

## The Effects of Capital Structure on Firm's Profitability: Evidence from Kenya's Banking Sector

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### Abstract

Capital structure is considered important corporate financial management context and is mainly related to the establishment of an ideal debt policy. The determination of a company's capital structure constitutes a difficult decision, one that involves several and antagonistic factors, such as risk and profitability. Despite of substantial theoretical developments in the field of corporate finance over the past several decades, the rift between theory and practice still needs to be reconciled. This paper empirically investigates the relationship between capital structure and the firm's profitability of banking industry in Kenya, by using panel data extracted from the financial statements of the companies listed on the Nairobi Stock Exchange from year 2004-2012. The rationale behind the industry specific analysis is the fact that exogenous variables appear to force institutions in the same industry in similar fashion, thus leading to the existence of an industry specific capital structure. It is found that a significant positive relationship exists between the short term debt and profitability and statistically significant negative relationship between long term debt and profitability. The results are partially consistent with the previous studies as the negative relationship between long term debt and the firm performance tends to sport the dominant pecking order theory. The association of short term debt and the financial performance in contrast attests the static trade-off theory. Total debt as a whole has no association with the firm's performance because of the inherited different characteristics of short term debt and long term debt.

**Key words:** Capital Structure, Profitability, Banking industry, Exogenous variables

### 1. Introduction

The capital structure of a firm is a mixture of different securities. In general, institutions can choose among many alternative capital structures. For example, institutions can arrange lease financing, use warrants, issue convertible bonds, sign forward contracts or trade bond swaps. Institutions can also issue dozens of distinct securities in countless combinations to maximize overall market value (Abor, 2005). The debate of optimal capital structure has been the focal point of the finance literature for previous several decades. According to finance theory, the capital structure do affects firm's cost of capital and consequently financial performance. Cost of capital serves as the benchmark for firm's capital budgeting decisions therefore the optimal mix of debt and equity is imperative to outperform. Shareholders' wealth maximization concept also dictates that institutions choose the optimal mix of debt and equity financing that best serve the ultimate objective of the firm. Capital structure theory in response suggests that institutions establish what is often referred to as a target debt ratio, which is based on various trades-offs between the costs and benefits of debt versus equity. Despite of the crucial nature of capital structure decisions the empirical studies have very little to say about the optimal level of debt financing. Therefore, logical parameters with empirical proves are still waited as the available literature is unable to evaporate the rift between practice and theory.

This paper, by using dynamic panel data techniques, investigates the relationship between capital structure and the profitability of the banking sector in Kenya, which is the one of the largest industry in Kenya. The investigation is kept limited to banking industry since different industries have different financing requirements. Previous researchers, including Bradley, Larrel and kim (1984) and Almazan and Molina (2005), reported that institutions in a given industry develop similar capital structures. Exogenous variables appear to force institutions in the same industry in similar fashion, thus leading to the existence of an industry specific capital structure. According to Eli Schwartz (1959) optimum capital structure varies for institutions in different industries because the typical asset structure and earning stability which determine inherent risk vary for different types of production and thus the borrowing powers of the firm. MacKay and Phillips (2002) provided

evidence that industry factors help explain firm financial structure, the diversity of institutions that populate industries, and the simultaneity of real and financial decision.

The rationale of this study is to provide insights into the relationship between capital structure and financial performance of Kenya's banking industry. The pioneer work on capital structure by Modigliani and Miller (1958) despite of the unrealistic assumptions has been source of inspirations for scholars. Their propositions state that the market value of any firm and its cost of capital are independent of its capital structure in presence of perfect market conditions. In the real world, uncertainty and lack of knowledge as to the relevant variables may make this optimum solution a difficult achievement.

## **2. Statement of the problem**

Financial Managers have a responsibility of determining the optimal mix of debt and equity that will ensure maximization of shareholders wealth. This has led to the desire to establish whether there is an optimal capital structure that maximizes firm's value. Studies on the impact of capital structure on firm performance have mostly been carried out in developed economies on large and listed firms. In the developing economies, Chiang Yat Hung et al., (2002) concluded that while high gearing is positively related to asset, it's negatively related to profit margins in Hong Kong. In Kenya, Kiogora (2000), the only study in the literature, found a positive relationship between capital structure and value of the firm.

Since Kiogora's (2000) study, equity levels of firms listed at the NSE have substantially risen. A random observation shows that debt equity ratios have dropped substantially from 5.03, 1.53 and 1.89 in 2002 to 1.07, 0.64 and 1.51 in 2012 respectively for Kenya Power, BAT Kenya and Kenya Airways. Over the same period, the returns on equity have improved substantially for the three firms from -1.18, 0.20 and 0.17 in 2002 to 0.94, 0.31 and 0.72 in 2012 respectively for the three companies. A similar pattern is observed for many firms listed at the NSE. Given these observations, it would be interesting to establish, whether there is a clear linkage between capital structure and the profitability of banking institutions quoted on the Nairobi Securities Exchange in the period 2004-2012.

## **3. Objectives Of The Study**

The general objective of this study was to focus on examining the link between capital structure and profitability of banking institutions listed at the Nairobi Securities Exchange.

The specific objectives of this study were to:

- i. Determine effect of equity financing on profitability of banking institutions listed on the Nairobi Securities Exchange.
- ii. Determine the effect of debt financing on the profitability of banking institutions quoted on the Nairobi Securities Exchange.

## **4. Review Of Related Literature**

The capital structure of a firm could be explained, in general terms, by two dominant theories; the trade-off and pecking order theories. Based on an arbitrage argument, Modigliani & Miller (1958) ascertained that with the existence of perfect capital market, the capital structure decisions would have no impact on the value of the firm. Arbitrage, they argued would ensure that an individual's exposure to risk would not change because home-made leverage was as good as corporate leverage. However, there was a reaction from Duraud (1959) to Modigliani and miler's irrelevant theory. He questioned the applicability of arbitrage process and the assumptions they made of a risk-less world that are somehow unrealistic. In response to this and other criticisms, Modigliani and Miller (1963) modified their original hypothesis. Relaxing the assumption of zero taxation, they argued that levered institutions will be more value than unlevered institutions due to the fact that debt is a tax deductible expense.

Modigliani & Miller (1958) affirm that, in if treating of perfect markets; the capital structure doesn't have influence on the market value of the company, which will be settled by the composition of its assets. This is a model with several presuppositions - unreal for the current context - in which perfect markets are those without brokerage costs, and individual taxes and where it is possible to investors to obtain financing at the same rates practiced to companies. There is not an information asymmetry, and the company's debt of is free of risk.

Since Modigliani & Miller (1963) made an oversight of the impact of personal taxes, Miller (1977) made an important contribution by correcting the 1963 contention. Relying on several assumptions, Miller (1977)

introduced a model designed to show how leverage affects a firm's value. When both personal and corporate taxes are taken into account, this model suggests that in that market equilibrium, corporate tax advantage are cancelled out by the effects of personal taxes hence capital structure irrelevance. Taggart (1980) extended Miller's analysis to conditions of incomplete capital markets and special costs associated with corporate debt. He concluded that Miller's findings could be upheld and all equity capital structures are seen as perfectly rational for at least some institutions.

Over the past several decades' corporate finance researchers have devoted considerable efforts to transform rationalism of capital structure into empiricism. The problem of developing a definitive theory of capital structure and designing empirical tests those are powerful enough to provide a basis for choosing among the various theories is still unresolved.

The available literature on leverage and profitability depicts a great deal of theoretical controversies. The pecking order theorists Myers (1984), Myers and Majluf (1984), and Shyam-Sunder and Myers (1999) states that institutions have a preference of using internal sources of financing first, then debt and finally external equity obtained by stock issues. The preferences are attributed to the cost gap between internal and external funds due to asymmetric information and agency problems. Holding it true profitable institutions prefer capitalization of earnings over debt and new equity issues respectively. This tendency portrays negative association between leverage and profitability of the firm. This association is one of the most systematic findings in the empirical literature (Kester, 1986; Harris and Raviv, 1991; Rajan and Zingales, 1995; Hung Albert and Addie, 2002). Their findings suggest that institutions follow a pecking order. Whenever possible institutions raise finance preferably from their internal sources, rather than bank loans and debt issue. The external equity financing is there last resort. Astudy of Saudi Arabia by Sulaiman A. Al-Sakran (2001) where debt does not offer any tax-shield, also reported a negative relationship between profitability and leverage. It is pertinent to elaborate that in Saudi Arabia tax is calculated on the net worth rather than on profits (Zakat and Usher) therefore the tax advantage of the debt is out of question. Well known agency cost theory (Jensen and Meckling, 1976) also tends to support this relationship. Booth, Aivaizian, Kunt and Maksimovik, (2001) documented that more profitable is firm, the lower the debt ratio' regardless of how debt ratio is defined.

On the other hand, in accordance with trade-off theory an opposite relationship may also be envisaged. Various researchers have analyzed different types of trade-offs between capital structure and corporate taxes (Modigliani and Miller 1963), personal taxes (DeAngelo and Masulis 1980) and transaction cost of bankruptcy (Kraus and Litzenberger 1973). The stated rational is when institutions are profitable they prefer debt to benefit from the tax shield. Other way round profitability is a good proxy for low default risk in consequence profitable institutions can borrow more funds at cheaper rates as the likelihood of paying back the debt is greater. Institutions use debt financing to dilute their cost of capital due to low Waited Average Cost of Capital (WACC) institutions have wider spans of acceptance for capital budgeting choices. Employment of low cost capital in productive investment avenues enables institutions to magnify their profits. It is also consistent with the objective of financial management *i.e.* maximization of present shareholders' wealth<sup>4</sup>. The underlying supposition dictates positive relationship between leverage and profitability. S. Klien, O'Brien and Peters (2002) also argued that institutions with lower expected cash flows find it more difficult to incur higher level of debt (because bankruptcy is more likely) than do institutions with higher level of expected cash flows. Companies with large and stable profits should, all else equal, make greater use of debt to take advantage of interest tax shields Anil and Marc Zenner (2005). Jensen (1986) reported that profitable institutions might signal quality by leveraging up, resulting in a positive relation between leverage and profitability. Joshua Arbor (2005) reported significantly positive relationship between short term debt and profitability and negative association between long term debt and profitability. This implies that an increase in the long-term debt position is associated with a decrease in profitability.

Long and Malitz (1986); found no relationship between capital structure and profitability. Using a US sample Fama and French (1998) also concluded that the relationship between capital structure and firm value was unreliable. They compared the two competing models, with mixed results. However, they also find that among growth institutions, the least levered institutions make the largest new equity issues, which is inconsistent with the pecking order model. Lemmon and Zender (2001) separated institutions into two groups based on the foregone tax benefits associated with debt financing. They document that a large fraction of institutions are conservatively financed, and that neither the pecking order nor the tradeoff theory of capital structure adequately explain this result. Minton and Wruck (2002) found little evidence that the tradeoff theory explains the capital structure choices of low debt institutions. Rather, they find that low debt institutions appear to follow a financing hierarchy. Brealey and Myers<sup>5</sup> (2003) contend that the choice of capital structure is fundamentally a marketing

problem. Dynamic capital structure models take into consideration the costs of adjusting toward the target debt-to-equity ratio (Maris and Alayan (1990); Leland, 1998); Aydin Ozkan, (2001).

## 5. Data Base And Research Methodology

The data-base of the study is completely based on secondary data which has been collected from various web sites and annual financial reports of the sample firms on NSE. The reference period of the study is of eight years which is from the financial year 2004-12. In this study, 11 firms of banking industry has been taken as sample. The sample firms are listed on the Nairobi Stock Exchange and are selected by the researchers on the basis of random sampling technique. Annual data extracted from the financial statements of these companies has been used for analysis. The companies include (1) Barclays Bank Ltd (2) CFC Stanbic Holdings Ltd (3) I&M Holdings Ltd (4) I&M Holdings Ltd (5) Housing Finance Co Ltd (6) Kenya Commercial Bank Ltd (7) National Bank of Kenya Ltd (8) NIC Bank Ltd (9) Standard Chartered Bank Ltd (10) Equity Bank Ltd (11) Co-operative Bank of Kenya Ltd. The entire set of variables used in this study is based on book values. Myers (1984) advocated that the book values are proxies for the values in place. Panel data analysis allows studying the dynamic nature of the capital structure decisions at the firm level of banking industry. Companies with negative equities and having DA (Debt to Asset) ratio greater than one have been excluded due to deceptive results. Variable used for the analysis include profitability and leverage ratios. Profitability is measured by commonly used ratio by many researchers i.e. Return on Equity (ROE). It is worked out by dividing the net profit before interest and taxes by the shareholders' equity, expressing the result in percentage. Return on equity demonstrates the percentage earnings of the shareholders' funds. Leverage ratios include:

- 1) Short-term debt (current liabilities) to the total assets
- 2) Long-term debt (fixed liabilities) to total assets
- 3) Total debt (total liabilities) to total assets

Short term debt include all liabilities, which are required to be discharge within one year, Alternatively, these cover those obligations whose liquidation is expected to be made out of current assets. They are usually incurred in the normal course of business and are required to be paid at fairly definite dates. Long term debt includes all liabilities other than the short term debt and Shareholders' equity. Total debt pertains to sum of total fixed liabilities and current liabilities except shareholder's equity. Assets include all assets at their book value.

Firm size and sales growth are also included as control variables. Natural logarithm of sales has been taken as proxy for size (SIZE). This measure is the most common proxy for size (Titman and Wessels, 1988; Rajan and Zingales, 1995; Ozkan, 2001). Sales growth is the percentage increase or decrease in sales between two time periods. Linear regression model is used to investigate the nature of relationship between Capital Structure and profitability. The motive of studying short term, long term and total debt separately is to investigate the impact of different type of financing options minutely. Since the cost / benefits of short term debt and long term debt differs to a great extent. Therefore, separate analysis can better explain the relationship.

The following regression equations are used in the analysis.

- 1)  $ROE_{it} = \beta_0 + \beta_1 (SDA_{it}) + \beta_2 (SIZE_{it}) + \beta_3 (SG_{it}) + \epsilon_{it}$
- 2)  $ROE_{it} = \beta_0 + \beta_1 (LDA_{it}) + \beta_2 (SIZE_{it}) + \beta_3 (SG_{it}) + \epsilon_{it}$
- 3)  $ROE_{it} = \beta_0 + \beta_1 (DA_{it}) + \beta_2 (SIZE_{it}) + \beta_3 (SG_{it}) + \epsilon_{it}$

Where  $(ROE_{it})$  is EBIT divided by equity of firm  $i$  in time  $t$ .  $(SDA_{it})$  is short-term debt divided by the total assets of firm  $i$  in time  $t$ .  $(LDA_{it})$  is long-term debt divided by the total assets of firm  $i$  in time  $t$ .  $(DA_{it})$  is total debt divided by the total assets of firm  $i$  in time  $t$ .  $(SIZE_{it})$  is the log of sales for firm  $i$  in time  $t$ .  $(SG_{it})$  is sales growth of firm  $i$  in time  $t$ ; and  $\epsilon_{it}$  is the error term.

The return on equity is kept dependent variable and the leverage ratios and control variables as the independent variables. In most of the studies of capital structure Return on Equity is considered independent variable. Because we are primarily interested in the nature of relationship between capital structure and profitability keeping other things constant therefore, the rearrangement of the variables provide the same results. Our area of concern is the magnitude as well as nature of relationship. The signs and values of coefficient along with measures of significance are pertinent to our intention.

## 6. Empirical results

### 6.1 Descriptive statistics

In this section descriptive statistics of the variables used in analysis are presented to look at the nature and validity of the data. All variables are based upon accounting values and are thus determined simultaneously. Average value of return on equity (ROE) over 8 year period is 22.1% that demonstrate a good performance of the industry in the period under study. Overall the annual sales growth of 16.35% encourages stating that banking industry of Kenya is observing a remarkable growth. Average of short term debt to total assets is 45% that depicts a noteworthy portion of assets is financed with the short term debt. This suggests that short-term debt tends to be easily available therefore companies use short term debt as their major source of financing. Long term debt to total assets as compared to the short term debt to assets is low i.e. 17%. The under developed nature of the long term debt market might be one of the possible reasons. Overall 61.8% assets are financed with the debt that depicts banking as moderately leveraged industry. However, the debt ratio variation across the institutions is large, ranging from a maximum debt ratio of 98% and a minimum of 11.6%.

**Table 1: Descriptive Statistics**

	Mean	SD	Minimum	Median	Maximum
ROE <sub>it</sub>	0.2208	0.3638	-2.5183	0.2098	3.3172
SIZE <sub>it</sub>	2.9609	0.4549	0.6232	2.9597	4.3247
SG <sub>it</sub>	16.3537	60.1230	-98.7105	8.4122	981.3232
SDA <sub>it</sub>	0.4485	0.1506	0.0695	0.4519	0.7907
LDA <sub>it</sub>	0.1699	0.1403	0.0000	0.1437	0.7183
DA <sub>it</sub>	0.6185	0.1572	0.1158	0.6460	0.9794

### 6.2 Regression statistics

Results of the Regression Equations used in the analysis are exhibited in this section. The results are discussed separately that enable us to make comparison of the different debt financing options. The separation of results also permits us to observe inherited almost opposite characteristics of short term debt and the long term debt in association with control variable.

#### 6.2.1 Equation 1

In the first equation the relationship of short term debt with the profitability is studied keeping size and sales growth controlling variables. It is found that the significant positive relationship between short term debt and profitability exists. The positive value of coefficient of beta (0.4128) is empirically significant (t-value 4.3114) at 99% confidence level. This suggests that short-term debt tends to be less expensive; therefore increasing short-term debt with a relatively low cost will lead to an increase in profit levels. The results also dictate that profitable institutions use short term debt as their paramount choice of financing. They exploit their position to generate short term debt at low costs as the profitability adds to their creditworthiness. The results are consistent with the static trade off theory but with the exclusion of tax shield assumption. On the basis of results it is recognized that short term debt being a cheaper source of financing contributes significantly towards the profitability of the institutions.

$$ROE_{it} = \beta_0 + \beta_1 (SDA_{it}) + \beta_2 (SIZE_{it}) + \beta_3 (SG_{it}) + \varepsilon_{it}$$

**Table 2: Profitability (EBIT/equity) Ordinary Least Squares**

Variables	Coefficients	Standard Error	t Stat	P-value
Intercept	-0.4297	0.0979	-4.3899	0.0000
SIZE <sub>it</sub>	0.1534	0.0317	4.8314	0.0000
SG <sub>it</sub>	0.0007	0.0002	2.9180	0.0037
SDA <sub>it</sub>	0.4124	0.0957	4.3114	0.0000

Regression Statistics	
Multiple R	0.3009
R Square	0.0906
Adjusted R Square	0.0860
Standard Error	0.3478

#### 6.2.2 Equation 2

The results given in the table below depict that empirically significant negative relationship exist between the long term debt and the profitability. The results are consistent with the pecking order theory the negative value of

beta (-0.3407) is significant at 99.91% confidence level further t value of (-3.3430) exhibit that the relationship is empirically reliable. It dictates that higher level of long term debt in the capital structure of the firm lower the profitability. In other words profitable institutions prefer capitalization of earnings for their financing needs and than short term debt. The results tend to refute the trade-off theory rather support the pecking order theory.

$$ROE_{it} = \beta_0 + \beta_1 (LDA_{it}) + \beta_2 (SIZE_{it}) + \beta_3 (SG_{it}) + \epsilon_{it}$$

**Table 3:** Profitability (EBIT/equity) Ordinary least squares

Variables	Coefficients	Standard Error	T Stat	P-value
Intercept	-0.2483	0.0959	-2.5898	0.0098
SIZE <sub>it</sub>	0.1746	0.0315	5.5372	0.0000
SG <sub>It</sub>	0.0006	0.0002	2.5211	0.0120
LDA <sub>it</sub>	-0.3407	0.1019	-3.3430	0.0009

Regression Statistics	
Multiple R	0.2819
R Square	0.0795
Adjusted R Square	0.0748
Standard Error	0.3499

### 6.3.3 Equation 3

No significant relationship could be found between total debt and the profitability. The positive relationship (beta 0.0998) is not significant (t- Stat 1.0728) enough to justify any proposition. The reason traced out is the opposite relationship that exists between individual elements of this variable with the dependent variable (ROE). The P-value of (0.2838) also reveals that the relationship is not statistical significant. Therefore the impact of total debt on profitability as a whole contains no any significant value as the short term debt has positive relationship and long term debt has negative relationship therefore the net impact is cancelled out.

$$ROE_{it} = \beta_0 + \beta_1 (DA_{it}) + \beta_2 (SIZE_{it}) + \beta_3 (SG_{it}) + \epsilon_{it}$$

**Table 4:** Profitability (EBIT/equity) Ordinary Least Squares

Variables	Coefficients	Standard Error	t Stat	P-value
Intercept	-0.3541	0.1046	-3.3855	0.0008
SIZE <sub>it</sub>	0.1697	0.0322	5.2776	0.0000
SG <sub>it</sub>	0.0006	0.0002	2.6760	0.0077
DA <sub>it</sub>	0.0998	0.0930	1.0728	0.2838

Regression Statistics	
Multiple R	0.2530
R Square	0.0640
Adjusted R Square	0.0593
Standard Error	0.3528

The values of Coefficient of Determination, that is, R Square and Adjusted R square are considerably low in all three equations. The ultimate cause is there are numerous factors that determine the profitability. In this study we are barely interested in studying the relationship of leverage and profitability therefore, values of individual variables' statistics are relevant with propositions of the study. Results are significant enough to serve our purpose best. Overall the results are consistent with the existing research but with little variation. The reason of this disagreement might be the fact that most of the researchers used total debt as variable to study the relationship between capital structure and the firm's performance. The inverse nature of relationship can be the reason of inconsistent results of previous studies.

## 7. Conclusion And Recommendation

The capital structure decision is crucial for any business organization. The decision is important because of the need to maximize returns to various organizational constituencies, and also because of the impact such a decision has on an organization's ability to deal with its competitive environment.

On the basis of findings, it is documented that short term debt has significant positive relationship with the profitability. This suggests that short-term debt tends to be less expensive, and therefore incremental short-term debt in capital structure will lead to an increase in profit levels. Therefore short term debt is the preferable source of financing for the profitable institutions. Whereas long term debt has significant negative relationship with the profitability that envisage long-term debts are relatively more expensive due to certain direct and indirect costs, therefore employing high proportions of long term debt in financial structure results in low profitability.

Empirical results indicate no significant association between total debt and profitability the inclination of individual results provide the logical justification for surprising result. On the basis of these findings it is concluded that the relationship between short term debt and the profitability is consistent with the static trade-off theory not because of the tax shield rather some other unexplored factor. The underlying rationality is, interest on long term debt is also tax deductible expense like short term debt but the results are quite opposite in direction. Pecking order theory is true but with the addition of short term debt on top of the hierarchy of preference. Implicit in such testing is that both theories have certain elements that are mutually exclusive. Both the theories as a whole can hold true but with the suggested accompaniments.

In the light of whole debate it is suggested that existing theories of capital structure contribute to some extent in decision-making process though certain aspects of the theories are partially refuted. The definite reason is the fact that the capital structure decision is a complex, multi-dimensional problem; thus capital structure decisions are likely to be the product of multifarious group processes. Simply it is difficult if not impossible to mull over all relevant factors with bounded rationality, at least in the current scenario. In-depth case study observations of individual institutions' financing decisions over time would be especially valuable in exploring this diversity.

Based on these results, the following recommendations are suggested:-

- 1) The firm must consider using an optimal capital structure. The optimal capital structure includes some debt, but not 100% debt. In other words, it is a "best" debt/equity ratio for the firm, which in turn, will minimize the cost of capital, i.e., the cost of financing the company's operations. In addition, it will reduce the chances of bankruptcy.
- 2) This study is limited to the sample of banking institutions in Kenya. Future research should investigate generalizations of the findings beyond the banking sectors.
- 3) The banking institutions in Kenya have to run feasibility study for the new projects before taking the investment decision.

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