

Debt-Equity Ratio and Financial Performance of Listed Companies at the Nairobi Securities Exchange, Kenya



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ABSTRACT: Firm financial performance is essential for corporate survival and prosperity. Financial leverage may be used to enhance corporate financial performance, but it can also occasion financial distress and bankruptcy if not carefully managed. At the Nairobi Securities Exchange, a number of firms face poor financial performance, and financial distress, commonly associated with excessive leverage and bankruptcy. The purpose of this study was to determine the effect of debt-Equity ratio on financial performance of listed companies at Nairobi Securities Exchange. The study was grounded on dynamic tradeoff and pecking order theories. Positivist research paradigm with explanatory design using linear regression model on panel data obtained from a survey of 38 listed companies at Nairobi Securities Exchange over the period 2010 to 2019 was used. The data was mined from financial statements filed at the Nairobi Securities Exchange. Controlling for Firm size, Sales growth and operational efficiency, the study found Debt Equity ratio ($\beta = -.1633009$ $p = 0.000$) negatively related to Return on Equity and statistically significant at 0.05. The study recommended reduction in long-term or short-term debt or both or increase in equity finance for overall reduction in debt-equity ratio to enhance Return on Equity. Further, the study recommends deepening of Kenya's capital market to permit optimal capital structure adoption by firms. The study contributes to knowledge by establishing the state of financial leverage at Nairobi Securities Exchange, to policy by establishing the need for deepening of capital market at NSE and to theory by confirming the relevance of dynamic tradeoff and pecking order theories at the bourse. The study scope was limited to firms listed at NSE. A similar study covering East Africa capital market is recommended. Further, a study to explore the limiting factors in Kenya's capital market is recommended.

KEYWORDS: Debt-Equity Ratio, Return on Equity, Financial Leverage, Financial Performance

I. INTRODUCTION

Financial performance not only measures a firm's value proposition to stakeholders, but also its health: the ability to survive and prosper into the future (Naz, Ijaz, & Naqvi, 2016; Orlitzky, Schmidt, & Rynes, 2003). Financial performance depends on a firm's responses to environment changes including threats and opportunities which require sufficient economic resources, in addition to flexibility in the resource deployment. A firm obtains supplementary capital from either additional debt or equity or both but when time is of essence, from debt or internal equity. According to Modigliani and Miller (1963), Myers and Majluf (1984), Jensen and Meckling (1976), Debt is used for a variety of reasons including to supplement capital needs; to optimize performance or as a temporary source of finance before long-term equity can be raised. A firm may use excess debt and be unable to subsequently rebalance the debt-Equity ratio or economic down turn may convert previously sustainable debt to unsustainable, leading to financial distress and possible bankruptcy. The use of debt therefore entails the risk of financial distress, liquidity crisis and bankruptcy. It also exposes a firm to higher agency cost of debt, financial inflexibility, lost investment opportunities and under investment (Ang, Daher, & Ismail, 2019; Myers, 1977).

At NSE in recent times, a number of listed firms are observed with poor financial performance, liquidity crises, and bankruptcies (CMA, 2019; Juma, 2019; Anyanzwa, 2018). Extant research show that adequately financed corporations optimally deliver firm objectives to all stakeholders (Aras & Crowther, 2008; Maher & Andersson, 2000; Škare & Golja, 2014; Škare & Hasić, 2016). Whereas the use of debt helps lever a firm's investment in assets and return on equity, excessive use results in under investment, declining ROI, liquidity crisis, financial distress, and bankruptcy. This study therefore sought to establish the effect of Debt-Equity ratio on financial performance, of listed companies at the Nairobi securities exchange.

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THEORETICAL AND EMPIRICAL LITERATURE

Theoretical Foundation and Literature

The study was supported by Dynamic Trade off and Pecking order theories of capital structure. Dynamic tradeoff theory refers to a family of models that explain firm investment finance behaviour in a multi-period time space with due consideration for macro-economic constraints. Considering bankruptcy costs, uncertainty of returns, taxes but no transaction costs to allow for instantaneous adjustment of leverage to target optimum leverage: static tradeoff, Kane et al (1984) and Brennan and Shwartz(1984) in Frank and Goyal (2008) concludes that firms maintain high levels of leverage to take advantage of tax savings. Fischer, Heinkel, and Zechner (1989), considering bankruptcy costs, uncertainty of returns, taxes and transaction costs, concludes that firms would not rebalance to target leverage frequently but rather allow leverage level to drift from target up to an upper and lower limits before discrete rebalancing action. The drift explains the diversity in leverage levels in an industry and the inverse relationship between profitability and leverage. Roberts and Leary (2004) confirm that at the lower leverage limit a firms rebalance using debt and at the upper limit, equity`.

Myers and Majluf (1984) Pecking order theory proposes a financing hierarchy based on adverse selection. According to Myers (1984) and Myers and Majluf (1984), a firm follows pecking order of financing if it prefers internal financing to external and, in case of external financing, debt to equity The basic concept is existence of asymmetric information about the firm value and its growth prospects between the firm's management and the investing public. Management of mostly, overvalued rather than undervalued firms are willing to sell equity shares outside. The investing public therefore expects stock issues to be overvalued. Shares are sold after the firm has reached an exogenous debt capacity and the tradeoff between benefits of debt and demerits is of secondary importance (Agca & Mozumdar, 2004).

This study is premised on firm investment financing behavior in a multi-period dynamic environment explained by Dynamic tradeoff theory. The unique capital structure of each firm in the population is path dependent. The current and future unique capital structure of each firm take into consideration past and present macroeconomic variables and the unique investment opportunity set. Pecking order theory explains the significance of debt in firm finance. To a large extent firms finance investment using riskless and risky debt as retained earnings is often insufficient to meet investment needs. The two theories concur that, a firm applies risky debt when the degree of information asymmetry affecting its share price is severe and that Financial Leverage is a critical permanent structure of most firms' capital structure.

Empirical Literature

Financial performance measures the extent a firm delivers its economic goals (Barney, 2002).It also measures the firm's financial health (Crane, Laurence, & Langstraat, 2005; Naz et al., 2016; Orlitzky et al., 2003). All stakeholders of a firm are interested in a firm's financial performance both as a value preposition and a measure of its stability and going concern status(Li, Wang, & Deng, 2008). The principal purpose for performance measurement is firm evaluation (Kueng, 2000; Neely, Gregory, & Platts, 1995). A firm's financial performance ultimately depends on the strategies, and the bundle of resources deployed and the timeliness of the actions taken to align the firm with its external environment (Furrer, Alexandre, & Sudharshan, 2007). The primary source of finance for a firm's resources is equity. Debt may be used as an addition to equity up to an optimal amount. At the same time, managers need to save on debt slack for any urgent financial need since equity requires market timing(Huang & Ritter, 2005). The timeliness of actions by management ultimately depends on the availability of internal economic resources and or the firm's debt slack(Graham & Harvey, 2002).

Debt-Equity Ratio measures the extent of debt usage in asset finance without impacting firm control. It measures the extent debt leverages equity in asset finance and return(Al Momamni & Obeidat, 2017). It also reflects the composite borrowing characteristic of the firm which, while consistent with the firm's strategy for delivering target return, optimizes its exposure to the risk of financial distress. The total debt includes long-term debt, short-term debt, spontaneous debts and non-debt items included in liabilities while equity is the total amount of funds attributable to the shareholders, who control the enterprise and bear residual risk. Together debt and equity finance entity assets. It thus results in the ability of a firm to use fixed charge capital to magnify the effect of changes in EBIT on EPS(Kraus & Litzenberger, 1973; Long & Malitz, 1985; Modigliani & Miller, 1963). Under perfect market conditions, Bethlehem (1978); Myers (1977) suggests that firms should apply fixed charge capital to increase investment in assets provided ROCE is higher than the cost of fixed charge capital. However, fixed return capital not only levers capital and income as afore mentioned, but also impacts a firm's bankruptcy risk and may magnify reduction in EPS during recession occasioning financial distress.

Financial leverage affect financial performance in two ways: lagged effect by altering equity stock risk and the required rate of return translating to stock price and by influencing investment choices indirectly through business risk(Ozdogli, 2012). Penman, Richardson, and Tuna (2007), observed a significant negative relationship between Debt/Equity Ratio to price ratio and lagged

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stock return, controlling for size, return volatility, and default risk. Other studies obtained similar results(Martis, 2013; Masavi, Kiweu, & Kinyili, 2017; Muhammad, Shah, & ul Islam, 2014; Naz et al., 2016; Omollo, Muturi, & Wanjare; Salamba, 2015; Salim & Yadav, 2012; Schulz, 2017; UDEH, NWUDE, ITIRI, & AGBADUA, 2016; Yapa Abeywardhana, 2016; Yazdanfar & Öhman, 2015; Zeitun & Tian, 2014). Some studies on the contrary, obtained positive relationship(Fosu, 2013; Margaritis & Psillaki, 2010; Narang). Yet others observed non-linear quadratic relationship taking the shape of inverted U(Hess & Immenkötter, 2014; Skopljak & Luo, 2012). The negative relationship is puzzling as its contrary to expectation(Mukras, 2015). It's long been accepted that investors act rationally and only accept incremental investment if increased risk entails higher return and not negative return(Rubinstein, 2002). Given the conflict in findings, this study sought to examine the debt-Equity ratio and financial performance relationship at the Nairobi securities exchange.

II. CONCEPTUAL FRAME WORK AND HYPOTHESIS

A. COMCEPTUAL FRAMEWORK

Conceptual framework is the relationship between broad ideas drawn from a field of study and applied in presentation of relationships in a study(Kombo & Tromp, 2006; Wanjere, Ogutu, Kinoti, & Iraki, 2021). The study conceptualized Debt-Equity ratio to influences financial performance of listed companies at the Nairobi Securities Exchange as presented in figure 1.

Figure 1 Conceptual Framework.



Source: Researcher, 2021

B. CONCEPTUAL HYPOTHESIS

The hypothesis was deduced from the research objective and the conceptual framework as stated:

H₀₁: Debt-Equity ratio has no statistically significant effect on financial performance of companies listed at the Nairobi Securities Exchange.

III. METHODOLOGY

The study adopted positivist research paradigm which allowed the researcher to assume independent existence of the research phenomenon and to separate ontological process from epistemological matters (Aliyu, Bello, Kasim, & Martin, 2014; Kim, 2003; Wardlow, 1989). Descriptive research design was applied to obtain information from listed companies regarding financial leverage and financial performance and using statistical inference to deduce knowledge from the observations(Fosu, 2013; McConnell & Servaes, 1995; Salamba, 2015; Yapa Abeywardhana, 2016). The research design was preferred for its ability to ensure subject-object dualism.

The study was conducted in Kenya, among companies listed at the Nairobi Securities Exchange. Listed companies were preferred as they are mandated to file public access annual financial reports with the securities exchange. The study population consisted of all the 63 listed firms at the NSE on 31st December 2018. To enhance statistical sample size, panel data was employed for the period from financial year 2010 to 2019(Memon et al., 2020). However, firms with less than eight years annual financial reports were omitted from the study to ensure strongly balanced panel data sample for statistical efficiency(Bonazzi & Iotti, 2014; Mukras, 2015). The data was obtained through data mining of company filings at the Nairobi Securities Exchange. Ten year panel was used. Data collection sheet was used and the requisite parameters computed.

The study variables included firm financial performance: measured as ROE; Deb-Equity ratio, and three covariates: Firm size, Sales Growth and firm operational efficiency, thought to confound the effect of Debt-Equity ratio on firm financial performance. Financial performance is considered a second order performance indicator closely associating first order indicators: growth, profitability and market value. Profitability not only reflects managerial efficiency but also the firm's internal efficiency in return generation. It was preferred due to its sensitivity to both internal factors as well as managerial factors and was measured as

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ROE. Other studies that have used this measure include (Leon, 2013; Martis, 2013; Muhammad et al., 2014; Omollo et al.; Yapa Abeywardhana, 2016)

Debt-Equity ratio is the extent of fixed charge capital used to increase investment in assets and return on equity (Abubakar, 2015; Ahmad, Salman, & Shamsi, 2015). It results in increasing risk of financial distress. The overall financial risk position given by total debt to total equity is fundamental in estimating the risk of insolvency. This study therefore used Debt-Equity ratio to measure financial leverage. Other studies which have used this measure include; (Booth, Aivazian, Demirguc-Kunt, & Maksimovic, 2001; Byoun, 2008; Kayo & Kimura, 2011; Lemmon & Zender, 2010). Data analysis involve documentation, description, classification and presentation of field data in an interpretable, intelligible form, and in a systematic way with due regard to study objectives, to facilitate identification of data characteristics, relationships, trends, and structures. The structures, trends and relationships identified in turn permit the researcher to identify the study contribution to knowledge, practice and policy. Data was analyzed using descriptive statistics tools such as mean, range, variance, correlation, kurtosis, and skewness so as to obtain a clear understanding of the natural characteristics of the independent, intervening and dependent variables and inferential statistics to test the hypothesized cause-effect relationship using regression and analysis of variance models.

The nature of panel data used is cluster time series. The relevant regression models are Pooled, Random, or Fixed Effects models. The pooled effects model is similar to OLS and is efficient when all conditions for OLS are satisfied: an unlikely event under panel data. Random effects model is efficient when endogeneity is related to the regressors, while fixed effects model deals with endogeneity related to the entities through clusters and therefore efficient in both cases. After testing field data for best fit through Hausman-Test, F-Test, and Breusch-Pagan Lagrange Multiplier Test, the fixed effect model turned out the best fitting model and was adopted for data analysis. The general form of the model is given by:

$$Y_{it} = \alpha_j + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \epsilon_{it}$$

i = i th firm; t = year t . Y = ROE; X_1 = Debt-Equity ratio X_2 = Firm Size; X_3 = Firm Operational Efficiency; X_4 = sales growth.

IV. PRELIMINARY ANALYSIS

The study population was 63 listed firms yielding 630 firm years. However only 38 firms had complete financial reports for at least eight years yielding 380 (60%) firm years and observations. The study sought to investigate the relationship between Debt-Equity ratio and financial performance of companies listed at the NSE controlling for sales growth, firm size and operational efficiency. NSE classifies companies into nine industrial segments: Agriculture, Banking, Commercial and Allied, Construction, Energy, Insurance, Investment, Manufacturing, and Telecommunication. The variables of interest were: debt-equity ratio, Return on Equity, Sales Growth, Operational efficiency, and Firm size. Mean of these variables are presented in table 4.1 below.

Table 4.1 Variable Summary statistic by Industry

INDUSTRY	DERATIO	ROE	SALESG~H	OPEFF	FIRMSIZ
AGRIC	34.32981	11.17665	10.51727	.4895412	15.58961
BANK	639.9912	17.29833	13.34498	.0952389	19.05657
COMMER	91.96633	-.4930978	.7424468	.9277768	15.57727
CONSTR	165.1668	6.959282	2.63195	.7476845	16.5041
ENERG	182.494	6.870885	13.27174	1.234889	18.63534
INSUR	261.2095	17.73769	21.19461	.3401791	17.52583
INVEST	112.9749	4.214188	38.02294	.3227741	17.09066
MANUF	210.3677	5.363187	.3351456	1.055096	16.38206
TELECOM	51.88792	30.46089	13.58392	1.08424	18.76921
Total	288.4953	10.64085	10.67688	.599979	17.38166

Source: Research Data, 2021.

Table 4.1 clearly shows the diversity of the listed companies for each variable.

The raw data was subject to normal distribution tests and Debt-Equity Ratio, Return on Equity and Sales Growth were found not to be normally distributed and were therefore log-normalized.

The data was also subject to multi-collinearity test and the statistical output presented in table 4.2

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Table 4.2 VIF Test Results

Variable	FIRMSIZ	LNDERATIO	OPEFF	LNSALESGR
VIF	1.71	1.60	1.27	1.06
1/VIF	0.583175	0.623884	0.784414	0.946716

Source: Research Data, 2021

Table 4.2: **VIF Test Results**, show absence of multi-collinearity of covariates.

Multicollinearity was further tested by pairwise correlation test and the results presented in table 4.3

Table 4.3: Pairwise Correlation Test Results

e(V)	OPEFF	FIRMSIZ	LNDERATIO	LNSALE~T	_cons
OPEFF	1.0000				
FIRMSIZ	0.2767	1.0000			
LNDERATIO	0.1746	-0.5134	1.0000		
LNSALESGR	-0.0580	-0.1279	0.0336	1.0000	
_cons	-0.2281	-0.3710	-0.0269	-0.3187	1.0000

Source: Research Data, 2021

Table 4.3: Pairwise Correlation Matrix, confirm the absence of multi-collinearity among covariates.

The data was subjected to unit root test for stationarity. The study applied Fisher type unit root test based on both Phillips-Perron (PP) and Augmented Dickey-Fuller (ADF) test statistic and all variables were established to be stationary.

The study adopted cross-sectional time series approach to data collection. The suitable regression model is either of pooled, fixed or random effect. To identify the best fitting model, the field data was subject to the following tests: to select between random effect and pooled effect Breusch Pagan Lagrangian Multiplier Test for Random Effects was performed and the results showed $Prob > \chi^2 = 0.1354$. At 5% significance, we fail to reject the null hypothesis and conclude that Pooled effect best fit the data. To select between fixed and random effect model the Hausman test was performed and the results showed $Prob > \chi^2 = 0.0025$. The null hypothesis was rejected at 5% significance and concluded that fixed effects model fits the data better. The choice between pooled t and fixed effect was based on R^2 , F, and p, shown in table 4.4,

Table 4.4: Fixed Effect and Pooled Effect models Comparison

Model	R^2	F	Prob>F
Pooled Effect	0.0986	7.67	0.0000
Fixed Effect	0.1841	14.71	0.0000

Source: Research Data, 2021

Based on R^2 Fixed-effect regression model was selected.

The study objective was “to establish the effect of debt-equity ratio on financial performance of companies listed at NSE” The fixed effect regression results of the test are shown on Table 4.5

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Table 4.5: Effects of Debt-Equity ratio test Regression model result. .

Fixed-effects (within) regression	Number of obs =	369
Group variable: COMPNUM	Number of groups =	38
R-sq: within = 0.1696	Obs per group: min =	7
between = 0.0150	avg =	9.7
overall = 0.0547	max =	10
	F(4,327) =	16.70
corr(u_i, Xb) = -0.7331	Prob > F =	0.0000

LNROE	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
OPEFF	.1239179	.0868594	1.43	0.155	-.0469558 .2947916
FIRMSIZ	.0964612	.0415129	2.32	0.021	.0147952 .1781271
LNDERATIO	-.2345286	.0342699	-6.84	0.000	-.3019458 -.1671114
LNSALESGRT	.1619656	.0453902	3.57	0.000	.0726719 .2512593
_cons	5.511081	.7789375	7.08	0.000	3.97872 7.043442
sigma_u	.23755958				
sigma_e	.29621739				
rho	.39141926 (fraction of variance due to u_i)				
F test that all u_i=0: F(37, 327) = 2.38 Prob > F = 0.0000					

Source: Research Data, 2021

The models' explanatory power was $R^2 = 16.96\%$ and Debt-Equity ratio ($\beta = -.250272$, $p = 0.000$) showed negative statistically significant relationship with ROE at 5% significance. Firm size, operational efficiency and Sales-growth; had positive relationship with ROE with all and regression constant except operational efficiency statistically significant.

H₀₁: "Debt-Equity ratio has no statistically significant effect on financial performance of companies listed at NSE".

Test Results: $\beta = -.2345286$, $t = -6.84$, $p = 0.000$

Conclusion: Reject the null hypothesis and accept alternative hypothesis: Debt/Equity ratio has negative statistically significant effect on financial performance of listed companies at NSE measured as ROE

V. DISCUSSION OF RESULTS

The results are consistent with leverage drift above the optimum as proposed by dynamic tradeoff theory of capital structure, where capital market friction prevents or delays deliberate capital structure rebalancing through issue of equity or reduction in total debt. It is also consistent with pecking order theory where information asymmetry makes cost of equity finance higher than debt finance and therefore firms use higher proportion of debt. Other studies with similar observations include (Martis, 2013; Masavi et al., 2017; Muhammad et al., 2014; Naz et al., 2016; Omollo et al, 2018; Salamba, 2015; Salim & Yadav, 2012; Schulz, 2017; UDEH et al., 2016; Yapa Abeywardhana, 2016; Yazdanfar & Öhman, 2015; Zeitun & Tian, 2014).

VI. CONCLUSION

Based on the foregoing data analysis results, the study concluded that Debt-Equity ratio has a negative statistically significant effect on financial performance of companies listed at NSE measured as ROE. The study therefore, with a view to upholding sufficient ROI to shareholders, recommend practicing managers to monitor and optimize the level of Debt-Equity ratio in their firms by reducing either short-term or long term debt or both or issue equity to achieve optimum debt-equity ratio. It further recommends capital market regulator to implement policies to reduce cost of equity. The study recommends a replica study covering East African Capital market and further research to establish securities market constraints in Kenya.

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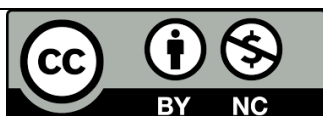
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