European Scientific Journal May 2015 edition vol.11, No.13 ISSN: 1857 – 7881 (Print) e - ISSN 1857- 7431

CORPORATE SIZE, PROFITABILITY AND MARKET VALUE: AN ECONOMETRIC PANEL ANALYSIS OF LISTED FIRMS IN KENYA

Dr. Robert Kisavi Mule, PhD
Lecturer, Department of Accounting & Finance, School of Business & Economics, Maseno University, Private Bag, Maseno, Kenya
Prof. Mohamed Suleiman Mukras, PhD
Department of Economics, Maseno University
Onesmus Mutunga Nzioka, PhD student
Tutorial Fellow, Department of Finance & Accounting, School of Business, Mombasa Campus, University of Nairobi, Nairobi, Kenya

Abstract

In corporate finance, the size of a firm is a primary factor in determining the success of a firm due to economies of scale. While, previous studies have confined their analyses on either a single industry or a few firms, in this study, we consider a rather comprehensive sample of firms that represent a sufficiently broad range of firm sizes in all sectors of Kenyan economy hence amplifying the importance of the study. Global corporate size literature shows plausable but mixed relationship between firm size, profitability and market value. The effect of corporate size on profitability and market value in a frontier market using panel methodology is unknown. The purpose of this study is to explore the effect of corporate size on profitability and market value of listed firms in Kenya. In this study, data for companies which were active in Nairobi Securities Exchange (NSE) between the years 2010 to 2014 has been used. Unit root test results indicate that all the variables are integrated of order zero ($p = .000$) meaning that they were stationary at levels. Panel correlation and multiple regression methods are used in the empirical estimations. Results indicate that there is a positive significant relationship between firm size and profitability, that is, return on equity ($\beta = .012$, $t = 2.585$) impying that value that a unit change in firm size leads to an increase in return on equity of firms listed at the Nairobi Securities Exchange of 0.012, all things being fixed whereas firm size insignificantly positively predicts profitability, that is, return on asset ($\beta = .012$, $t = 1.659$). In addition, the results show that corporate size has no

statistically significant impact on firm market value (β = -.011, t = -.225) under random effects specification.

Keywords: Firm size, Panel regression anaysis, Panel correation analysis, Nairobi Securities Exchange, Stationarity, Unit root tests, Emprical analysis

Introduction

The debate on the role of corporate size in explaining firm profitability and value has been ongoing in the field of corporate finance. Early research (Scherer, 1973 and Shepherd, 1972), as quoted by Niresh and Velnampy (2014) emphasized the importance of economies of scale and other efficiencies in larger firms. On the other hand, the structure-conduct-performance paradigm highlights the importance of market concentration and conduct in explaining profitability and firm value. In particular, Baumol (1967) as quoted by Velnampy (2013) argues that the advantages of larger firms stem from their market power and greater access to capital markets while Caves and Porter (1977) and Porter (1979) as quoted by Bauman and Kaen (2003) attribute variations in profitability and market value to group strategic behavior in different industries.

In corporate finance, the commonly used method for financial analysis is the use of profitability and market value ratios as key measures of firms' overall efficiency and performance (Tangen, 2003). These metrics are widely used financial models for performance measurements (Tangen, 2003 and Agiomirgiannakis *et al.*, 2006). Theoretically, several variables that may influence firm performance as the survival or business success mostly depends on the profitability and market value of the firm. In this way, the present study was initiated to identify the effects of corporate size on profitability and market value of the listed firms in Kenya. The size of a firm is the amount and variety of production capacity and ability a firm possesses or the amount and variety of services a firm can provide concurrently to its customers. The size of a firm is a primary factor in determining the profitability and market value of a firm due to economies of scale which can be found in the traditional neo-classical view of the firm (Surajit and Saxena, 2009). It reveals that, contrary to smaller firms, items can be produced on much lower costs by bigger firms. In accordance with this concept, a positive relationship between corporate size and profitability and market value is expected (Tangen, 2003). Contrary to this, alternative theories of the firms advise that larger firms come under the control of managers pursuing self-interested goals and therefore managerial utility maximization function may substitute profit maximization of the firms' objective function. In determining the business success of a firm, profitability and market value perform a dynamic role. Profitability is the amount of money a firm can

engender with whatever resources the firm has while market value is the market capitalization to book value of assets of the company ratio. The eventual goal for any organization is maximizing its profitability and market value. Consequently, firms can reap out the benefits associated with the increased profitability and market value (Agiomirgiannakis *et al.*, 2006).

Theoretical literature (Berger and di Patti, 2006; Majdumdar and Chhibber, 1999 and Capon *et al*., 2011) link corporate size to profitability and market value positively. Berger and di Patti (2006) posit that size is an important determinant of firm's performance arguing that larger firms are usually more diversified; better- managed and have larger risk tolerance. Small firms, on the other hand, may find it more difficult to solve the information asymmetry problem and thus may appear to perform worse than big companies (Berger and di Patti, 2006).

According Capon *et al*. (2011), the size of the firm has an important role in firm performance for many reasons. In a certain perspective of studies, size can be a proxy of firm resources. Since larger firms have more organizational resources, they give larger firms the better equipment to achieve their goals (Capon *et al*., 2011). Sizes can also proxy for the probability of default and the volatility of firm's assets. It assumes that larger firms are difficult to liquidate. Majdumdar and Chhibber (1997) also point out that larger firms generate superior performance relative to smaller firms. Other theoretical arguments (Onder, 2003, Tran, 2005 and Surajit and Saxena, 2009) assert that a bigger firm can devise better ways and means to fight market risks and uncertainties and have better chances to offset random losses and perform better. Moreover, size brings bargaining power over suppliers and competitors, a big firm can buy up the best sites with related advantage, the superior technology and best professional experts because of its control over the market.

Empirical evidence on the relationship between corporate size, profitability and market value of firms has been the subject of several studies since the pioneering works of Scherer (1973) and Shepherd (1972). However, the evidence on these relationships is mainly cross-sectional and time series studies and have yielded mixed results (Shen and Rin, 2012; Amato and Amato, 2004 and Gschwandtner, 2005). Amato and Amato (2004) also consider the financial conditions of firms by looking at their bad debt to sales ratios and net worth to assets ratios. They find both variables to be negatively correlated with profit rates. While a large amount of bad debt relative to sales obviously hinders firm performance, the adverse effect of a relatively high net worth on profit rates can be explained by the agency theory that increased borrowing tends to raise scrutiny by the lending institutions, thus giving the firm's managers greater access to lenders' expertise in managing its financial conditions. Gschwandtner (2005) finds

that profit persistence is associated with industry characteristics, such as concentration and growth, and larger firms tend to enjoy higher long-run profit rates. When she divides the sample into surviving and exiting firms, then she also finds exiters to behave more competitively than survivors before exiting the market. Moreover, Wu (2006) found that firm size affects firm performance positively and concluded that larger firms have stronger competitive capability than smaller ones as a result of their superior access to resources and better performance.

In Europe, Shen and Rin (2012) found that firm size had a positive relationship with performance, implying that bigger firms are expected to achieve better performance. However, in the case of UK firms, size had a negative and significant effect on performance of UK companies. This implies that small companies sometimes suffer less from agency problems and more flexible structure to fit the change (big firms are too big to change). The similar negative relationships are found by Yang and Chen (2009).

A few recent studies apply panel techniques to accommodate unobserved firm specific effects in time-series regression. Panel models pool cross-section and time series data together. However, the focus of these studies (e.g. Gersoki *et al*., 2003; Glen *et al.*, 2003; Goddard *et al*., 2006) remains on the degree of persistence in firm profits over time, which might be less interesting than the determinants of profits and market value across firms or industries, at least from the policy perspective. In addition to the potential insight into firm performance over time, panel data models can account for unobserved heterogeneity among firms, also known as individual effects.

Interestingly, Amato and Amato (2004) find that the typical firm size-profitability relationship established in those studies using data of manufacturing firms does not hold in retailing industries. On the other hand, Vijayakumar and Tamizhselvan (2010) who used different measures of size (sales and total assets) and profitability (profit margin and profit on total assets) while applying model on a sample of 15 companies operating in South India using semi-logarithmic specification of the model, found a positive relationship between firm size and profitability. Moreover, the part that firm size plays in profitability was examined by Lee (2009) who used fixed effect dynamic panel data model and performed analysis on a sample of more than 7000 US publicly-held firms and found that absolute firm size plays a remarkable role in explaining profitability. Ozgulbas *et al.* (2006) have studied the effect of firm size on performance over the firms operating in Istanbul Stock Exchange between the years of 2000 to 2005 and found that big scale firms have a higher performance as compared to small scale firms. In a similar fashion, Jonsson (2007) has studied the relationship between profitability and size of the firms operating in Iceland. Results of

the analysis showed that bigger firms have higher profitability as compared to smaller firms.

Size-profit relationship for the firms functioning in the financial services sector was tested by Amaton and Burson (2007). They tested both linear and cubic form of the relationship. Even though a negative influence of firm size on profitability was revealed with the linear specification in firm size, evidence of a cubic relationship was detected between return on assets and firm size. Becker *et al.* (2010) have studied the effects of firm size on profitability in the firms operating in manufacturing sector in USA using the data for years 1987 to 2002. Results of the study showed that negative and statistically significant relationships exist between the total assets, total sales and number of employees of the firms and their profitability.

Velnampy and Nimalathasan (2010) studied the relationship between firm size and profitability of all the branches of Bank of Ceylon and Commercial Bank in Sri Lanka over the period of 10 years from 1997 to 2006. They observed that there was a positive relationship between firm size and profitability in Commercial Bank, but there was no relationship between firm size and profitability in Bank of Ceylon. Another study by Velnampy (2013) discovered that there was no correlation between corporate governance and firms' performance measures. The sample of 28 manufacturing companies using the data representing the period of 2007 to 2011 revealed that the determinants of corporate governance were not correlated to the performance measures of the organization.

Based on this literature, it is clear that the studies on the effect of corporate size on profitability and market value have generated varied results ranging from those supporting a positive relationship among the variables used in the study to those opposing it. There is no common agreement on how the firm size is related to firm profitability and value. Hence, the results are inconclusive and require more empirical work to reconcile the contradictory results. In this way, the current study was instigated to investigate the effect of corporate size on profitability and value of the listed firms in Kenya using panel methodology. Moreover, foregoing anecdotal evidence raises a fundamental question: is corporate size associated with profitability and firm value in Kenya? Our research is an attempt to seek answers to this question. We measure profitability both in terms of return on equity and return on assets and market value is surrogated by Tobin's Q, corporate size is measured in terms of natural log of sales and uses a panel empirical methodology.

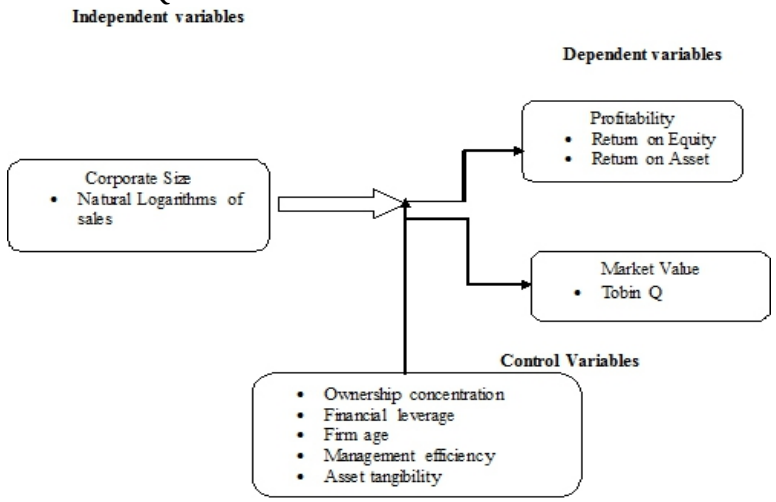
The study contributes to the existing literature in two directions. First, rather than confining our results to a single industry or a few firms, we consider a rather comprehensive sample of firms that represent a sufficiently broad range of firm sizes in nearly all sectors of Kenya. Second, we

incorporate the time dimension of firm-level data in a panel framework so that we can evaluate whether the Kenyan markets in the past five years have become more or less competitive.

Conceptual framework

The conceptual framework is adapted from Odongo *et al.* (2014) by modifying it to suit the research purpose. Odongo *et al*. (2014) employ panel methodology in examining capital structure, profitability and firm value for a sample of firms listed at the Nairobi Securities Exchange. Therefore, this study was relevant in conceptualizing this research. Concerns and aspects in Odongo *et al*. (2014) are transformed into two variables known as corporate size and market value measured in terms the natural logarithms of firm sales and Tobin's Q respectively. This was in sync with previous local studies (see for example, Odongo *et al.,* 2014 and Mule *et al.,* 2013). Five other additional variables namely firm size, ownership concentration, financial leverage, age, management efficiency and asset tangibility are introduced in the reconstructed conceptual framework. These variables were operationalized to depict Berger and Bonaccorsi (2006) and Becchetti and Sierra (2003) constructs. Previous scholars notably Shen and Rin (2012), Murillo (2007), Agustinus and Rachmadi (2008), Nickell *et al*. (1997) and Majdumdar and Chhibber (1997) have identified these variables as drivers of performance, consequently their inclusion as control variables.

The independent variable corporate size is proposed to directly influence two dependent variables namely: profitability measured in terms of return on equity and return on assets and market value of the firm measured in terms of Tobin's Q.



Corporate size, Profitability and Market value relationship

Source: Adapted and modified from Mule *et al.* (2013) Odongo *et al.* (2014).

Econometric Methodology

To assess the effect of corporate size on profitability and market value, the estimation procedure used by Mule *et al.* (2013) and Odongo *et al.* (2014) is adopted and modified as:

$$\boldsymbol{y_{it}} = \boldsymbol{\alpha} + \delta\, \boldsymbol{Z_{it}} + \emptyset\, x + \boldsymbol{\varepsilon_{it}} \qquad (i = 1, \ldots, N;\ t = 1, \ldots, T) \quad (1)$$

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

where $\boldsymbol{y_{it}}$ is a measure of performance (profitability or market value) – return on equity, return on assets and Tobin's Q; Z is corporate size, measured in terms of natural log of sales , x is a vector of control variables, consisting of several factors traditionally believed to determine firm profitability and market value – the asset tangibility ratio ($TANG_{it}$) = fixed assets ÷ total assets of the company; ownership concentration ($OWNC_{it}$) surrogated by the percentage of shares held by the five greatest shareholders of each company relative to the total shareholding of each company, financial leverage ($FINLEV_{it}$) = long-term debt ÷ total capital for each firm, Age of the firm ($FAGE_{it}$) = number of years since listing and management efficiency (ME_{it}) = total sales ÷ the total assets. Because these control variables are expected to be correlated with performance measures (dependent variables), their exclusion from the tests may bias estimates α, δ, and $\emptyset$ which are the coefficients to be estimated.

Firm's size may influence performance since larger firms tend to enjoy economies of scale, which may positively influence financial results (Jermias, 2008). Therefore, a positive relationship between firm's size and profitability and firm's value is expected. Asset tangibility, proxied by the ratio of fixed assets to total assets, is also considered as an important determinant of performance. The importance of asset tangibility in a firm's operations is emphasized by Akintoye (2009) who argues that a firm will have smaller costs of financial distress if they retain large investments in tangible assets than those that rely on intangible assets. All else equal, the more tangible assets a firm has, the greater is a manufacturing firm's ability to produce its product and generate more revenue from sales. Thus, for such firms, a positive relationship is expected between asset tangibility and financial performance. However, firms in the services sector and retail sectors, which do not engage in actual production, may require more "soft" assets such as inventories and accounts receivable in the ordinary course of events. Since such firms may perform better with fewer tangible assets, a negative relationship is expected. Clearly, the sign of the asset tangibility variable depends on which of the two categories of firms dominates the sample. Older firms are expected to enjoy better performance (Velnampy, 2006). On the contrary, firm's age works as a negative and significant determinant for performance (Shen and Rin, 2012), indicating that when

firms grow older, they may become more inert and inflexible. Empirical evidence (see for example, Abor, 2005 and Deesomsak *et al.*, 2004) show both negative and positive relationships between financial leverage and profitability and firm value. Theoretical literature links ownership concentration and profitability and firm value both positively and negatively (Januszeski *et al.*, 2002).

Management efficiency reflects the capability of the management to deploy its resources efficiently, income maximization, reducing operating costs can be measured by financial ratios. The higher the ratio the more the efficient management is in terms of operational efficiency and income generation and asset utilization. Therefore, a positive relationship between management efficiency and profitability and firm's value is expected.

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 (2) as follows:

$$\boldsymbol{y_{it}} = \boldsymbol{\alpha} + \delta\, \boldsymbol{Z_{it}} + \emptyset\, x + \boldsymbol{\mu_i} + \boldsymbol{\varepsilon_{it}} \quad (i = 1, \ldots, N;\ t = 1, \ldots, T) \qquad (3)$$

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

In terms of econometric soundness, the random effects models have been variously criticized on several grounds (see, e.g., Baltagi, 2001). In response to the criticisms, we perform diagnostic tests to gauge the suitability of the specifications using the Hausman test for the random effects models. In conclusion, 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.

Data and Unit Root Tests

Data

This study examines the relationship between corporate size, profitability and firm value listed companies at the Nairobi Securities Exchange using data for the period 2010 through 2014. Observations are sampled at annual intervals because firm size revisions often require the ratification of company shareholders, who typically meet on an annual basis

in Kenya. The year 2010 is important in several respects. First, it coincided with the end of secondary effects of the 2007/2008 global recession and financial turmoil originating in the developed world. Second, it marked the beginning of the recovery of the economy as clearly reflected by the improved performance of the Nairobi Securities Exchange (NSE), namely market capitalization rose by 40% in 2010, exceeding the Kshs 1 trillion, with average annual return of 36 % based on the NSE 20 Share Index. As a result, NSE was among the best performing equity markets in Africa after the Uganda Securities Exchange, which recorded an index return of 53 %. Equity turnover and share volume recorded 190 % and 127 % respectively, as market capitalization rose by 40 % compared to 2009. Third, 2010 also marked the end of the second decade of Kenya's economic reforms. Thus, the profitability and value 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 enabling them to acquire more fixed assets to boost their productive capacities. The listed companies were analyzed as a panel of the entire stock market. The profitability, firms' value and size of firms' data are collected from firms' audited financial statements contained in NSE handbooks.

The Nairobi Securities Exchange had sixty one listed firms at the end of 2014. However, several of the firms were listed after 2010 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 53 listed firms for a period 2010 through 2014 which resulted in a sample of 265 firm year observations. A step by step analysis was done by first showing the descriptive statistics of the data used in the estimation.

Table 1: Descriptive Statistics of Study variables

Variable	Minimum	Maximum	Mean	Std. Deviation	Skewness
ROE	-.238	.693	.165	.120	1.003
ROA	-.620	1.899	.170	.202	2.623
FINLEV	.000	.794	.266	.172	.858
TANG	.048	1.457	.56149	.242	.129
ME	.078	8.450	1.050	.830	4.048
TOBINSQ	.061	7.791	1.328	1.344	2.009
FSIZE	10.841	21.364	15.494	1.785	.154
FA	1	61	26.620	16.885	.149
OWNC	.1104	.963	.660	.175	-.864

Source: Field Data, 2014

Table 1 shows the descriptive statistics for variables used in the study. The variables are defined thus: Tobin's Q = Market value of equity ÷

Book value of assets; ROA = Pre-tax profits ÷ total assets of the company; ROE = Net earnings ÷ equity in book value; Asset Tangibility = Fixed assets ÷ total assets. Financial Leverage = total debt ÷ total capital for a firm; Ownership concentration = summation of amount of ownership of five greatest shareholders of a company relative to the total shareholding. Age of the firm = the number of years since listing and management efficiency = total sales ÷ the total assets.

The statistics show that mean values for return on equity (ROE) and return on assets (ROA) are 16.5 % and 17.0 % respectively, with a negative skewness, indicating that most of the firms are "clustered" on the left side of the distribution. These values mean that listed companies generate Kshs16.5 profit on every Kshs 100 invested by their shareholders during the same period and that firms listed at the NSE earn a Kshs 17.0 profit on every Kshs 100 they own in their respective companies. The ROE value compare favorably to that obtained by previous studies (Maniagi *et al.*, 2013) that obtain an average ROE of 17.759 % and is at variance with that obtained by Odongo *et al.*, (2014) of 9.13 percent. The mean ROE value compare unfavorably with those obtained by Maniagi *et al.* (2013) and Odongo *et al.* (2014) who found a mean ROA of 9.836 % and 9.59 % respectively. Tobin's Q, a measure that combines market performance with book values, shows a high mean value of 1.328. The average Tobin's Q ratio of 1.328 which is greater than 1(q >1) implies that listed firms' stock is more expensive than the replacement cost of its assets This may indicate that most of the firms are overvalued relative to their book values. The mean Tobin's Q compares favorably with that obtained by Andres (2008) of 1.599 and is marginally lower than that obtained by Odongo *et al*., (2014) who obtained a Q ratio of 1.8460 for a sample of firms in Kenya.

The firm' size indicates that on average, firms listed on the NSE had a mean of 15.494. Financial leverage shows that on average firm listed on the NSE employs only 0.266 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 (see Gwatidzo and Ojah, 2014). This value is comparable to the mean financial leverage of 22.64 % obtained by Maniagi *et al.* (2013) and is 1.63 times lower than mean financial leverage obtained by Wanjeri (2012). However, it is 9.7 times higher than mean financial leverage obtained by Vitor and Badu (2012) in Turkey. About 56.15 % of all assets are tangible. On the other hand, the control variables had varied averages ranging from management efficiency (1.050), ownership concentration (66.0 %) to firm's age (26.620). These results are consistent

with previous studies that identified these variables as main firm-specific drivers of performance (Agustinus and Rachmadi, 2008 and Murillo, 2007).

Table 2: Correlation Matrix of Profitability and Explanatory Variables

FSIZE	FINLEV	OWNC	TANG	ME	FA	ROE	ROA	
1.000	-.052	-.244**	-.008	.231**	-.121	.093	.143*	**FSIZE**
	(.403)	(.000)	(.898)	(.000)	(.053)	(.132)	(.020)	
	1.000	.189**	.194**	-.188**	-.199**	-.157*	-.302**	**FINLEV**
		(.002)	(.002)	(.002)	(.001)	(.011)	(.000)	
		1.000	-.040	.082	.214**	.136*	-.117	**OWNC**
			(.518)	(.187)	(.001)	(.027)	(.057)	
			1.000	-.309**	-.017	-.108	-.150*	**TANG**
				(.000)	(.783)	(.079)	(.015)	
				1.000	-.003	.036	.110	**ME**
					(.959)	(.564)	(.073)	
					1.000	.153*	-.027	**FA**
						(.014)	(.665)	
						1.000	.246**	**ROE**
							(.000)	
							1.000	**ROA**

**. 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 profitability 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 Levin *et al.* (2002). Results, presented in Panel B of Table 3, shows that the unit roots hypothesis is rejected by all variables at the 1% level of significance. The results indicate that firm size is insignificantly positively associated with profitability measured in terms of return on equity (ROE), r = .093, p = .132) implying that an increase in firm size leads to an insiginificant increase in protiablility as measured in terms of ROE while firm size is significantly positively associated with return on assets (ROA), r = .143, p = .020) meaning that firm size and return on assets are movin in the same direction.

Table 3: Correlations and Unit Root Tests
Panel A: Correlation Matrix of Firm Value and Explanatory Variables

FSIZE	FINLEV	OWNC	TANG	ME	FA	TOBINSQ	
1.000	-.052	-.244**	-.008	.231**	-.121	.003	**FSIZE**
	(.403)	(.000)	(.898)	(.000)	(.053)	(.964)	
	1.000	.189**	.194**	-.188**	-.199**	-.346**	**FINLEV**
		(.002)	(.002)	(.002)	(.001)	(.000)	
		1.000	-.040	.082	.214**	-.023	**OWNC**
			(.518)	(.187)	(.001)	(.709)	
			1.000	-.309**	-.017	-.182**	**TANG**
				(.000)	(.783)	(.003)	
				1.000	-.003	.110	**ME**
					(.959)	(.075)	
					1.000	.001	**FA**
						(.993)	
						1.000	**TOBINSQ**

Source: Field Data, 2014

Panel B: Unit Root Tests Results

ROE	ROA	TOBIN'S Q	FSIZE	FINLEV	OWNC	FAGE	TANG	ME
-9.391	-42.944	-153.376	-13.578	-36.009	-24.566	-23.258	-28.793	-41.609
[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***

Source: Field Data, 2014

ROE is return on equity, ROA is return on assets, FINLEV is financial leverage, OWNC is ownership concentration, FAGE is Firms' age, TANG is asset tangibility and ME is management efficiency.

Panel A: ** implies that the correlation coefficient is at 1 % (2- tailed).

Panel B: Figures in square brackets are the p-values of the Levin-Lin-Chu panel unit root test statistics.

Table 3 presents an analysis of the "relations" between the firm value and explanatory variables. The correlation coefficients between explanatory variables are generally low, indicating that multicollinearity is not a serious concern in the estimations. The results indicate that firm size is insignificantly positively associated with performance measured in terms of Tobin's Q, r = .003, p = .964) meaning that an increase in firm size, leads to an insignificant increase in market value measured in terms of Tobin's Q.

Empirical Results and Discussions

The results of the estimation of the panel data models with each of the performance measures, that is, ROE, ROA and 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) to take care of unobserved time-specific effects that may influence firm performance. We report results for profitability and value together as shown in Table 4.

Firm size and profitability

Table 4 presents the results with return on equity (ROE) and return on assets (ROA) as the measures of firm profitability. As shown in the table, there is a positive significant relationship between firm size and the return on equity (β = .012, t = 2.585). It can be inferred from this value that a unit change in firm size leads to an increase in return on equity of firms listed at the Nairobi Securities Exchange of 0.012, all things being fixed. This finding is consistent with previous studies (Gschwandtner, 2005 and Jonsson, 2007) who found a positive relationship between firm size and profitability. However, results are at variance with those of Amato and Amato (2004) who found that firm size was a negative predictor of profitability. On the other hand, firm size insignificantly positively predicts return on assets (β =.012, t = 1.659).

Financial leverage is a significant negative variable informing the return on equity (β = -.105, t = -2.240) and return on assets (β = .331, t = -4.201) under the random effects specification. These values are statistically significant since the t-values are greater than -2 (Shim *et al*. 1995). It can be inferred from these values that a unit change in financial leverage leads to a decrease in return on equity and return on assets of firms listed at the Nairobi Securities Exchange of .105 and .331, respectively, all things being fixed. These results concur with the previous studies (Mule and Mukras, 2015, Odongo *et al.,* 2014 and San and Heng, 2011) who report negative relationship between financial leverage and profitability. However, these findings are at variance with those of Maniagi *et al.,* 2013, Gicheha, 2012, and Wanjeri, 2012 who report both positive and negative relationship between financial leverage 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 (Mule and Mukras, 2015).

Ownership concentration significantly positively predicts return on equity (β = 0.001, t = 2.849). It can be inferred from this value that a unit change in ownership concentration leads to an increase in ROE of firms listed at the Nairobi Securities Exchange of .001, all things being fixed. These results concur with the previous studies (Mule and Mukras, 2015, Ongore, 2011, Wiwattanakantang, 2001 and Gonenc, 2006) who report a negative relationship between ownership concentration and profitability. The findings are however at variance with other previous studies (Uadiale, 2010, Mandaci and Gumus, 2010 and Chen *et al.,* 2005) who found that ownership concentration had a positive and significant relationship with company performance.

Asset tangibility insignificantly negatively predicts return on equity (β = -.050, t = -1.532) and return on assets (β = -.084, t = -1.555). 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 returns on equity and returns on equity of the average firm listed on Kenya's Nairobi Securities Exchange by 5 % and 8.4 % respectively. The negative coefficient finding is consistent with the findings of Muritula (2012); 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 Mule and Mukras, 2015, Shen and Rin, 2012) and Murillo, 2007) who found a positive and significant relationship between asset tangibility and firm's profitability measures.

Table 4: Panel regression outputs for profitability (ROE and ROA)

	ROE Model	**ROA Model**
Constant	.052	.155
	(-.628)	(1.11)
FSIZE	.012**	.012
	(2.585	(1.659
TANG	-.050	-.084
	(-1.532)	(-1.555)
OWNC	.001**	.000
	(2.849)	(-.448)
FINLEV	-.105**	-.331**
	(-2.240)	(-4.201)
ME	-.014	.001
	(-1.390)	(.080
FAGE	.001	-.001
	(1.649)	(-.988)
R^2	.092	0.115
Adjusted R^2	.070	0.094
Durbin Watson Stat	1.111	1.13
F- Statistics	6.68	7.58
	[.000]	[.000]
Restricted F statistics	9.7	9.35
	[.000]	[.000]
Breusch- Pagan Test	1.48	1.56
	[.200]	[.160]
Hausman Test	10.12	10.79
	[.590]	[.610]

Source: Field Data, 2014

Table 4 reports coefficients estimates, with their t-values in braces. Standard errors for the models are robust to heteroscedasticity and autocorrelation. The Durbin-Watson statistic is evaluated against critical

values in Bhargava *et al.* (1982). The relevant critical values at 5 % are: d_{pl} = 1.8338 and d_{pu} = 1.8769. In square brackets are p-values of the reported diagnostic test statistics.

Management efficiency appear not to contemporaneously influence firms' return on equity (β = -.014, t = -1.390) and return on assets (β = .001, t = .0080). Similarly, firm age is an insignificant negative predictor of return on equity (β =.001, t = 1.649) and is an insignificant negative predictor of return on asset (β = -.001, t = -.988) under random effects model.). These findings concur with that of Shin and Rin (2012) who found that management efficiency and firm's age had a negative relationship with profitability.

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 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 Adjusted R^2 shows that the variables jointly explain between 7.0 % and 9.4 % of the variation in the return on equity and return on assets respectively of firms listed on the Nairobi Securities Exchange.

Thus use of panel methodology and multiple measures of profitability reconciles conflicting results and therefore corporate size has a positive significant relationship with the return on equity while corporate size insignificantly positively predicts return on assets. This implies that as firms increase their sizes, profitability measured in terms of ROE and ROA increases.

Firm size and firm market value

Finally, we analyze the relationship between firm's size and firm value. Firm value is proxied by Tobin's Q in our empirical tests. Results are presented in Table 5. In contrast to profitability findings, we find that firm size has no statistically significant impact on firm value (β = -.011, t = -.225) under random effects specification. This finding is inconsistent with previous studies (Gschwandtner, 2005 and Jonsson, 2007) who found a positive relationship between firm size and market value of firms. However, results are in tandem with those of Amato and Amato (2004) who found that firm size was a negative predictor of profitability. Consistent with our findings on

firm profitability, our results show a (predominantly) negative significant relationship between firm value and financial leverage (β = -2.671, t = -5.182) impying that value that a unit change in financial leverage leads to an incrdecrease in Tobin's Q of firms listed at the Nairobi Securities Exchange of 2.671, all things being fixed while ownership concentration insignificantly predicts market value (β = .003, t = .493), a finding supported by Mule *et al*. (2013). Asset tangibility significantly negatively predicts Tobin's Q (β = -.745, t = -2.094). This finding is at variance with that of Mule and Mukras (2015), Shen and Rin (2012) and Murillo (2007) who found a positive and significant relationship between asset tangibility and firm's performance. Consistent with our findings on firm profitability, our results show a (predominantly) negative insignificant relationship between firm value and management efficiency (β = -.015, t = -.143) and firm age (β = -.005, t = -1.086).

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 the random effects specification. 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 Adjusted R^2 shows that the variables jointly explain 11.6 % of the variation in the Tobin's Q of firms listed on the Nairobi Securities Exchange.

Table 5: Panel Regression outputs for market value (Tobin's Q)

	Tobin's Q Model
Constant	2.595**
	(2.841)
FSIZE	-.011
	(-.225)
TANG	-.745**
	(-2.094)
OWNC	.003
	(.493)
FINLEV	-2.671**
	(-5.182)
ME	-.015
	(-.143)
FAGE	-.005
	(-1.086)
R^2	0.137
Adjusted R^2	0.116
Durbin Watson Stat	1.34
F- Statistics	7.01

	[.000]
Restricted F statistics	9.1
	[.000]
Breusch- Pagan Test	1.73
	[.140]
Hausman Test	10.17
	[.680]

Table 5 reports coefficients estimates, with their t-values in braces. Standard errors for the models are robust to heteroscedasticity and autocorrelation. The Durbin-Watson statistic is evaluated against critical values in Bhargava *et al.* (1982). The relevant critical values at 5 % are: d_{pl} = 1.8338 and d_{pu} = 1.8769. In square brackets are p-values of the reported diagnostic test statistics.

Conclusion

Four conclusions can be drawn based on the preceding evidence. The first conclusion is that corporate size is an important positive predictor of profitability measured in terms of ROE. Secondly, it is concluded that ownership concentration is a pertinent positive predictor of profitability measured in terms of ROE. The third conclusion is that financial leverage is a significant negative variable informing the firm profitability measured in terms of return on equity and return on assets. Forth conclusion is that, asset tangibility and financial leverage significantly negatively predicts market value measured in terms of Tobin's Q.

Policy and Managerial Implications of the Study

The following are the policy and managerial implications of the study. Based on the first conclusion, it is recommended that managers of listed firms should continue enhancing corporate size as this improves profitability of these firms. On second conclusion, it is recommended that capital market regulators should encourage high levels of ownership concentration as this enhances profitability as measured in terms of ROE. Third, it is recommended that managers and shareholders of listed companies should reduce the proportion of financial leverage in their capital structure as this undermines profitability of these firms. Fourth, the study recommends that managers should decrease the proportion of tangible and debt in their financial statements as these were found to jeopardize firms' market value as measured in terms of Tobin's Q.

Study Contributions

The study contributes to finance theory in four dimensions: first by combining market based and standard accounting financial indicators as

measures of profitability and value to test the the relationship between corporate size, profitability and market value.

Secondly, the study has provides new empirical evidence on the relationship between corporate size, profitability and market value of listed firms in frontier market using panel approach. Third, it provides further evidence on the possibility of co-existence of the providers of long-term finance, asset tangibility, management efficiency and firm's age and their differential association with profitability and 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 they make.

Lastly, use of panel methodology and market value reconciles conflicting results and therefore corporate size has an insignificant negative effect on firm's market value as measured in terms of Tobin's Q. This implies that as firms increase their sizes, market value measured in terms of Tobin's Q declines.

References:

Abor, J. (2005). The effect of capital structure on profitability: An empirical analysis of listed firms in Ghana. *Journal of Risk Finance*, *6*, 438- 447.

Agiomirgiannakis, G., Voulgaris, F., & Papadogonas, T. (2006) Financial Factors Affecting Profitability and Employment Growth: The Case of Greek Manufacturing. *International Journal of Financial Services Management*, 1(2/3), 232-242.

Agustinus, P., & Rachmadi, P. (2008). Determinants of corporate performance of listed companies in Indonesia, *MPRA*. Retrieved May 15, 2013, from http://mpra.ub.un.muenchen.de/id/eprint/6777.

Amato, L. H., & Burson, T. E. (2007). The effects of firm size on profit rates in the financial services. *Journal of Economics and Economic Education Research*, *8*(1), 67–81.

Amato, L., & Wilder, R. P. (1985). The effects of firm size on profit rates in U.S Manufacturing.*Southern Economic Journal*, *52*(1), 181–190. Retrieved on 3rd March, 2015 from http://dx.doi.org/10.2307/1058913.

Andres, C. (2008). Large shareholders and firm performance: An empirical examination of founding-family ownership. *Journal of Corporate Finance, 14*, 431-445.

Baltagi, B. H. (2001). *Econometric analysis of panel data.* New York: John Wiley & Sons.

Bauman, H. D., & Kaen, F. R. (2003). Firm size, employees and profitability in U.S Manufacturing Industries. *Social Science Research Network.*

Berger, A.N., & Bonaccorsi di Patti, E. (2006). Capital structure and firm performance: A new approach to testing pecking order theory and an

application to banking industry. *Journal of Banking and Finance*, *30* (4), 1065-1102.

Chen, M. C., Cheng, S. J., & Hwang, Y. (2005). An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance. *Journal of Intellectual Capital*, *6* (2), 159-176.

Deesomsak, R., Paudyal, K., & Pescetto, G. (2004). The determinants of capital structure: Evidence from the Asia Pacific region. *Journal of Multinational Financial Management*, *14* (4/5), 387- 405.

Gicheha, R.G. (2012). Effect of capital structure on the financial performance of commercial banks in Kenya. Retrieved July 22, 2013, from http://ir-library.ku.ac.ke/handle/123456789/6115.

Gonenc, H. (2006). Ownership concentration and corporate performance: A simultaneous equation framework for Turkish Companies. In Altug, S., and Filiztekin, A., (eds). *The Turkish economy. The Real Economy, Corporate Governance, and Reform.* Routledge, London, 199-215.

Gwatidzo, T. & Ojah, K. (2014). Firms' debt choice in Africa: Are institutional

Infrastructure and non-traditional determinants important? *International Review of Financial of Financial Analysis, 31*, 152-166.

Hausman, D.M. (1998). *Causal asymmetries*. New York, Cambridge University Press.

Im, K.S., Pesaran, M.H., & Chin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of Econometrics, 115*, 53-74.

Jang, S., & Park, K. (2011). Inter-relationship between firm growth and profitability. *International Journal of Hospitality Management*, *30*, 1027–1035. Retrieved on 3rd March, 2015 from http://dx.doi.org/10.1016/j.ijhm.2011.03.009.

Januszewski, S.I.,Koke, J., Winter, J.K. (2002). Productivity Market Competition, Corporate Governance and Firm Performance: an empirical analysis for Germany. Research in Economics 56, 299-332.

Jermias, J. (2008). The relative influence of competitive intensity and business strategy on the relationship between financial leverage and performance, *British Accounting Review*, 40, 71-86.

Jonsson, B. (2007). Does the size matter? The relationship between size and profitability of Icelandic firms. *International Journal of Business and Management, 9* (4) Retrieved on 9th March, 2015 from www.ccsenet.org/ijbm.

Lee, J. (2009). Does Size matter in Firm Performance? Evidence from U.S Public Firms. *International Journal of the Economics of Business, 16* (2), 189–203. Retrieved on 5th March, 2015 from http://dx.doi.org/10.1080/13571510902917400

Levin, A., Lin C.F., & Chu, C.J. (2002). Unit root test in panel data: asymptotic and finite- sample properties. *Journal of Econometrics, 108*, 1-24. Majumdar, S. K. (1997). The impact of size and age in firm level performance: Some evidence from India. *Review of Industrial Organization, 12*, 231–241. Retrieved on 3rd March, 2015 from http://dx.doi.org/10.1023/A:1007766324749.

Mandaci, P. E., & Gumus, G. K. (2010). Ownership concentration, managerial ownership and firm performance: Evidence from Turkey. *South East European Journal of Economics and Business, 5*(1), 57-66.

Maniagi, G., Mwalati, S., Ondiek, B., Musiega, D., & Ruto, B. (2013). Capital structure and performance : Evidence from listed non-financial firms on Nairobi Securities Exchange, Kenya. *International Journal for Management Sciences and Technology (IJMST)*, 2 (2), 2-16.

Mule, R.K & Mukras, M.S (2015). Financial leverage and performance of listed firms in frontier market: Panel evidence from Kenya, *European Scientific Journal***,** *11*(7), 534-550

Mule, R.K & Mukras, M.S, & Oginda, M.N (2013). Ownership concentration and financial performance of listed firms in Kenya: An econometric analysis using panel data. *European Scientific Journal, 9* (28), 194-211.

Murillo, C. (2007). Asset tangibility and firm performance under external financing: Evidence from product markets. Retrieved March 20, 2014, from http://DOI:10.2139/ssrn.971170.

Niresh, J.A & Velnampy, T. (2014). Firm size and profitability of listed manufacturing firms in Sri Lanka, *International Journal of Business and Management, 9* (4), 57- 64.

Onder, Z. (2003), Ownership concentration and Firm Performance: Evidence from Turkish firms METU studies in development 30(2): 181-203.

Odongo, K., Mokoteli, T.M., & Maina, L. (2014). Capital structure, profitability and firm value: Panel evidence of listed firms in Kenya. *MPRA, 57116*. Retrieved 13th March, 2105 from http://mpra.ub.uni-muenchen.de/57116/.

Ongore V. O. (2011). The relationship between ownership structure and firm performance: An empirical analysis of listed companies in Kenya. *African Journal of Business Management, 5* (6), 2120-2128.

Ozgulbas, N., Koyuncugil, A. S., & Yilmaz, F. (2006). Identifying the effect of firm size on financial performance of SMEs. *The Business Review, Cambridge, 6* (1), 162– 167.

Shen, G., & Rin, M. (2012). How does capital structure affect firm performance? Recent Evidence From Europe Countries. Retrieved March 12, 2013, from

http://edubb.uvt.nl/webapps/blackboard/execute/viewcatalo?type=course &id=21.

Shim, J.K., & Siegel, J.G. (1995). *Dictionary of Economics*. USA: John Wiley & Sons.

Surajit, B. & Saxena, A. 2009. Does the Firm Size Matter? An Empirical Enquiry into the performance of Indian Manufacturing Firms. Available at SSRN: http://ssrn.com/abstract=1300293.

Tangen, S. (2003).An overview of frequently used performance measures. *International Journal of Productivity and performance management*, 52(7), 347-354

Tran, T.Q.G. (2005). Ownership structure and firm performance in transition countries: The case of European Union new members. *Dans FMA European Conference*.

Uadiale, O. M. (2010). The impact of board structure on corporate financial performance in Nigeria. *International Journal of Business and Management, 5***,** 155-161.

Velnampy, T. (2005). A Study on Investment appraisal and profitability. *Journal of Business Studies*, (2), 23–35.

Velnampy, T. (2006). An empirical study on application of Altman original bankruptcy forecasting model in Sri Lankan companies. *Journal of Management*, *1*.

Velnampy, T., & Nimalathasan, B. (2010). Firm Size on Profitability: A comparative study of Bank of Ceylon and Commercial Bank of Ceylon Ltd in Sri Lanka.

Global Journal of Management and Business Research, 10 (2), 96–100.

Velnampy. (2013). Corporate governance and firm performance: A study of Sri Lankan manufacturing companies. *Journal of Economics and Sustainable Development*, *4*(3),228–236.

Vijayakumar, A., & Tamizhselvan, P. (2010). Corporate size and profitability: An empirical analysis. *College Sadhana-Journal for Bloomers of Research*, *3*(1), 44–53.

Vitor, D.A., & Badu, J. (2012). Capital structure and performance of listed banks in Ghana. *Global Journal of Human Social Science*, *12* (5), 56-62.

Wanjeri, P.M. (2012). The effect of capital structure on performance of non-financial companies listed in Nairobi Securities Exchange. Retrieved May 21, 2013, from www.ksms.or.ke/index.php?option=com_content &view.

Wiwattanakantang, Y. (2001). Controlling shareholders and corporate value: Evidence from Thailand. *Pacific-Based Finance Journal*, *9*, 323–362. Retrieved September 2, 2014, from http://dx.doi.org/10.1016/S0927-538X(01)00022-1.