
<th>Variables</th>
<th>Profitability: ROA</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>STD</td>
<td>LTD</td>
<td>TD</td>
</tr>
<tr>
<td></td>
<td>Coef.</td>
<td>Sig.</td>
<td>Coef.</td>
</tr>
<tr>
<td>Firm Size</td>
<td>0.059</td>
<td>0.964</td>
<td>-0.104</td>
</tr>
<tr>
<td>Sales Growth</td>
<td>0.107</td>
<td>0.004</td>
<td>-0.111</td>
</tr>
<tr>
<td>GDP</td>
<td>-4.147</td>
<td>0.413</td>
<td>-3.232</td>
</tr>
<tr>
<td>Inflation</td>
<td>0.367</td>
<td>0.378</td>
<td>0.347</td>
</tr>
<tr>
<td>Exchange Rate (GHS to US$)</td>
<td>-6.617</td>
<td>0.723</td>
<td>-6.208</td>
</tr>
<tr>
<td>Constant</td>
<td>34.706</td>
<td>0.143</td>
<td>27.214</td>
</tr>
<tr>
<td>STD</td>
<td>-0.089</td>
<td>0.121</td>
<td></td>
</tr>
<tr>
<td>LTD</td>
<td>-0.148</td>
<td>0.072</td>
<td></td>
</tr>
<tr>
<td>TD</td>
<td>-0.152</td>
<td>0.005</td>
<td></td>
</tr>
</tbody>
</table>

Note. Significant level at 5%; Random-effects GLS regression.
Source: Researchers Regression Result.

From Table 4, short-term debt with probability value of 0.121 was found to be insignificant and negatively associated with returns on asset. This indicates that, increasing the amount of short term debt will result in a decrease in the return of asset of the firms. The result also shows that total debt with a probability value of 0.005 recorded a significantly negative relationship with return on asset. The relation between total debts to capital ratio and return on asset was found to be significantly and negatively related. The negative relationship between long-term debt and profitability on one hand and short-term debt and profitability on the other hand, denotes that though high geared firms could be profitable, at the time of the study, the increase amount of short-term debt and long-term debt did not result in increase in profitability.

All things being equal, we as researchers, it could be as a result of high lending rate or costs of borrowing. It therefore means that for such firms to be profitable, they will initially prefer internal finance to external borrowings as stated by the pecking order theory.

Van Horne and Wachowicz (2008) support this by saying that firms with high profit levels, all things being equal, would maintain relatively lower debt levels since they can realize such funds from internal source. Sales growth however was significantly and positively related to return on asset for all measure of debts. The results also show that apart from sales growth that registered positive association with returns on asset, inflation also do though not significant, while the rest of the predictor variables were inversely related to return on asset.

From the results it can therefore be concluded that whereas STD and LTD were found to be insignificant and negatively related with ROA, TD was significantly and negatively related to ROA. Regarding the control variables, it can be seen that whereas FS was statistically insignificant and negatively related to ROA for all measures of debts, FS, Exchange rate, GDP were insignificantly and negatively related to ROA. However, SG was significantly and positively related to ROA for all measures of debts.

4.3.1 Decision Rule

The conclusion therefore shows that the null hypothesis, ROA is positively related to short-term debt, Long term
debt, total debt and firm size needs to be rejected in favour of the alternative hypothesis. However regarding ROA and SG the null hypothesis, ROA is positively related to SG and hence we fail to reject the alternative hypothesis.

Table 5. Regression result for ROE

<table>
<thead>
<tr>
<th>Variable</th>
<th>Profitability: ROE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>STD</td>
</tr>
<tr>
<td></td>
<td>Coef.  Sig.</td>
</tr>
<tr>
<td>Firm Size</td>
<td>-1.107  0.729</td>
</tr>
<tr>
<td>Sales Growth</td>
<td>0.282  0.002</td>
</tr>
<tr>
<td>GDP</td>
<td>-14.868  0.222</td>
</tr>
<tr>
<td>Inflation</td>
<td>0.532  0.595</td>
</tr>
<tr>
<td>Exchange Rate (GHC to US$)</td>
<td>13.174  0.769</td>
</tr>
<tr>
<td>Constant</td>
<td>88.258  0.122</td>
</tr>
<tr>
<td>STD</td>
<td>-0.036  0.796</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.208  0.222</td>
</tr>
<tr>
<td>Wald chi$^2$(3)</td>
<td>21.800  0.001</td>
</tr>
<tr>
<td>Prob. &gt; chi$^2$</td>
<td>0.001  0.001</td>
</tr>
</tbody>
</table>

Note. Significant level at 5%; Random-effects GLS regression.
Source: Regression Result Computed by Researchers.

From Table 5, short-term debt with probability value of 0.796 registered insignificant and negative association with ROE. This indicates that short term debts though insignificant have a tendency to be less expensive and therefore increasing short-term debts with relatively low interest rate will lead to an increase in profit level. The results also showed that ROE was insignificantly and negatively related to long term debts and total debts. The ROE with probability value of 0.27 and 0.207 for LTD and TD respectively, though insignificant, to some extent confirms studies conducted by Abor (2005), who observed a significantly positive relationship between the ratio of short-term debt to total assets and profitability, but a negative association between the ratio of long term debt to total assets and profitability.

The inverse relationship between ROE and LTD implies that an increase in LTD finance will lead to a decrease in profitability. This is explained by the fact that LTD finance is relatively more expensive and therefore employing high proportions of it could lead to low profitability. The results support early finding by Miller (1997), Fama and French (1998); Graham (2004) which stated that there is an inverse relationship between LTD and profitability.

The control variable, firm size and GDP with probability values of 0.729 and 0.222 respectively were also insignificantly and negatively associated with ROE and all measures of debts. The results though insignificant, to some extent confirms Gatsi and Akoto’s (2010) conclusion that bank size was significantly and negatively related to both returns on equity and net interest margin in the banking sector. However there was a positive and statistically insignificant relationship between exchange rate and inflation. In respect to ROE, Sales growth was significant and positively related to ROE for all measures of debts.

4.3.2 Decision Rule

ROE for all measures of debts are negatively related and indicates that the null hypothesis need to be rejected. ROE is positively related to short term debts, long term debts, total debt and firm size, and GDP needs to be rejected in favour of the alternative hypothesis. However the null hypothesis, ROE is positively related to exchange rate, inflation and Sales growth needs not be rejected.
Table 6. Regression results NPM

<table>
<thead>
<tr>
<th>Variable</th>
<th>STD</th>
<th>Profitability: NPM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coef.</td>
<td>Sig.</td>
</tr>
<tr>
<td>Firm Size</td>
<td>-0.049</td>
<td>0.965</td>
</tr>
<tr>
<td>Sales Growth</td>
<td>0.051</td>
<td>0.117</td>
</tr>
<tr>
<td>GDP</td>
<td>-2.150</td>
<td>0.621</td>
</tr>
<tr>
<td>Inflation</td>
<td>0.292</td>
<td>0.415</td>
</tr>
<tr>
<td>Exchange Rate (GHS to USS)</td>
<td>-12.563</td>
<td>0.434</td>
</tr>
<tr>
<td>Constant</td>
<td>31.317</td>
<td>0.125</td>
</tr>
<tr>
<td>STD</td>
<td>-0.131</td>
<td>0.008</td>
</tr>
<tr>
<td>LTD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

R-squared: 0.178  0.110  0.192
Wald chi²(3): 17.940  10.210  19.700
Prob. > chi²: 0.006  0.116  0.003

Note. Significant level at 5%; Random-effects GLS regression
Source: Authors Regression Result.

Short-term debt and long term debt are negatively and insignificantly related to NPM. However, from the regression results total debt is negatively and significantly related to NPM with probability value of 0.003. This means that increase in leverage does not result in improved profitability hence the use of internal financing as indicated by Myers and Majuluf (1984), Chittenden et al. (1996), Friend and Lang (1988), Kester (1986).

The implication is that firms that generate internal funds, generally tend to avoid gearing (debt), while profitable firms may have better access to debt finance than less profitable ones, the need for debt finance may possibly be lower for highly profitable firms if the retained earning ease significantly to fund new investments (Abor & Biekpe, 2005). The findings clearly provide support for the pecking order theory that states that, profitable firms prefer internal financing to external financing. Firm size, GDP, exchange rate and inflation rate were insignificantly and negatively related to NPM for all measures of debts. Sales growth, however, was insignificantly and positively related to NPM for all measures of debts.

The conclusion indicates that the null hypothesis, NPM is positively related to short-term debt, long term debts, total debt, exchange rate, and firm size needs to be rejected in favour of the alternative hypothesis. However the null hypothesis, NPM is positively related to SG needs not be rejected. The negative relationship established, may be due to the fact that the non-financial firms paid high interest rate for the loan during the year under study.

5. Conclusions

This empirical study output revealed that, with the exception of NPM and ROA that was significantly and not positively related to total debt, ROE was all insignificantly related to short term debt and long term debt.

Sales growth was significantly and positively related to ROA, ROE and NPM for all measures of debts, Firm size indicated insignificant and negatively association to ROA, ROE and NPM for all measures of debts.

As researchers we also conclude that the absence of a well-developed bonds markets in Ghana for non-financial firms makes them dependent on large short term loans instead of long term loans revealing profitable firms use more short-term debts to finance their operations which put interest payment pressure on them.

The negative linkage between the profitability ratios and total debt denotes that the firms’ profitability was not influenced by debt financing hence deviating from the expected outcome. This situation denotes that leverage did not bring about profitability and hence the need to consider internal finance. This implies that non-financial firms in Ghana use less debt and depend more on internal source of financing, thus supporting the pecking order theory.

Furthermore, firm size influences profitability measured by return on assets, return on equity and net profit margin negatively. The findings suggest that growth is crucial in determining non-financial firms’ profits in Ghana and when it increases, profit also increases. This result is in line with the theoretical prediction. Thus the null hypothesis that NPM is positively related to short-term debt, long term debts, total debt, exchange rate, and firm size needs to be rejected in favour of the alternative hypothesis. However the null hypothesis, NPM is positively related to SG needs not be rejected. The null hypothesis, ROE is positively related to short term debts, long term debts, total debt and firm size, and GDP needs to be rejected in favour of the alternative hypothesis. However the
null hypothesis, ROE is positively related to exchange rate, inflation and SG needs not be rejected. Also the null hypothesis, ROA is positively related to short-term debt, Long term debt, total debt and firm size needs to be rejected in favour of the alternative hypothesis. However regarding ROA and SG the null hypothesis, ROA is positively related to Sales Growth and would not be rejected too.

References


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