

## Capital Structure, Ownership Structure and Firm Value: An Econometric Panel Analysis of Firms Listed in Kenya

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**Abstract:** The purpose of this study is to explore the effect of capital structure and ownership structure on market value of listed firms in Kenya. In this study, data of companies that were active in Nairobi Securities Exchange (NSE) between the years 2007 to 2012 is used. Capital structure is surrogated by total long term debt to total capital ratio, while ownership structure is represented by summation of amount of ownership of five greatest shareholders of a company relative to the total shareholding and firm value is proxied by Tobin's Q. Before empirical estimations, data was subjected to the Levin- Lin- Chu panel unit root test. The results indicated that all variables were integrated of order zero ( $p = .000$ ), that is, are stationary at levels. Panel correlation and multiple regression methods were used in the empirical analysis. Results indicate that capital structure ratio significantly negatively influence firms' market value in both FEM ( $\beta = -.35$ ,  $t = -2.54$ ) and REM ( $\beta = -.12$ ,  $t = -2.65$ ) implying that a unit change in capital structure ratio leads to a decrease in Tobin's Q of firms listed at the Nairobi Securities Exchange of .35 and .12, respectively, all things being fixed. Ownership structure is an insignificant positive predictor of market value in both FEM ( $\beta = .01$ ,  $t = .14$ ) and REM ( $\beta = .01$ ,  $t = .18$ ) respectively. This means that a unit change in ownership structure leads to an increase in Tobin's Q of firms listed at the Nairobi Securities Exchange of .01, all things being fixed. Asset tangibility is a negative significant predictor of market value ( $\beta = -.13$ ,  $t = -1.96$ ) for FEM specification. In contrast, firm size is a positive significant predictor of market value in FEM ( $\beta = .04$ ,  $t = 2.91$ ). The Adj- $R^2$  for FEM and REM show that the variables jointly explain between 42 % and 43 % of the variation in the Tobin's Q respectively of firms listed on the Nairobi Securities Exchange. .

**Keywords:** Random Effect Models, Fixed Effects Models, Panel, Econometric analysis, Kenya

### INTRODUCTION

Corporate finance offers eight theories that explain firms' capital and ownership structure choices. The first school of thought is the agency theory that posits that in the presence of information asymmetry, the agents (in this case, the shareholders and managers) are likely to pursue interests that may hurt the principals, or debt holders [1]. Initially, the theory was applied to the relationship between managers and equity holders with no explicit recognition of other parties interested in the wellbeing of the firm. Subsequent research efforts widened the scope to include not just the equity holders but all other stakeholders, including employees, creditors and government among others [2]. Agency theory explains how best the relationship between agents and principals can be tapped for

purposes of governing a corporation to realize its goals. Interest on agency relationships became more prominent with the emergence of the large corporation [3].

The second school of thought is the stakeholders' theory which postulates that the excessive power in the hands of management who represent shareholders (ownership concentration) may be abused and serves their own interest at the expense of providers of long term debt capital (financial leverage) and society as a whole [4]. Proponents of this theory argue that the current institutional restraints on managerial behavior, such as non-executive directors, the audit process and the threat of takeover, are simply inadequate to prevent managers from abusing corporate

power. Shareholders protected by liquid asset markets are uninterested in all but the most substantial of abuses. Incentive mechanisms, such as share options, are means through which managers can legitimize their abnormal overpayment (viewed by some as a symptom of the breakdown of governance [5]). The abuse of executive power is particularly embedded in the problem of executive overpay since executive remuneration has risen much faster than average earnings and there is, at best, a very weak link between compensation and management performance [6, 7].

As observed by [8], the stakeholders' theory has been subject of some investigation. For instance, [2] provide a comprehensive review of corporate governance, with a particular focus on the stakeholder theory and find that many parties are interested in the well-being of the firm and that these parties often have competing interests [9]. This is exemplified by the equity (ownership concentration) and debt holders (financial leverage) claim on the assets and income of the company which precipitates to financial leverage and ownership concentration and the resultant level of firm's financial performance.

The third school of thought is the trade-off theory suggested by [10] which refers to the idea that the firm chooses how much debt capital (financial leverage) and how much equity to use (ownership concentration) by balancing the cost and benefits. The marginal benefit of further increases in debt declines as debt increases while marginal cost increases so that a firm that is optimizing its overall value will focus on this trade-off when choosing how much debt and equity to use for financing. As pointed out by [11], this theory asserts that the firm's optimal debt-equity ratio is achieved at the point when the marginal present value of tax on additional debt is equal to the increase in the present value of financial distress costs. The trade-off theory has both the static and the dynamic aspects.

The fourth theory is signalling theory proposed by [12] laid in which he assumed that managers and shareholders (ownership concentration) being the insiders have a better knowledge about the true distribution of future returns of the firm whereas investors do not notably providers of long term debt represented by financial leverage. Investors interpret high levels of financial leverage as a signal of the firm's stable income, high future cash flows and managers' confidence about financial performance of their own companies. According to [1] quoting Ross (1977) observed that investors take high levels of debt as a signal of higher quality. He further posits that profitability (as a proxy of quality performance) and financial leverage are thus positively related. The concepts of financial leverage and ownership

concentration are anchored on this theory. It has been argued that financing decision of a firm is a mirror of signaling theory [1].

The fifth school of thought explaining firms' capital structure choice is the pecking order hypothesis. Invoking agency theory, signaling hypothesis and information asymmetry, the pecking order hypothesis argues that firms have a preference order for different types of finance, reflecting their ease of availability or relative costs [13]. The pecking order hypothesis does not emphasize target leverage; rather, current leverage reflects firm's historical profitability and the need for additional investment funds at some point in time. 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 [1].

The sixth theory is irrelevancy theory. The theory was put forward by Modigliani and Miller in 1958. It is based on the following 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 [16].

The seventh theory is Market timing theory fronted by [17] 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 their equity issues, they issue new stock when the stock price is perceived to be overvalued and buy back own shares when they are undervalued.

Eighth theory is free cash flow theory which postulates that 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. [18] argues that increasing leverage instills discipline in managers as they will be cautious not to make the firm insolvent [19].

From the foregoing, the association between ownership structure and capital structure is an important one as it underpins the link between corporate governance and firm performance. Consequently, theoretical literature links ownership structure and capital structure both positively and negatively [20], [21], [22]. It recognizes that external block holders surrogated by ownership concentration have strong incentives to reduce managerial opportunism [21]. Consequently, firms may prefer to use debt as a governance mechanism to control management's consumption of perquisites [22] a viewpoint contrasted by [20] who opines that if external block-holders monitor management effectively, managers may not be able to adjust debt to their own interests as freely as if such investors did not exist. In that case, firms with large external block-holdings are likely to have higher debt ratios at least up to the point where the risk of bankruptcy may induce them to lower debt [20].

Other authors [23] and [24] argue that an increase in managerial ownership pushes firms to reduce financial leverage in order to decrease default risk thereby advocating a negative relationship between ownership structure and capital structure.

Empirical evidence [23], [25], [26], [27] and [28] show mixed relationships between ownership structure and capital structure leading to theory building stagnation. [23] use descriptive research design, correlation analysis to investigate the impact of managerial stake on corporate capital structure. However, they did not cover other ownership arrangements and only managerial ownership concentrations of large manufacturing firms instead of listed firms were considered. Similarly a study by [25] use correlational research design, cross-sectional data and convenient sampling techniques to investigate the association between chief executive officers stake among USA firms financial leverage levels. The study focused on firms in the USA as opposed to listed firms. Besides, the CEO's stake surrogated ownership

structure. In addition, [26] use correlation research design and cross-sectional data and report mixed results depending on how ownership structure is measured. However, the study concentrated on all firms in the UK as opposed to listed firms which have clear ownership and capital configurations and fails to incorporate time series component.

On the contrary, [27] use time series data and multiple regression analysis to examine the relationship between ownership structure and capital structure among Australian firms and report mixed results depending on how ownership structure is operationalized. However, the study fails to test the association of greatest shareholders and financial leverage and did not cover listed firms.

Continental empirical evidence [29], [31], and [30] show a positive association between ownership structure and capital structure. [29] use unbalanced panel and found that managerial shareholding significantly positively influenced the choice of long term debt over equity. However, the study did not test the association of block shareholders and capital structure, focuses on SMEs instead of listed firms which have clear ownership and capital structures. On the contrary, [30] use descriptive research design, cross-sectional data, logistic regression and step wise regression to investigate the relationship between ownership structure and financial leverage, however, they only consider cross-sectional aspects of listed firms as opposed to panel which encompasses both time and cross-sectional aspects. Records at the Nairobi Securities Exchange indicate that in the period 2006-2011, listed companies' debt levels oscillated between 22.64 % and 76.2 % [31] implying that capital structure of Kenya's listed firms greatly varies.

NSE (2011) use a small sample size and descriptive statistics in analyzing shareholding levels of firms listed at the NSE and found that the top five shareholding levels ranged between 62.570 % to 94.200 %, implying that majority of listed companies' shares are held by just a few investors. However, it fails to show whether ownership structure can co-exist with debt holders surrogated by capital structure. With such an environment of ownership concentration in the background, the interest of lenders who are largely outsiders could easily be compromised and managed to be skewed towards the interest of such block holders [32]. This situation is aggravated by the fact that few studies have been done on the ownership structure-capital structure relationship of listed firms especially in the developing countries [28] and [33].

Reviewed literatures show that ownership structure and capital structure underpin the link between corporate governance and performance of firms. It

recognizes that external block holders surrogated by ownership concentration have strong incentives to reduce managerial opportunism. Consequently, firms may prefer to use debt which surrogates capital structure as a governance mechanism to control management's consumption of perquisites. In addition, if external block-holders which surrogate ownership structure monitor management effectively, managers may not be able to adjust debt to their own interests as freely as if such investors did not exist hence reducing financial leverage. In that case, firms with large external block-holdings are likely to have higher debt ratios. Prior researches use convenient sampling methods and descriptive or correlational research designs, descriptive statistics, logistic and step-wise regression analyses; study manufacturing firms, SMEs, and non-listed firms. They employ either time series or cross-sectional data and use single measures of performance, but fail to study listed firms using panel methodology. Therefore, it was unknown how block holders represented by ownership structure associate with debt holders surrogated by capital structure and their effect on market value for listed firms using multiple measures of performance and panel methodology.

Existing literature show diverse relationships exist between capital structure, ownership structure and market value but none relates these concepts using panel methodology for listed firms in a frontier market like Nairobi Securities Exchange. Literature shows that while studying capital structure-market value and ownership structure-market value relationship, it is imperative to combine both time series and cross-sectional data. This approach enhances efficiency of the data and gives more robust estimates. Moreover, these studies are disaggregated and none has given consideration to capital structure, ownership structure and market value relationship, yet when investigated separately, have shown inconsistent results. Therefore, no prior studies that have integrated the three variables: capital structure, ownership structure and market value of listed firms in frontier market in a single research.

Nairobi Securities Exchange (NSE) is the single major open capital market in the country. It differs from those developed markets in such characteristics on firm levels as the ownership structure, capital structure, asset structure, profitability, firm size and corporate governance standards [34]. Therefore, this makes it a unique context for this study. It plays a crucial role in the economic development of the Kenyan economy as it enables listed companies to gain access to long-term investment funds by issuing equity and debt securities to the public which precipitate to capital structure and ownership structure respectively. Knowledge gained from this study may be used to develop financing strategies that are more efficient in

maximizing capital structure and ownership structure while taking advantage of financial instruments in the capital market. The panel multiple regression models developed and validated in this study should influence more studies in the field of corporate finance and related disciplines and offer insight into financial management and corporate performance teaching and research methodologies. This study therefore contributes to finance theory in three dimensions: first by using market based financial indicators as measures of firm performance to test the predictions of the capital and ownership structure theories.

Secondly, the study has provides new empirical evidence on the relationship between capital structure, ownership structure and market value of listed firms in frontier market using panel approach.

Lastly, it provides further evidence on the possibility of co-existence of the opportunistic and informative block-shareholders surrogated by ownership structure and debt-holders represented by capital structure and their differential association with market value of listed firms. Understanding the nature of these associations is important for portfolio managers and financial decision makers because they may convey information about the quality of financial information and firm value.

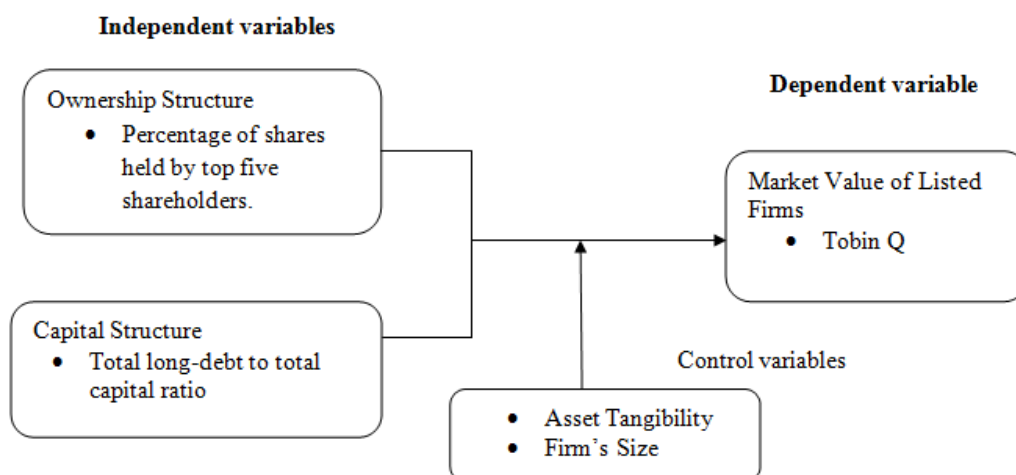
## MATERIALS AND METHODS

The study employed an adapted conceptual framework from [35] and [25] by modifying it to suit the research purpose. [35] employ panel methodology in examining ownership concentration and financial performance for a sample of 53 firms listed at the Nairobi Securities Exchange. [25] investigate managerial entrenchment and capital structure decisions among large USA firms. Therefore, these studies are relevant in conceptualizing this research. Concerns and aspects in [35] are combined into one variable known as ownership structure measured in terms the summation of amount of ownership stake of the top five greatest shareholders of the company relative the total shareholding of the company.

Based on [25], capital structure is condensed into long term debt and is surrogated by the ratio of the total long-term debt to total capital of the firm. This study adopted market value metric (Tobin's Q) used by [36] and [35]. Additional two other variables namely firm's size and asset tangibility are introduced in the reconstructed conceptual framework. These variables were operationalized to depict [37] and [38] constructs. Previous scholars notably [39], [40], [41] and [42] have identified these variables as drivers of firm value consequently their inclusion as control variables. The two independent variables: capital structure and

ownership structure were proposed to directly influence the dependent variable: market value of the firm

measured in terms of Tobin's Q.



**Fig-1: Capital structure, Ownership structure and Market value relationship**

Source: Adapted and modified from [35] and [25].

To assess the effect of capital and ownership structures on market value, the estimation procedure used by [35] and [36] is adopted and modified as:

$$TOBIN'S Q_{it} = \beta_0 + \beta_1 CAPSTR_{it} + \beta_2 OWNCSTR_{it} + \emptyset x + \varepsilon_{it} \quad (i = 1, \dots, N; t = 1, \dots, T) \quad (1)$$

$$\varepsilon_{it} \sim N(0, \sigma^2) \quad (2)$$

where  $TOBIN'S Q_{it}$  is a measure of market value – ratio of market capitalization to book value of assets for firm  $i$  in period  $t$ ; capital structure ( $CAPSTR_{it}$ ) = long-term debt ÷ total capital for each firm,  $OWNCSTR_{it}$  is surrogated by the percentage of shares held by the five greatest shareholders of each company relative to the total shareholding of each company,  $x$  is a vector of control variables, consisting of several factors traditionally believed to determine firm market value namely: the asset tangibility ratio ( $TANG_{it}$ ) = fixed assets ÷ total assets of the company and  $FSize_{it}$  is firm size, measured in terms of natural log of sales. Asset tangibility and firm size are control variables are traditionally believed to determine firm market value hence these control variables are expected to be correlated with market value of a firm (dependent variable), their exclusion from the tests may bias estimates  $\beta_0$ ,  $\beta_1$ ,  $\beta_2$  and  $\emptyset$  which are the coefficients to be estimated.

The model is subject to the general assumptions of the classical linear regression model proposed by [43] and [44] namely: linearity of the relationship between the dependent and independent variables; independence of errors (autocorrelation);

normality of the error distribution and homoscedasticity (i.e. constant variance of the errors). The choice of Tobin's Q to surrogate market value was motivated by the fact that this metric is quantifiable, expressive and comparable [45].

Moreover, beyond the company-specific factors identified, we expect that individual companies included in the sample might have other unobserved idiosyncrasies that set them apart from each other. To take care of such unobserved individual-specific effects, we re-write equation (1) as follows:

$$TOBIN'S Q_{it} = \beta_0 + \beta_1 CAPSTR_{it} + \beta_2 OWNCSTR_{it} + \emptyset x_{it} + \mu_i + \varepsilon_{it} \quad (i = 1, \dots, N; t = 1, \dots, T) \quad (3)$$

Where  $\varepsilon_{it} = \mu_i + \varepsilon_{it}$  such that  $\mu_i$ , the time-invariant company-specific effects, account for unobserved heterogeneity and  $\varepsilon_{it}$  is white noise. Equation (3), is first estimated as a fixed effects model (FEM) in which case we assume that  $\mu_i$  are pure stochastic disturbance terms uncorrelated with each other ( $Cov(\mu_i, \mu_j) = 0$ , for all  $i \neq j$ ), uncorrelated with the explanatory variables ( $Cov(\mu_i, x_{it}) = 0$ ) as well as with the random error term ( $Cov(\mu_i, \varepsilon_{it}) = 0$ ). In this case,  $E(\mu_i) = 0$  and  $Var(\mu_i) = \sigma_\mu^2$ .

In the alternative specification, equation (3) is estimated as a random effects model (REM) in which case we assume that  $\mu_i$  are pure stochastic disturbance terms uncorrelated with each other ( $Cov(\mu_i, \mu_j) = 0$ , for all  $i \neq j$ ), uncorrelated with the explanatory variables ( $Cov(\mu_i, x_{it}) = 0$ ) as well as with the random error term



(Cov ( $\mu_i, \varepsilon_{it}$ ) = 0). In this case,  $E(\mu_i) = 0$  and as before  $\text{Var}(\mu_i) = \sigma_{\mu}^2$ .

In terms of econometric soundness, both the random effects models and fixed effects models have been variously criticized on several grounds [46]. In response to these criticisms, we perform diagnostic tests to gauge the suitability of both specifications using the Restricted F-test for the fixed effects models and the Hausman test for the random effects models. If the fixed effects model is the appropriate specification (compared to, say, the restricted pooled model specification), the Restricted F-test should fail to reject the hypothesis that fixed effects estimator produces consistent coefficients. In that case, and in absence of heteroscedasticity and serial correlation in the error term (or if they have been adjusted for in the standard errors), we can conclude that fixed effects estimates are efficient. Similarly, the null hypothesis for the Hausman test is that the coefficient estimates from the random effects specification are consistent. Failure to reject this hypothesis vindicates the appropriateness of the random effects specification for the data.

## RESULTS AND DISCUSSIONS

This study examines the relationship between capital structure, ownership structure and firm value listed companies at the Nairobi Securities Exchange using data for the period 2007 through 2011. Observations are sampled at annual intervals because capital and ownership structure revisions often require the ratification of company shareholders, who typically meet on an annual basis in Kenya. Year 2007 is important in several respects. First, it coincided with the

beginning of the 2007/2008 global recession and financial turmoil originating in the developed world that had since spread to developing countries and the Kenya's listed firms had not been immune to the secondary effects of this crisis. Second, the year also coincided with an important event in Kenya's history: the change of political leadership from the National Rainbow Coalition (NARC), to a coalition government for the first time since the country's political independence after disputed 2007-08 general elections. Third, 2007 also marked the end of the second decade of Kenya's economic reforms. Thus, the performance of firms was expected to reflect the better economic risk and sovereign risk environments as well as improved access to funding because economic reforms would make a wider range of financing instruments available to businesses. The listed companies were analyzed as a panel of the entire stock market. The market value, capital and ownership structures leverage data were collected from firms' audited financial statements contained in NSE handbooks.

The Nairobi Securities Exchange had fifty eight listed firms at the end of 2012. However, several of the firms were listed after 2007 and hence did not have a time series long enough to enable us include them in the analysis. Some firms were left out due to non-availability of data. The final sample consisted of 50 listed firms for a period 2007 through 2011 which resulted in a sample of 250 firm year observations. A step by step analysis was done by first showing the descriptive statistics of the data used in the estimation and then correlation analysis was done.

**Table 1: Descriptive Statistics of Study variables**

Variables	Minimum	Maximum	Mean	Std. Deviation
Capital structure	.000	.794	.26746	.172130
Ownership structure	.110	.963	.65964	.176652
TOBIN'S Q	.061	7.791	1.32835	1.343769
Asset tangibility	.048	1.457	.56149	.242486
Firm Size	10.841	21.364	15.49375	1.785281

**Source: Field Data, 2014**

The table shows the descriptive statistics for variables used in the study. The variables are defined thus: Capital structure = long-term debt to total capital ratio, Ownership structure = summation of amount of ownership of five greatest shareholders of a company relative to the total shareholding, Tobin's Q = Market value of equity ÷ Book value of assets; ROA = Pre-tax profits ÷ total assets of the company; Asset Tangibility = Fixed assets ÷ total assets. Firm's size = natural logarithm of sales.

The statistics show that mean values for capital structure, ownership structure and Tobin's Q are 26.746 %, 65.96 % and 1.329 respectively. Capital structure statistic implies that on average firm listed on the NSE employs only 0.267 Kenyan Shilling of long-term debt for every Shilling of capital employed. Clearly, Kenyan firms either prefer to finance their long-term activities through equity or find themselves in that situation courtesy of uncontrollable reasons such as unavailability of diversified long-term financing sources in the capital market [46]. This value is comparable to the mean leverage of 22.64 % obtained

by [48] and is 1.63 times lower than mean financial leverage obtained by [49]. However, it is 9.7 times higher than mean financial leverage obtained by [50] in Turkey.

The highest and lowest ownership structure values are 96.31 % and 11.040 % respectively with a mean ownership concentration of 65.96 %. This means that of the total shareholding of firms listed at the NSE, top five shareholders stake is 65.96 % and only 34.04 % of the total shareholding belongs to dispersed ownership implying that shares of firms listed at the NSE are closely held. This value is 1.344 times higher than mean ownership structure obtained by [51] of 48.57 %.

The average Tobin's Q ratio of 1.329 which is greater than 1 ( $q > 1$ ) implies that listed firms' stock is more expensive than the replacement cost of its assets. This indicates that most of the firms are overvalued relative to their book values. The mean Tobin's Q compares favorably with that obtained by [52] of 1.599 and is marginally lower than that obtained by [36] who obtained a Q ratio of 1.8460 for a sample of firms in Kenya.

About 56.149 % of all assets are tangible. The firm's size indicates that on average, firms listed on the NSE had a mean of 15.493. These results are consistent with previous studies that identified these variables as main firm-specific drivers of performance [41] and [40].

Before empirical estimations are conducted, the data series were subjected to unit root tests to establish their stationarity conditions, that is, their orders of integration. Where a series is found to be non-stationary at levels, it is differenced until it became stationary. Use of non-stationary data in estimations yields non-sensible or spurious regression results. According to [46], the stationarity or otherwise of a series can strongly influence its behaviour and properties. For instance, persistence of shocks will be infinite for non-stationary series. If two variables are trending over time, a regression of one on the other could have a high coefficient of determination even if the two are totally unrelated. If the variables in the regression model are not stationary, then it can be proved that the standard assumptions for asymptotic analysis will not be valid. In other words, the usual "t-ratios" will not follow a *t*-distribution, so we cannot validly undertake hypothesis tests about the regression parameters [43] and [46].

**Table 2: Unit Root Tests Results**

CAPSTR	OWNSTR	ASSTANG	FSIZE	TOBIN'S Q
-19.391	-32.944	-152.316	-63.578	-39.349
[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***

Source: Field Data, 2014

CAPSTR is capital structure, OWNSTR is ownership structure, ASSTANG is asset tangibility and FSIZE is firm size. Figures in square brackets are the p-values of the Levin-Lin-Chu panel unit root test statistics.

Table 2 provides a summary of the Levin- Lin-Chu panel unit root test results. The results indicate that all variables are integrated of order zero, that is, are stationary at levels. Given that all variables were integrated of order zero, there was therefore no need to test for cointegration in the series.

**Table-3: Correlation Matrix of market value and Explanatory Variables**

CAPSTR	OWNSTR	ASSTANG	FSIZE	TOBIN'S Q	
1.000	.193**	.192**	-.061	-.342**	CAPSTR
	(.002)	(.002)	(.326)	(.000)	
	1.000	-.053	-.247**	-.024	OWNSTR
		(.391)	(.000)	(.697)	
		1.000	-.008	-.182**	ASSETANG
			(.898)	(.003)	
			1.000	.003	FSIZE
				(.964)	
				1.000	TOBIN'S Q

\*\*. Correlation is significant at the 0.01 level (2-tailed). \*. Correlation is significant at the 0.05 level (2-tailed). The p-values are in braces. Source: Field Data, 2014

Table 2 presents an analysis of the “relations” between the variables in the analysis. It displays the correlation matrix for market value and explanatory variables. The correlation coefficients between explanatory variables are generally low, indicating that multicollinearity is not a serious concern in the estimations. To avoid spurious regression estimates in our empirical analysis, it is necessary that variables be stationary. We run panel unit root tests using the method proposed by [53]. Results, presented in Table 2, shows that the unit roots hypothesis is rejected by all variables at the 1% level of significance. The results indicate that capital structure is significantly negatively associated with market value measured in terms of

Tobin’s Q ( $r = -.342$ ,  $p = .000$ ) while ownership structure is significantly positively associated with market value, that is, Tobin’s Q ( $r = .193$ ,  $p = .002$ ).

The results of the estimation of the panel data models with market value, that is, Tobin’s Q and for the full sample of observations are discussed in this section. Time dummies are included in the random effects model (REM) and random effects model (REM) to take care of unobserved time-specific effects that may influence firm value. We report results for capital and ownership structures and market value together as shown in Table 4.

**Table 4: Panel regression outputs for Market value (Tobin’s Q)**

	<b>FEM</b>	<b>REM</b>
Constant	-.30*	.12**
	(-1.86)	(2.44)
CAPSTR	-.35**	-.12***
	(-2.54)	(-2.65)
OWNSTR	.01	.01
	(.14)	(.18)
ASSTANG	.13*	-.17
	(-1.96)	(-5.28)
FSIZE	.04***	-.001
	(2.91)	(-.91)
Adjusted R <sup>2</sup>	.42	.43
Durbin Watson Stat	1.084	1.072
F- Statistics	6.11	6.31
	[.000]	[.000]
Restricted F statistics	4.08	4.31
	[.000]	[.000]
Breusch- Pagan Test		54.85 [0.000]
Hausman Test		11.46
		[.57]

**Source: Field Data, 2014**

The table reports coefficient estimates (with their t-values in braces). Standard errors for the fixed effects model estimates are robust to heteroscedasticity and autocorrelation. The Durbin-Watson statistic is evaluated against critical values tabulated in Bhargava et al. (1982); the relevant critical values at 5% are: and =1.8769. In square brackets are p-values of the reported test statistics.

Capital structure ratio significantly negatively influence firms’ market value in both FEM ( $\beta = -.35$ ,  $t = -2.54$ ) and REM ( $\beta = -.12$ ,  $t = -2.65$ ). These values are statistically significant since the t-values are greater than -2 [54]. It can be inferred from these values that a unit change in capital structure ratio leads to a decrease in Tobin’s Q of firms listed at the Nairobi Securities Exchange of .35 and .12, respectively, all things being fixed. These results concur with the previous studies



[35], [35] and [56] who report negative relationship between capital structure ratios and market value. However, these findings are at variance with those of [48], [57], and [49] who report both positive and negative relationship between capital structure and performance for non-financial listed firms. Due to agency conflicts between various stakeholders, listed firms seem to have employed financial leverage levels which have negatively affected the performance of these firms [55].

Ownership structure is an insignificant positive predictor of market value in both FEM ( $\beta = .01$ ,  $t = .14$ ) and REM ( $\beta = .01$ ,  $t = .18$ ) respectively. It can be inferred from this value that a unit change in ownership structure leads to an increase in Tobin's Q of firms listed at the Nairobi Securities Exchange of .01, all things being fixed. The findings concur with other previous studies [58], [59] and [60] who found that ownership structure had a positive and significant relationship with company performance. However, the results are at variance with previous studies [55] and [61] who report a negative relationship between ownership structure and performance measured in terms of Tobin's Q.

Asset tangibility is a negative significant predictor of market value ( $\beta = -.13$ ,  $t = -1.96$ ) for FEM specification. We interpret this variable to represent firms' "earning power/potential". Thus, for manufacturing firms, a higher level of tangible assets will enhance earnings through its positive impact on the ability to produce. For firms in the services and retail sectors, a high level of tangible assets may compromise the ability to provide service or sell merchandise as it ties down money on (fixed) assets, which do not generate income. Coefficient estimates show that an increment in tangible assets by 100% would elicit a drop in Tobin's Q of firm listed on Kenya's Nairobi Securities Exchange by 13 %. The negative coefficient finding is consistent with the findings of [62]; it may be explained by the fact the average firm listed at the Nairobi Securities Exchange (as in most parts of the frontier markets) does not engage in manufacturing activities and hence find current assets more useful in the ordinary course of their business. This finding is however, at variance with the findings of [55], [39] and [40] who found a positive and significant relationship between asset tangibility and firm's market value.

In contrast, firm size is a positive significant predictor of market value in FEM ( $\beta = .04$ ,  $t = 2.91$ ). It can be inferred from this value that a unit change in firm size leads to an increase in Tobin's Q of firms listed at the Nairobi Securities Exchange of 0.04, all things being fixed. This finding is consistent with previous studies [55], [63] and [64] who found a

positive relationship between firm size and profitability. However, results are at variance with those of [65] who found that firm size was a negative predictor of market value.

Diagnostic statistics show that our model is robust. First, the Durbin-Watson statistic, which tests for first order serial correlation in the errors of a regression output, shows that the hypothesis of positive autocorrelation is not rejected, at the 5% level, under both fixed effects and the random effects specification. However, because the standard errors are corrected for autocorrelation and heteroscedasticity, this does not present any threats to the consistency of our estimates. Second, we further evaluate the "validity" of the random effects model using the Hausman test; in each case, the test fails to reject the hypothesis that our estimates are consistent. Similarly, the Breusch-Pagan test rejects the hypothesis of zero-covariance of unit-specific error terms, upholding a key assumption of the REM specification. Third, the Adj-R<sup>2</sup> for FEM and REM show that the variables jointly explain between 42 % and 43 % of the variation in the Tobin's Q respectively of firms listed on the Nairobi Securities Exchange.

Thus use of panel methodology and market value reconciles conflicting results and therefore capital and ownership structure have a negative and positive relationship with Tobin's Q respectively. This implies that as firms increase their financial leverage, market value measured in terms of Tobin's Q decreases. On the other hand, as firms increase ownership structure, market value, increases.

## CONCLUSIONS

Four conclusions can be drawn based on the preceding evidence. The first conclusion is that Capital structure is an important negative predictor of market value measured in terms Tobin's Q. Secondly, Ownership structure is an insignificant positive predictor of market value in both FEM and REM specifications. Third, Asset tangibility is a negative significant predictor of market value for FEM specification. Lastly, firm size is a positive significant predictor of market value in FEM specification.

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