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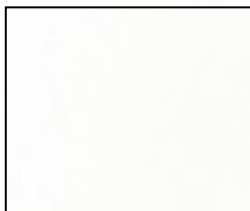
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**“CAPITAL STRUCTURE AND PERFORMANCE: EVIDENCE  
FROM LISTED NON-FINANCIAL FIRMS ON NAIROBI  
SECURITIES EXCHANGE (NSE) KENYA”**



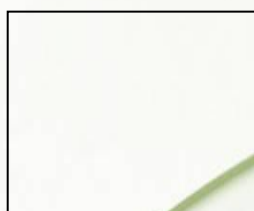
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## Abstract

This paper examines the relationship between a firm's capital structure and performance among a sample of 30 companies listed on NSE whose data for a 5-year period (2007-2011) was available. The study uses six performance measures: return on asset (ROA), return on Equity (ROE), earnings per share (EPS), dividend payout (DPO), market price to book ratio of stock, and size of the firm. Three capital structure measures are used as independent variables: short-term debt to asset ratio (STDA), long-term debt to asset ratio (LTDA), and total debt to asset ratio (TDA). The size of the firm is taken as the natural logarithm of sales, considered as a moderating variable. The results using Model I indicate a significant correlation between TA of a firm and LTDA. LTDA has a positive correlation with ROE and EPS, which is insignificant and weak, while a negative correlation with ROA, which is significant. PBR and DPO are negative and weak. STDA has a positive correlation with ROE, DPO, and PBR, while negative with ROA and EPS. TDA has a negative relationship with ROA and EPS but a positive correlation with ROE, DPO, and PBR. When using Model II, where the size of a firm is factored in, it shows a strong positive correlation with capital structure proxies, which is significant. Size also has an impact by reversing the correlation of TDA with PBR and DPO from negative to positive, while that of TDA with ROE goes from positive to negative.

Thus, firms on NSE appear to use less debt in their capital structure, making many firms to pay less interest. Thus, not increasing the risks the firm may be exposed to as debt tends to reduce performance. The pecking order hypothesis takes preference.

**Key words:** capital structure, financial leverage, financial performance,

## 1.0. Introduction

Capital structure of a firm is the mix of debt, equity, and other sources of finance that management of a firm uses to finance its activities. Different firms use different proportions or mix. A firm may adopt to use all equity or all debt. All equity is preferred by investors as they are not given conditions on the type of investment and usage of funds from providers. All debt is preferred by investors in a country where debt interest is tax deductible. Firms use a mix of debt and equity in various proportions in order to maximize the overall market value of the firm. Abor (2007)

The Nairobi Securities Exchange, formerly Nairobi Stock, was constituted as a voluntary association of stock brokers under the society act. In 1990, a trading floor and secretariat was set up at the IPS building, before moving to the Nation Centre Nairobi in 1994. Over the past decade, the securities exchange has witnessed numerous changes, automating its trading in September 2006 and in 2007, making it possible for stockbrokers to trade remotely from their offices, doing away with the need for dealers to be physically present on the trading floor. Trading hours were also increased from two to six. Moving to Westlands in the environs of Nairobi symbolically marked the end of an era where the market was owned and run by stockbrokers. Daily Nation (19<sup>th</sup> Jan. 2013)

Nairobi Securities Exchange together with Uganda securities exchange and Dares-laam stock exchange memorandum of understanding led to the formation of East Africa securities exchange in 2006. Automated trading system ATS was introduced in 2006, making significant steps in capital markets in providing liquidity.

Nairobi Securities Exchange aims at supporting trading clearing settlement of equities debt derivatives and other associated instruments. It is mandated to list companies on the securities exchange and enables investors to trade in securities of companies thus its charged with the health of Securities Exchange. It's regulated by Capital Markets Authority

The Nairobi Securities Exchange companies are grouped in the following ten sectors Agricultural Sector, Automobiles & Accessories, Banking, Commercial & Services, Construction & Allied Sector, Energy & Petroleum, Insurance, Investment, Manufacturing & Allied and Telecommunication & Technology.

In Kenya a developing country debt interest is tax deductible. The use of all debt to finance the operations of a firm will be advantage on one side as debt interest will be tax and on the other side the firm will be under the control of creditor in order to control their stake in the

The use of debt capital increases agency cost between shareholders and debt holders. Many researchers still disagree on factors that significantly affect firms capital structure, hence determination of optimal capital structure is a difficult task that go beyond many theories though many researchers agree that the economic and institutional environment in which the firms operate significantly affect the capital structure of a firm. Owolabi and Inyang (2013)

A appropriate capital structure should be profitable to the firm to enable it meet its obligations when due, and should be flexible so as to adjust to various challenges in economic conditions

### ***1.1 Statement of the problem***

Capital structure is one of the contentious issues in finance. Various theories have been put forward by researchers to justify the existence of optimal capital structure of a firm. It is infact a puzzle. The theories have been developed to try to unearth the financing preferences managers may have in selecting a particular capital structure. Abor (2007). Different nations have different tax regulations and culture Suh (2008) hence the results of one nation may not apply to other nations as the interactions between various variables may not be the same. Hence Kenya a developing nation require such a research to enable managers and investors to undertake prudent investment decisions as researches in this area are only centered on developed nations

### ***1.2 Research objectives***

- i. To determine the effect of long term debt/ asset ratio on performance of non- financial firms on NSE.
- ii. To determine the relationship if any between short term debt/ asset ratio and performance of non- financial firms on NSE
- iii. To determine the effect of total debt/ asset ratio on performance of non- financial firms on NSE

### ***1.3 Research questions***

- i. Does long term debt/ Asset ratio has an effect on performance of non-financial firms listed on Nairobi Securities Exchange?
- ii. Is there any relationship between short term debt/ asset ratio and performance of non-financial firms listed on Nairobi Securities Exchange?

- iii. Do total debt/ Asset ratio have an effect on performance of non-financial firms on Nairobi Securities Exchange?

## **2.0 Literature Review**

This chapter highlight the common capital structure theories which include Modigliani and Miller theorem proposition I irrelevant theory, MM proposition II trade off theory ,pecking order theory, and the market timing theory. The chapter also reviews relevant literature.

### **2.1 Capital Structure Theories**

#### ***Irrelevant Theory***

The theory was put forward by Modigliani and Miller 1958. It is based on the assumptions. No transactions cost, no taxes, no bankruptcy cost, equity in borrowing cost for investors, equity in access to information and no effect of debt on earnings before interest and tax. The theory indicates that in a perfect market, it does not matter the capital structure mix used by the firm the value of the firm remain constant. If a firm uses cheaper debt then this increases the risk of the firm consequently the stock holders will demand higher dividend to compensate them for the high risk in their investments MM theorized that market value of a firm is determined its ability to earn and the risk of its underlying assets. Thus the weighted average cost of capital should remain constant. MM argued that the value of a firm is not affected by capital structure but by the earning ability of the assets. The assumptions made do not hold in the real world hence other researchers have come up with various theories to fill the gap in real life situation. Abor (2007)

#### ***The trade-off theory***

The trade-off theory of leverage assumes that there are benefits to leverage within capital structure used until an optimal capital structure is attained. The theory recognizes that (tax benefit) debt interest is tax deductible. This reduces the tax liability thus increasing tax shield. A high proportion of debt in a company makes it very risky for investors to invest in it. This make to demand investors a high premium on stock or high dividend. The theory assumes that a firm has an optimum capital structure based on trade-off between costs and benefits of using debt. This theory does not explain the conservative nature of firms when using debt finance, why leverage is consistence in most countries yet they have divergent taxation systems. Popescu (2009)

Firm's optimal debt ratio is determined by a trade-off between the bankruptcy cost and tax advantage of borrowing and it is achieved at the point when the marginal present value of the tax on additional debt is equal to the increase in the present value of financial distress costs. Owalobi and Anyang (2013)

#### ***Pecking order theory***

This theory explains why internal finance is more popular than external finance and why debt is considered the best option for firms. Debt finance is considered attractive, cheap and more profitable as it is considered flexible.

Pecking theory is based on information asymmetry. If managers have more information than other parties then information costs rises. Thus firms will prefer issuing shares when they are overvalued or last resort. Managers will use pecking order by first using internally generated funds. If more funds is required then go for cheap debt(capital with fixed interest) before



equity ( capital with variable interest rate) in financing the firms activities. Myers and Majluf 1984 as sighted in Popescu (2009)

### ***Market timing theory***

*This was fronted* by Baker and Wurgler (2002) article relating to capital structure to past market to book ratio. According to this theory firms prefer equity when they perceive that its relative cost is low otherwise debt finance would be appropriate. Firms time there equity issues , they issue new stock when the stock price is perceived to be overvalued and buy back own shares when they are undervalued.

### ***Free cash flow theory***

In this theory managers are forced to pay excess cash to investors as dividend to equity holders and interest to debt holders. High debt ratio discipline managers and prohibits them not to invest in projects with negative NPVs making the firm profitable. Jense 1976 argue that increasing leverage instills discipline in managers as they will be cautious not to make the firm insolvent. Owadabi and Anyang (2013)

## ***2.2 Review of Relevant literature***

Abor (2007) conducted a research on SMEs in Ghana and used 160 SMEs. the results were consist with pecking order hypothesis the coefficients for performance measured by profitability were negative and significant to this was in relation to capital structure proxies measured by long term debt and short term debt. This implied that internal financing increases profits hence SMEs tend to avoid using debt to finance their activities . Though profitable firms tend to have better access to debt finance the need for debt finance may be lower if retained earnings are sufficient to satisfy the need.

Abor J. (2008) researched on determinants of the capital structure of Ghanaian firms listed on the Ghana Stock Exchange (GSE) during the six-year period, 1998–2003. The results also reveal that both long-term and short-term debt ratios were negatively correlated with profitability in all the sample groups. The results of this study clearly supported the pecking order hypothesis, in that profitable firms initially rely on less costly internally generated funds and subsequently look for external resources if additional funds are need.

Mohammadzadeh (2011) studied firms listed on Tehran Stock Exchange and found that firms performance which is measured by (EPS & ROA) are negatively related to capital structure. These findings are consistent to Zeitun and Tian (2007) and Abor (2007) who indicate firm performance is negatively related to capital structure. while its not consistent with findings of Berger and Bonaccors di Patti (2006) who revealed a positive relation between firm performance and capital structure,

Ngoc-Phi-Anh D. & Jeremy D.(2011) examined the relationship between firm characteristics, capital structure and operational performance among a sample of 427 companies listed on the Vietnamese stock exchange during the three years 2007-2009. The results showed that both long term debt and short term debt were negatively correlated to performance shown by return on asset (ROA), but positively correlated with the long-term assets ratio (LTDA) and negatively correlated with short term ratio (STDR).

Vedran S.(2012) researched on capital structure and firm performance in the Financial Sector in Australia the results showed that a significant and robust quadratic relationship between capital structure and firm performance At relatively low levels of leverage capital structure is

positively correlated to performance and at relatively high levels of leverage capital structure is negatively correlated to performance. This was attributed to financial distress outweighing any gains made from managerial performance

Mohammad F. & Jaafer M. (2012) seeks to extend Abor's (2005). in their study with sample of 39 Jordan companies reveal significantly negative relation between debt and profitability. These show that an increase in debt position is associated with a decrease in profitability; thus, the higher the debt, the lower the profitability of the firm. The results also show that profitability increases with control variables; size and sales growth.

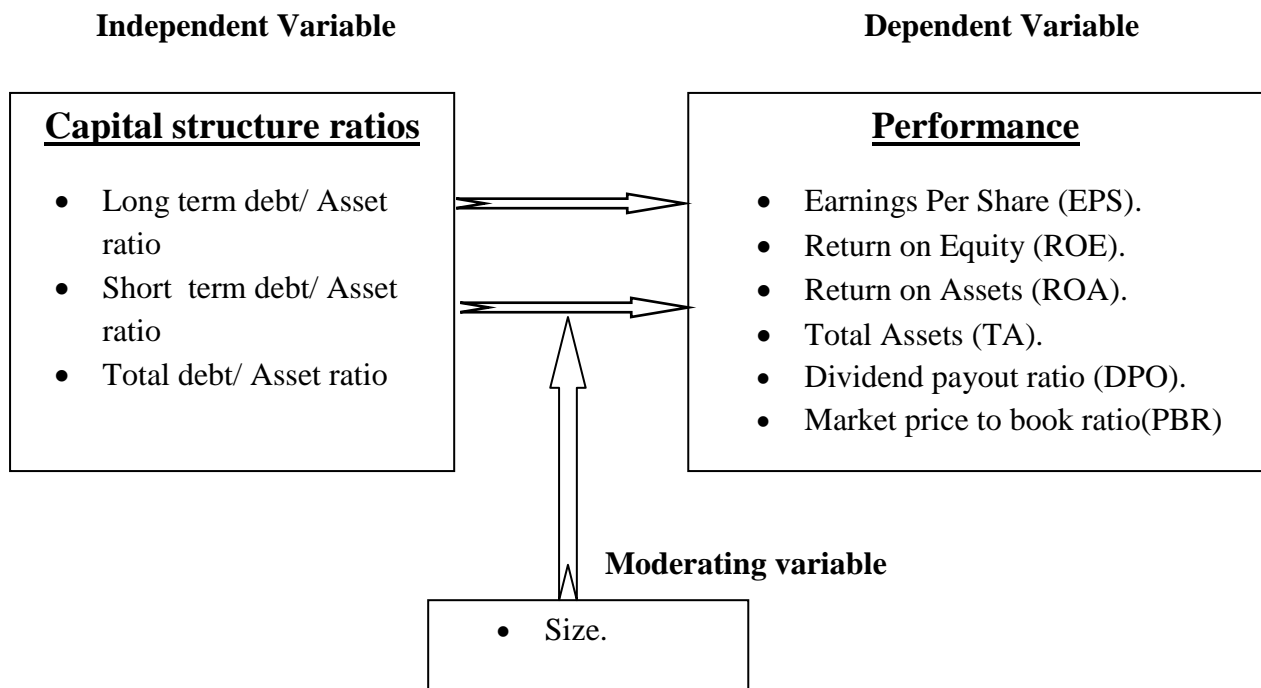
Abdul G (2012) studied the relationship of capital structure decisions with firm performance of Pakistan firms measured by Tobin's Q. The results showed that a negative and significant relationship exists between short term debt to total assets and total debt to total assets measures of capital structure and the Tobin's Q. The relationship between long term debt to total assets and Tobin's Q is positive whereas the control variable (firm size) shows a significantly negative relationship with the performance variable measured by Tobin's Q, as large size firms shows inefficiency and affects the firm performance negatively.

Nour A. (2012) studied Capital Structure and Firm Performance of Palestine firms the results indicated that firm performance is positively related to capital structure and statistically significant with total debt to total assets except Market value of equity/ Book value of equity was significant with total debt to total assets & short-term debt to total assets.

Iorpev L. & Kwanum L (2012) found a negative and insignificant relationship between capital structure and firm performance for firms listed on Nigeria stock exchange. The study concludes that statistically, capital structure represented by short-term debt to total assets (STDTA), long-term debts to total assets (LTDTA) and total debt to equity (TDE) is not a major determinant of firm performance. Abor (2005) reports a positive relation between capital structure, which measured by STD and TD, and performance over the period 1998-2002 in the Ghanaian firms

Puwanenthiren (2012) analyzed the impact of capital performance on Sri Lanka business firms. The results show that performance shown by ROE and ROA have negative relationship with capital structure at -0.104, -0.196 respectively. The F and t values were 0.366, -0.605 respectively and the relationship was insignificant. Thus firms which depend on debt capital pay much as debt interest.

Abdul G. (2012) researched on the relationship of capital structure decisions with firm performance of the engineering sector of Pakistan, the results showed that financial leverage measured by short term debt to total assets (STDTA) and total debt to total assets (TDTA) had a significantly negative relationship with the firm performance measured by Return on Assets (ROA), and return on equity (ROE) had negative but insignificant relationship with leverage. Firms in the engineering sector of Pakistan were largely dependent on short term debt but debts were attached with strong covenants which affected the performance of the firms.



**Conceptual framework**

**3 Research Methodology**

**3.0 Introduction**

This chapter highlights the research design that the researcher used, the population from which the sample was chosen thus companies listed on Nairobi Securities Exchange, sampling frame and technique applied, data collection and analysis method that was run on the data collected.

**3.1 Research Design**

The researcher was empirical type of research. The study was data-based research, coming up with conclusions which are capable of being verified by observation or experiment. It will utilized secondary data from companies listed on Nairobi Securities Exchange website and companies' website. Audited financial statements for the companies selected were used; thus increasing the reliability and validity of the findings and conclusion.

**3.2 Sample Size And Selection Criteria**

The population of NSE listed non-financial firms stand at 50 companies. A stratified sampling technique was used because of the nature of the study. The study was limited to all listed non-financial firms and those that were selected had to have complete data. The sample for the study consisted of 30 companies listed on Nairobi Securities Exchange NSE for the period of five years from 2007-2011 which is about 60%. Companies that were not listed in the NSE for the duration of the five year were left out of the sample. In this research financial companies have been excluded the reason being that financial companies operate under different regulation rules the central bank of Kenya beside the companies act cap 486. The sample included companies from the following eight sectors Agricultural Sector, Automobiles and Accessories, Commercial and Services, Construction and Allied Sector,

Energy and Petroleum, Insurance, Investment Manufacturing and Allied Telecommunication and Technology.

Company category	Total no of companies	Percentage	Sample
Agricultural Sector	7	57	4
Automobiles and Accessories	4	75	3
Commercial and Services	9	67	6
Construction and Allied Sector	5	80	4
Energy and Petroleum	4	75	3
Insurance	6	33	2
Investment	4	50	2
Manufacturing and Allied	9	56	5
Telecommunication and Technology	2	50	1
<b>TOTAL</b>	50	60	

**Table 1 Percentage of Samples Selected.**

### 3.3 Data Collection

The data was taken from reliable sources to ensure the reliability of the study. Secondary data was collected from various databases to undertake the analysis. Audited income statements, balance sheets and cash flow statements was collected from the Nairobi Securities Exchange limited and companies' website.

### Variables used

1. Market Price to Book Value (Kshs.) =  $\frac{\text{Market Capitalization}}{\text{Net Assets Value}}$
2. Return on assets =  $\frac{\text{Net income (profit after tax)}}{\text{Total assets}}$
3. Earnings per Share =  $\frac{\text{Earnings Attributable to Shareholders}}{\text{Number of outstanding Shares}}$
4. Pay Out - Ratio =  $\frac{\text{Dividend per Share}}{\text{Earnings per Share}}$
5. Return on Equity =  $\frac{\text{Net income (profit after tax)}}{\text{Equity}}$
6. Long term debt to asset =  $\frac{\text{long term debt}}{\text{Assets}}$



7. short term debt to asset =  $\frac{\text{short term debt}}{\text{Assets}}$
8. Total debt to asset =  $\frac{\text{total debt}}{\text{Assets}}$

### Model 1 Regression equations

- a)  $Y \text{ ROE} = a + b_1 \text{LTDA} + b_2 \text{STDA} + b_3 \text{TDA} + e$   
 b)  $Y \text{ ROA} = a + b_1 \text{LTDA} + b_2 \text{STDA} + b_3 \text{TDA} + e$   
 c)  $Y \text{ DPO} = a + b_1 \text{LTDA} + b_2 \text{STDA} + b_3 \text{TDA} + e$   
 d)  $Y \text{ EPS} = a + b_1 \text{LTDA} + b_2 \text{STDA} + b_3 \text{TDA} + e$   
 e)  $Y \text{ TA} = a + b_1 \text{LTDA} + b_2 \text{STDA} + b_3 \text{TDA} + e$   
 f)  $Y \text{ PBR} = a + b_1 \text{LTDA} + b_2 \text{STDA} + b_3 \text{TDA} + e$

Short term debt/ Asset ratio SDTA Total debt/ Asset ratio TDA Long term debt/ Asset ratio LTDA as independent variable and ROA Return on Assets, Return on Equity (ROE) Total Assets (TA), Dividend payout ratio (DPO) Market Price to Book (PBR) and E is the error term.  $b_1$   $b_2$   $b_3$  are regression coefficients and  $a$  is a constant.

Introducing moderating variable size factor the regression equations above will be

### Model 2 Regression equations (size as a factor)

- g)  $Y \text{ ROE} = a + b_2 \text{LTDA}, \text{SZ} + b_3 \text{STDA}, \text{SZ} + b_4 \text{TDA}, \text{SZ} + e$   
 h)  $Y \text{ ROA} = a + b_2 \text{LTDA}, \text{SZ} + b_3 \text{STDA}, \text{SZ} + b_4 \text{TDA}, \text{SZ} + e$   
 i)  $Y \text{ DPO} = a + b_2 \text{LTDA}, \text{SZ} + b_3 \text{STDA}, \text{SZ} + b_4 \text{TDA}, \text{SZ} + e$   
 j)  $Y \text{ EPS} = a + b_2 \text{LTDA}, \text{SZ} + b_3 \text{STDA}, \text{SZ} + b_4 \text{TDA}, \text{SZ} + e$   
 k)  $Y \text{ PBR} = a + b_2 \text{LTDA}, \text{SZ} + b_3 \text{STDA}, \text{SZ} + b_4 \text{TDA}, \text{SZ} + e$

Where  $\text{SZ}$  is the size of the firm which is represented by natural logarithm of sales of the firm

## 4. Data Analysis and Discussions

VARIABLES	MINIMUM	MAXIMUM	MEAN	STD DEVIATION	VARIANCE
ROE	-73.0	96.30	17.7592	17.6568	311.7634
ROA	-0.08	92.99	9.8359	10.8045	116.7369
DPO	-768.13	122.69	23.9745	59.3364	3520.801
EPS	-46.76	100.5	7.8694	11.8849	141.2508
TA	166.505E6	617.0E9	296.1E8	764.8586E8	5.85E21
PBR	0.15	7.79	1.6545	1.3788	1.901
LTDA	0.00	2.64	0.2264	0.2264	0.0049
STDA	0.00	2.76	0.3255	0.2783	0.0774
TDA	0.01	3.87	0.5166	0.3814	0.1455

**Table 2 descriptive analysis table**

**Analysis of the Descriptive statistics**

From the above table it is noted that all variables have positive mean .Both for capital structure proxies and performance. The mean value of ROE (17.76), ROA (9.84) and DPO (23.97) indicate that Kenyan companies listed on the NSE by considering inflation rate have a good performance and the fact that the price to book value PBV (1.65) greater than 1. This indicates that the share prices of the firm on the NSE are overvalued.

Capital structure proxies of Kenyan companies listed on the NSE LTDA mean value (22.64%), STDA mean value (32.55%) and TDA mean value (51.66%) show that Kenyan firms do not heavily rely on debts to finance their activities this shows that the Kenyan companies could be financing their activities through retained earnings.

The companies on the NSE tend to use pecking order theory where firms use internally generated funds to finance activities which is cheap .if more finance is required they resort to cheap debt (capital with fixed interest) before moving to capital with variable interest (equity)

	ROE	ROA	DPO	EPS	TA	PBR	LTDA	STDA	TDA
ROE	1								
ROA	.512**	1							
DPO	-.199	.149	1						
EPS	.351	.319	.194	1					
TA	.411*	.439*	.127	.063	1				
PBR	.584**	.690**	.076	.169	.689**	1			
LTDA	-.386*	.117	.511**	.080	-.206	-.199	1		
STDA	.204	.230	.262	-.219	-.264	.166	.181	1	
TDA	-.210	.082	.334	-.149	-.128	-.272	.342	.535**	1

\*\* Correlation is significant at the 0.01 level (2 tailed)

\*correlation is significant at the 0.05 level (2 tailed)

**Table 3 Correlations during 2007-2011**

Table 3 establishes correlation according to person matrix between capital structure proxies represented by LTDA, STDA and TD against performance proxies shown by RAO, ROE, TA, EPS, DPO and PBR.

The variable LTDA measures the long term debt to asset ratio. The results show that its positively correlated (0.511\*\*) with TA and the significant at 95% confidence level this shows firm on NSE acquire debt based on the value of asset a firm has.

LTDA shows a negative correlation with ROA (-0.386\*) and this is significant at 99% confidence level, this is consistent with Abdul G. (2012) but a weak negative correlation with DPO (-0.206) PBR (-0.199) This is consistent with Mohammadzadeh (2012) who reported a negative correlation between capital structure and ROA for companies listed on Tehran stock exchange.

The variable STDA measures short term debt to asset ratio, the result shows it is negatively correlated to ROA (-0.204) and EPS (-0.219) its consistent with Puwanenthiren (2012),

Ngoc-Phi-Anh D.(2011) but positively correlated to ROE (0.230) TA (0.314) DPO (0.264) and BPR (0.166) though not significant. This is consistent with Abor (2008), Mohammadzadeh 2012 who reported that BPR positively correlated to capital structure proxies though insignificant.

TDA variable measures total debt to asset ratio ,the results shows that capital structure proxy TDA is weakly negatively correlated to ROA (-0.210) EPS (-0.144) DPO (-0.128) PBR (-0.272) this implies that firms on NSE avoid the use of debt to finance their activities as it leads to lower performance. This is inconsistent with Abor (2005). This partly could be attributed to the period 2007 the country experienced post-election violence this might have made lenders fear to lend on long term basis hence restrictive covenants to long term debts.

Independent variable	EPS				DPO				PBR			
	Coefficient	T statistic	sig	VIF	Coefficient	T statistics	sig	VIF	Coefficient	T statistics	Sig	Vif
Constant	12.46	3.316	.003	-	15.18	4.082	.000	-	15.965	5.197	.0000	-
LTDA	.86	.377	.71	1.432	.011	.05	.96	1.432	.077	.370	.714	1.432
STDA	-.152	-.599	.555	1.772	.472	1.986	.058	1.772	.480	2.078	.048	1.772
TDA	-.097	-.365	.718	1.491	-.38	-1.546	.134	1.491	-.555	-2.295	.030	1.491
DURBIN WATSON F TEST		2.171				1.188				1.52		
ADJUSTED R <sup>2</sup>		.501				1.798				2.399		
STD ERROR		-.054				.076				.126		
		5.61355				5.55716				4.59016		

**Table 4a regression results for EPS,DPO &PBR**

Independent variable	ROA				ROE				TA			
	Coefficient	t statistic	sign	VIF	Coefficient	t statistics	sign	VIF	Coefficient	t statistic	Sig	VIF
Constant	16.134	6.090	.000	-	8.805	3.304	.003	-	9.201	4.559	.000	-
LTDA	-.491	-2.377	.025	1.432	.263	1.184	.247	1.432	.63	3.461	.002	1.432
STDA	-.379	-1.647	.112	1.772	.395	1.597	.122	1.722	.438	2.163	.040	1.772
TD	.185	.160	.512	1.941	-.219	-.845	.406	1.941	-.116	-.546	.590	1.941

DURBIN WATSON	1.457	1.813	1.562
F TEST	2.510	1.002	5.74
ADJUSTED R <sup>2</sup>	.135	0.000	.329
STD ERROR	3.9584	3.9816	3.01537

**Table 4b Regression result for ROA, ROE & TA.**

***Variance inflation factor (VIF)***

Variance inflation factor is the undesirable situation where the correlations among the independent variables strong, it refers to actual disparity percentage to total disparity among variables. Mohammad (2012). If this factor is less than 5 then there is no multi-collinearity problem. From the above tables **4a & b** all the regression models have a VIF less than 5 hence no multicollinearity problem indicating the disparity is small.

***Durbin Watson***

It is a test statistic that is used to detect the presence of autocorrelation (a relationship between factors test autocorrelation among regression models) if the value is less than 3 then there is no auto correlation problem Alsaeed (2005). If the value is substantially less than 2 then there is evidence of positive serial correlation. if less than 1.0, there may be cause for alarm.

Form tables 4a & b Durbin Watson values for ROA (1.457), ROE (1.831), TA (1.562), EPS (2.171), DPO (1.188) & PBR (1.52) This shows there is no autocorrelation problem on the regression models

The relationship between TA with capital structure shown by R<sup>2</sup> coefficient of determination is 0.329 that is only 32.9% of variance in the capital structure (LTDA STDA and TDA) can be accounted by TA. For ROA with capital structure shown by R<sup>2</sup> coefficient of determination is 0.135 that is only 13.5% of variance in the capital structure (LTDA STDA and TDA) can be accounted by ROA. For PBR the relationship with capital structure shown by R<sup>2</sup> coefficient of determination is 0.126 that is only 12.6% of variance in the capital structure (LTDA STDA and TDA) can be accounted by PBR

The final equations shall be:

- a) **Y ROE = 8.8 + .263LTDA + .395STDA - .219TDA**
- b) **Y ROA = 16.134 -.491LTDA - .379STDA + .185TDA**
- c) **Y DPO = 15.18 + .011LTDA + .472STDA - .38 TDA**
- d) **Y EPS =12.46 + .86LTDA - .1525STDA - .097TDA**
- e) **Y TA = 9.201 + .631LTDA + .438STDA - .116TDA**
- f) **Y PBR = 15.965 + .771 LTDA + .48STDA + .555TDA**

ROA	ROE	TA	EPS	DPO	PBR	LTDsz	STDsz	TDAAsz	
ROA	1								
ROE	.512**	1							
TA	-.199	.149	1						
EPS	.351	.319	.194	1					
DPO	.411*	.439*	.127	.063	1				
PBR	.584**	.690**	.076	.169	.689**	1			
LTDsz	-.374*	.244	.686**	.097	-.051	-.070	1		
STDsz	-.224	.273	.535**	-.151	.331	.150	.300	1	
TDAAsz	-.225	.202	.703**	-.073	.144	-.097	.544**	.780**	1

\*\* Correlation is significant at the 0.01 level (2 tailed)

\*correlation is significant at the 0.05 level (2 tailed)

**Table 5 Correlation Analysis Model II Equations During 2007-2011**

Table 5 correlation analysis taking size of the firms as a moderating variable (size is taken to be represented by natural logarithm of sales) the correlation matrix between performance and capital structure proxies show that capital structure proxies LTDsz (0.686\*\*) TDsz (0.703\*\* & STDAAsz (.535\*\*) have a strong positive correlation with TA and for each it's significant at 99% confidence level. This implies that with a firm's size as a factor firms on NSE acquire debt based on the value of the asset thus use it as collateral.

The results show that LTDsz proxy of capital structure is positively correlated to ROA, though weak form. LTDsz show weak negatively correlated to DPO -0.551 PBR -0.071, STDsz and TDsz show a weak negative correlation to ROA and EPS relate positive correlation to both DPO and PBR.

Independent variable	ROA				ROE				TA			
	Coefficient	t statistics	Sig n	VIF	Coefficient	T statistics	Sign	VIF	Coefficient	T statistics	sign	VI F
Constant	12.602	6.8762	.000	-	9.935	5.641	.000	-	10.365	9.826	.000	-
LTDAsz	-.402	-.1829	.079	1.502	.256	1.132	.268	1.502	.450	3.077	.005	1.502
STDAAsz	-.252	-.856	.400	2.702	.376	1.241	.226	2.702	.108	.552	.586	2.702
TDAAsz	.190	.569	.574	3.490	-.230	-.668	.510	3.490	.374	1.68	.105	3.490
DURBIN WATSON F TEST	1.353				1.846				2.095			
ADJUSTED R <sup>2</sup>	1.704				1.164				14.753			
STD ERROR	.068				.017				.587			
	4.10937				3.94873				2.36497			



**Table 6a Regression results for performance and capital structure proxies  
(size as a moderator)**

Independent variable	EPS				DPO				PBR			
	Coefficient	t statistic	sign	VIF	Coefficient	t statistics	Sign	VIF	Coefficient	t statistics	Sign	VIF
Constant	10.476	4.270	.000	-	12.769	5.13	.000	-	14.221	6.645	.000	-
LTDAsz	.161	.684	.500	1.502	-.055	-.249	.806	1.502	.082	.367	.717	1.502
STDAsz	-.190	-.603	.552	2.702	.6601	2.041	.051	2.702	.603	2.021	.054	2.702
TDAAsz	-.012	-.033	.974	3.490	-.326	-.973	.34	3.490	-.612	-1.805	.083	3.490
Durbin Watson	2.021				1.184				1.421			
F Test	.41				1.711				1.462			
Adjusted R <sup>2</sup>	-.065				.068				.046			
Std Error	5.6418				.58051				4.79788			

**Table 6b Regression results for performance and capital structure proxies  
(size as a moderator)**

From the results table 6a & b Model II the VIF values are less than 5 hence no multi collinearity problem, also the Durbin Watson factors are less than 3 hence no autocorrelation problem

From the results table 6a & b The relationship between TA with capital structure shown by R<sup>2</sup> coefficient of determination is 0.587 that is only 58.7% of variance in the capital structure moderate by size (LTDAsz STDAsz and TDAAsz) can be accounted by TA while the remaining 41.3% by other factors no considered. For ROA with capital structure shown by R<sup>2</sup> coefficient of determination is 0.068 that is 6.8% of variance in the capital structure (LTDAsz STDAsz and TDAAsz) can be accounted by ROA. For PBR the relationship with capital structure shown by R<sup>2</sup> coefficient of determination is 0.046 that is only 4.6% of variance in the capital structure (LTDAsz STDAsz and TDAAsz) can be accounted by PBR

The final equations shall be:

- a)  $Y_{ROE} = 9.935 + .251LTDA + .376STDA + .230TDA$
- b)  $Y_{ROA} = 12.602 - .402LTDA - .252STDA + .190TDA$
- c)  $Y_{DPO} = 12.769 - .055LTDA + .6601STDA - .323 TDA$
- d)  $Y_{EPS} = 10.476 + .16LTDA - .190STDA - .012TDA$
- e)  $Y_{TA} = 10.365 + .45LTDA + .108STDA + .374TDA$
- f)  $Y_{PBR} = 14.22 + .082 LTDA + .603STDA - .612TDA$

## 5. Conclusion

The research aims to explore the relationship between capital structure and performance of firms listed on Nairobi securities exchange. A sample of 30 companies was selected for the period 2007-2011. Analysis was performed using both descriptive statistics and inferential by applying linear regression analysis

Firms listed on Nairobi securities exchange have adopted pecking order hypothesis due to undeveloped debt market and the restrictive covenants associated with long term debt, this makes long term debts expensive hence making firms borrow less. Most firms prefer to finance their activities by using short term debts. From the results the total assets was positively correlated to capital structure proxies and it was significant this indicate that long term debts was utilized by large firms that had large assets which could be used to act as collateral for securing the loans.

Further research should be conducted on Kenyan market on financial firms to check consistency with the results. Also other market based measures should be applied so as to test the relationship of performance and capital structure to give more insight on the state of affairs on Kenyan case

## 6. Recommendation

The researcher recommends the following

- ✓ Firms should consider using optimal capital structure, that is the appropriate debt-equity mix so as to meet their obligation when due to avoid chances of bankruptcy and make the firms profitable.
- ✓ Political stability is an important factor in the debt-equity market it determines the firms performance regardless of size and financial base. The researcher recommends that the political wheel of the government should aim at stability for better performance.
- ✓ Inflation and exchange ratio greatly affect performance of listed firms thus government should control inflation to hedge listed firms against losses.
- ✓ Incentives and goodwill to investors and firms on NSE is essential to accelerate growth and performance.

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