



## DOES CAPITAL STRUCTURE MATTER? EFFECTS ON PROFITABILITY OF FIRMS LISTED AT THE NAIROBI SECURITIES EXCHANGE

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### ABSTRACT

Capital structure of firms is an important aspect in finance which seeks to determine the optimal capital structure that a firm should maintain. Various theories have been put across to address this issue. This paper examines the relationship between capital structure and profitability of firms listed at the Nairobi Securities Exchange (NSE). The study employed a descriptive research design. A census study of 49 firms listed at the NSE that were operational from 2009 and 2013 was undertaken. These companies comprised of all the segments at NSE. Secondary data was collected for a period of five years from financial statements of the firms and the NSE handbook. The findings of the study indicated that capital structure had a significant negative influence on the profitability of firms listed at the NSE.

### JEL Classification

C10, G30, M10

## 1. INTRODUCTION

Capital structure of a firm is the combination of debt and equity that make up the sources of corporate assets. It is the way a firm is financing its assets through a combination of equity and debt (Ahmadpour & Yahyazadehfar, 2010). According to Ghalibafasl (2005), combination of various financial sources of a company is called capital structure. The best combination of financial resources for a company is optimal or desirable capital structure. The study on capital structure attempts to explain the mix of securities and financing sources used by companies to finance investments (Myers, 2001). The capital structure choice is an important decision for any company given that it has an effect on the financial performance of firms (Maina & Ishmail, 2014). A firm should work towards maximizing its value and at the same time maximize the shareholders' interests. The value of a firm is defined as the market value of debt plus the market value of equity (Ross, Westerfield, Jaffe, & Kakani, 2009). A firm's financial performance, in the view of the shareholder, is measured by how better off the shareholder is at the end of a period, than he was at the beginning and this can be determined using ratios derived from financial statements; mainly the balance sheet and used to compare a firm's ratios with other firms or to find trends of performance over time (Berger & Patti, 2006). Capital structure of any institution should therefore be well managed to ensure that the firm remains in operation and it is

able to finance its projects. With unplanned capital structure, companies may fail to economize the use of their funds. Consequently, it is increasingly realized that a company should plan its capital structure to maximize the use of funds and to be able to adapt more easily to the changing conditions (Pandey, 2009).

Capital structure and financial performance of firms have been studied worldwide with different results. A study by Ghosh (2007) showed that debt relate negatively with a firm's performance. It argued that the level of debt associated inversely with firm's performance, because creditors use loans as disciplinary tool on the firm. Creditors impose restrictions such as: preventing the firm from distributing the earnings to shareholders, imposing restrictive conditions on the loans by increasing the interest rates, and requiring sufficient collaterals on loans. These restrictions will lead the firm to focus on how to pay the debt burden without much concern in achieving earnings thus reflect adversely on firm performance. Financial leverage affect positively on the expected performance, which is explained by the fact that low growth first attempts to depend on the borrowing for utilizing the expected growth opportunities and investing borrowed money at the profitable projects, thus increasing the firm performance (Dessi & Robertson, 2003). However, according to Titman and Wessels, (1988), firms with high profit levels, all things being equal, would maintain relatively lower debt levels since they can realize such funds from internal sources. A study of the Srilankan companies showed that the use of long-term debt is relatively low. The mean leverage in Sri Lanka was estimated as 13.5%, long-term debt to equity ratio is 24%. This evidence suggested that the use of debt financing in Sri Lanka was significantly low (Lalith, 1999). A study carried out in Ghana concluded that listed Ghanaian banks used 80.23 % debt and 17.77% equity, and therefore suggesting that the capital structure of Ghanaian banks is hugely skewed towards debt (Gatsi, 2012). Debt creates for the managers an incentive to work harder and encourage them to utilize the best invested opportunities. This leads to reduced risk of bankruptcy, thus reducing debt cost and enhancing the firm performance. Greater financial leverage may affect managers and reduce agency costs through the threat of liquidation, which causes personal losses to managers of salaries, reputation, and through pressure to generate cash flow to pay interest expenses (Grossman & Hart, 1982). According to the tradeoff theory, more profitable companies should have more income to shield from taxes. One of the most important parameters on the valuation and direction of economic enterprises in the capital markets is the capital structure (Drobetz & Fix, 2003). An important question facing companies in need of new finance is whether to raise debt or equity. In spite of the continuing theoretical debate on capital structure there is relatively little empirical evidence on how companies actually select between financing instruments at a given point of time in order to attain optimum profitability (Lalith, 1999). Managers have numerous opportunities to exercise their discretion with respect to capital structure decisions. The capital structure employed may not be meant for value maximization of the firm but for protection of the manager's interest especially in organizations where corporate decisions are dictated by managers and shares of the company closely held (Dimitris & Psillaki, 2008). The rest of the paper is organized as follows: In the next section we discuss the detailed literature on the relationship between capital structure and profitability. In

section three, we outline the methodology adopted for the study, then results in section four. Finally, we draw our conclusions from the study in section five.

## **2.LITERATURE REVIEW**

### **2.1.Theoretical Framework**

#### **Modigliani and Miller Capital Structure Theory**

According to Modigliani and Miller (MM), (1958) in their theory of capital structure irrelevance, it states that financial leverage does not affect the firm's market value. They hypothesised that in perfect markets, it does not matter what capital structure a company uses to finance its operations. They claimed that the market value of a firm is determined by its earning power and by the risk of its underlying assets, and that its value is independent of the way it chooses to finance its investments or distribute dividends. This proposition assumes no taxes and no bankruptcy costs. This theory was based on very restrictive assumptions that do not hold in the real world. (Abor, 2004). MM reviewed their earlier position by incorporating tax benefits as determinants of the capital structure of firms. They proposed that since interest is a tax-deductible expense, firms should use as much debt capital as possible in order to maximise their value (MM, 1963). Miller (1977) argued that a firm could generate higher after tax income by increasing the debt-equity ratio and this additional income would result in a higher pay-out to stockholders and bond holders but the value of the firm need not increase. Higher taxes on interest payments than on equity returns reduce or eliminate the advantage of debt finance to the firm. Green, Murinde, and Suppakitjarak (2002) stated that tax policy has an important effect on capital structure decisions of a firm. This is in the sense that corporate tax allows firms to deduct interest on debt when computing taxable profits. This suggests that tax advantages derived from debt would lead firms to be entirely financed through debt because interest payments associated with debt are tax deductible whereas payments associated with equity such as dividends aren't tax allowable deductions.

#### **Trade –off Theory**

This theory was first developed by Modigliani and Miller, (1958). It states that a target debt-equity ratio is approached at the point where the tax advantage of debt is offset by the costs of prevailing market imperfections. A firm's optimal debt ratio is usually viewed as determined by a tradeoff of the costs and benefits of borrowing. Firms balance tax savings from debt against dead weight bankruptcy costs. The key implications of the tradeoff theory is that leverage exhibits target adjustment so that deviations from the target are gradually eliminated (Myers, 1984). The tradeoff theory predicts a positive relationship between earnings and leverage (Shyam-sunder & Myers, 1999), a prediction which appears inconsistent with the well-established empirical evidence of a negative earnings and leverage relationship by Rajan and Zingales, (1995). Optimal capital structure is obtained when the firm's value is maximised and each firm sets a target debt –equity ratio in an industry class with a gradual attempt to achieve it. However, adjustment costs often deter firms from fully adhering to their optimal leverage ratios (Drodetz & Wanzenried, 2006).

### **Pecking Order Theory**

According to this theory, companies prioritize their sources of financing from internal financing to equity according to the law of least effort or of least resistance, preferring to raise equity as a financing means of last resort. The theorists argued that there is an asymmetric information problem between managers and investors. Investors would like to discount a firm's new securities when they are issued, and thus managers can anticipate price discounts in advance (Myers & Majluf 1984). Shyam –Sunder and Myers, (1999), examined the broad applicability of the pecking order theory. Their evidence based on a large cross-section of US publicly traded firms over long time periods showed that external financing is heavily used by firms. On average, net equity issues track the financing deficit more closely than do net debt issues. These facts do not match the claims of the pecking order theory. According to Lemon and Zender (2010), the idea of debt capacity is important in understanding the rejections of the pecking order theory. Consideration of debt capacity suggests that when not constrained by debt capacity, firms issue debt, but when constrained, they issue equity. They defined debt capacity as the point where adding more leverage reduces the firm's value.

### **Agency Theory**

The theory explains how to best organize relationships in which one determines the work while another party does the work. In this relationship, the principal hires while the agent does the work. In corporations, the principals are the shareholders of a company, delegating to the agent i.e. the management of the company, to perform tasks on their behalf. Agency theory assumes both the principal and the agent are motivated by self-interest. Agency theory extends the analysis of the firm to include separation of ownership and control, and managerial motivation. In the field of corporate risk management agency issue have been shown to influence managerial attitudes toward risk taking and hedging (Smith & Stulz, 1985). Consequently, agency theory implies that defined hedging policies can have important influence on firm value. The latter hypotheses are associated with financing structure, and give predictions similar to financial theory. Managerial motivation factors in implementation of corporate risk management have been empirically investigated in a few studies with a negative effect (Geczy, Minton,& Schrand 1997). Financial policy hypotheses were tested in studies of the financial theory, since both theories give similar predictions in this respect. All in all, the bulk of empirical evidence seems to be against agency theory hypotheses however. Agency theory provides strong support for hedging as a response to mismatch between managerial incentives and shareholder interests.

### **2.2. Empirical Evidence**

The choice of capital structure is fundamentally a marketing problem. The firm can issue dozens of distinct securities in countless combinations, but it attempts to find the particular combination that maximizes market value (Brealey & Myers, 2003). Booth, Alvazian, Demirgul-Kunt, and Maksimovic, (2002) argued that a firm that uses equity finance is able to make its performance better since there is direct control and because all the equity holders are the residual claimants, they have to ensure that resources are

allocated efficiently to be able to maximise shareholders wealth. Hutchinson (1995) agrees with this, arguing that provided that earning power of firms exceed the cost of debt, financial leverage will have a positive effect in firm's return on equity. Some studies have however shown that debt has a negative effect on firm profitability. Fama and French (2000), were of the view that the use of excessive debt creates agency problems among shareholders and creditors resulting in negative relationship between leverage and firm performance. Similarly, Gleason, Mathur, L, and Mathur, I; (2000), supported a negative impact of leverage on the profitability of the firm. Myers and Majluf (1984) also supports a negative relationship claiming that asymmetric information increases the cost of equity resulting in decreased performance. Maina and Ishmail (2014), also reported a non-significant negative relationship between capital structure and performance and concluded that in general, capital structure choice has no significant impact on Kenyan listed firms.

### **3. DATA AND METHODOLOGY**

The study employed descriptive survey. The study was based on listed companies operating in Kenya. Currently, there are 63 companies listed at the NSE (Mwai, 2014). A census, involving all the 49 firms listed in the NSE that were in operation between the year 2009 and 2013 was undertaken. Secondary data was obtained from NSE handbooks and published financial statements of the selected firms. T-test statistics, chi-square statistics and Pearson correlation analysis were used since they all tend to show relationship between variables.

### **4. RESULTS**

#### **4.1. Capital Structure of Companies Listed at the NSE**

This study utilized Debt Equity Ratio as a measure of capital structure for companies listed at the NSE. A comparison of Debt Equity ratio means for the five years was done to observe the trend. Appendix 1 shows the results on the mean and standard deviation of the years 2009 to 2013, as well as the average debt equity ratio for the five years. It was established that the year 2011 registered the highest Debt Equity ratio with a mean of 241.2% (SD = 234.4). This was followed closely by the year 2012 with a mean of 240.9% (SD = 218.4), then year 2013 with a mean of 237.6% (SD = 219.6). The year 2009 registered a mean of 221.4% (SD = 228.8) while year 2010 registered the lowest Debt Equity mean of 219.8% (SD = 212.7).

The study established that the mean Debt Equity ratio for the five years was 232.2% (214.7). These results indicate that the average capital structure of companies listed at the NSE had constantly declined between the years 2011 and 2013. The capital structure of the said companies had declined between the years 2009 and 2010 but greatly shot up the following year. Appendix 2 shows the average debt equity ratios for the years 2009 to 2013. The study established that 40.8% of the companies had a Debt Equity ratio of 200% and above same as that of less than 100% while 18.4% registered a Debt Equity ratio of 100 to 199%. This means that majority of the companies had a Debt Equity ratio of less than 200% since close to two thirds were in this category. It is worth noting that this

category of companies registered a Debt Equity ratio less than 232.2% which was the mean Debt Equity ratio.

The study sought to establish whether there were any differences in the capital structures among the 11 industries from which the companies listed in the NSE operated. For the purpose of this study, Debt Equity Ratio was categorized into three levels. Level 1 comprised Debt Equity ratio of less than 100%, level 2 comprised Debt Equity ratio of between 100 and 199% while level 3 consisted of Debt Equity ratios of 200% and above.

Appendix 3 shows industry and average debt equity ratio, a cross tabulation for the years 2009 to 2013. The study established that of the 6 companies in the Agriculture sector, the Debt Equity ratio of 5 was in Level 1 while the remaining one was in the third category. This means that most of the firms in the Agriculture sector had a low Debt Equity Ratio since a whopping 83.3% registered a Debt Equity ratio of less than 100%. There was only one firm in Automobiles and accessories industries and its Debt Equity ratio fell under level 2. All the 11 firms under banking industry had their Debt Equity ratio in the third category. This result means that all the firms in the banking industry had a Debt Equity ratio of above 199%.

The study established that out of the 7 firms in the commercial and services industry, 5 had a Debt Equity ratio of less than 100% while the remaining two had a Debt Equity ratio of more than 199%. This means that a high majority of the firms in the commercial and services industry had a low Debt Equity ratio since close to three quarters registered a Debt Equity ratio of less than 100%. It was further established that out of the 5 firms in the construction and allied industry, 3 had a Debt Equity ratio of between 100 and 199% while 1 firm had a Debt Equity ratio of more than 199% same as less than 100%. This result means that majority of the firms in the construction and allied industry had a moderate Debt Equity ratio.

There were 4 firms in the energy and petroleum industry out of which 3 had a high Debt Equity ratio while the remaining one had a moderate Debt Equity ratio. This result means that majority of the firms in the energy and petroleum industry had a high Debt Equity ratio since three quarters of these firms registered so. Out of the three firms in the insurance industry, 1 registered a high Debt Equity ratio, another one a moderate and the remaining one a low Debt Equity ratio. Hence, the Debt Equity ratio for firms in the insurance industry was evenly distributed in the three levels of Debt Equity ratio. The study established that of the three firms in the investment industry, two had a low Debt Equity ratio while one had a moderate one. This means that none of the firms in the investment industry had a high Debt Equity ratio. There was only one firm in the investment services industry and it registered a low Debt Equity ratio.

It was further established that of the 7 firms in the manufacturing and allied industry, 4 registered a low Debt Equity ratio, 2 registered a moderate Debt Equity ratio while 1 had a high Debt Equity ratio. This result means that a majority of the firms in manufacturing and allied industry had a low Debt Equity ratio. There was only one firm in telecommunication and technology industry and it registered a low Debt Equity ratio. A chi-square statistics

was done to establish whether the differences in the Debt Equity ratio among firms in various industries was statistically significant.

Appendix 4 shows industry and debt equity ratio chi-square tests. The results indicate that there is a statistically significant relationship between industry the firm falls and Debt Equity ratio of a firm (chi-square with twenty degrees of freedom = 44.3,  $p = 0.001$ ).

#### **4.2.Capital Structure and Profitability**

The study sought to establish the influence of capital structure on profitability of a firm. A T- test was done to test the null hypothesis; there is no significant influence of capital structure on profitability of a firm. Appendix 5 shows ROCE and debt equity ratio group statistics while appendix 6 shows ROCE and debt equity ratio independent samples test. The study established that the mean ROCE (Measuring profitability) for low geared companies was 12.45% (SD = 17.10) while that of firms that were high geared was 4.35% (SD = 7.42). This means that low geared firms registered much higher profitability compared to their counterparts that were high geared. The p-value is .003, implying that the difference in means is statistically significant at the .05 level of significance. Hence, the null hypothesis that there is no relationship between capital structure and profitability of a firm was rejected and thus the study concluded that capital structure had a significant negative influence on a firm's profitability.

A chi square test was done to see whether the same findings could be arrived at. Appendix 7 shows ROCE and debt equity ratio chi-square tests. The relationship between capital structure and profitability is statistically significant (chi-square with four degrees of freedom = 11.89,  $p = 0.018$ ). It shows that firms that are highly geared registered lower profits than firms that are highly geared. Hence, the null hypothesis was rejected since there is a significant relationship between capital structure and profitability.

Appendix 8 shows ROCE and debt equity ratio cross tabulation. A cross tabulation of profitability and capital structure indicated that majority of the firms that were low geared registered profitability in the higher brackets while high geared firms registered profitability in the lower brackets. This agrees with the results in the group statistics table about the means of the two groups of firms.

This result corresponds well with the finding of Booth et al (2002) who argued that a firm that uses equity finance is able to make its performance better since there is direct control and because all the equity holders are the residual claimants, they have to ensure that resources are allocated efficiently to be able to maximize shareholders wealth. Firms that are low geared are much more independent than their counterparts that are high geared. Such firms do not have to worry much about the interest on debts. Most decisions made in such firms revolve around maximizing on the shareholders wealth. Since this goal overshadows other goals, the result is high profits.

The findings of this study also agrees with the finding of Fama and French (2000), who ascertained that use of excessive debt creates agency problems among shareholders and creditors resulting in negative relationship between leverage and firm performance. Myers and Majluf (1984) also agrees with the study as they argued a negative relationship

between leverage and profitability claiming that asymmetric information increases the cost of equity resulting in decreased performance. Titman and Wessels (1988) also agrees with the findings of this study as they argued that firms with high profit levels, all things being equal, would maintain relatively lower debt levels since they can realize such funds from internal sources. However, Dessi and Robertson 2003 contradicts this as they argued that financial leverage affect positively on the expected performance, which is explained by the fact that low growth first attempts to depend on the borrowing for utilizing the expected growth opportunities and investing borrowed money at the profitable projects, thus increasing the firm performance

According to the tradeoff theory, more profitable companies should have more income to shield from taxes (Grossman & Hart, 1982) and thus it disagrees with the results of this study. ) Trade off theory also agrees with MM's reviewed proposition which incorporated tax benefits as determinants of the capital structure of firms. They proposed that since interest is a tax-deductible expense, firms should use as much debt capital as possible in order to maximise their value (MM, 1963).

## **5.CONCLUSION**

The study established that the mean ROCE (Measuring profitability) for low geared companies was 12.45% (SD = 17.10) while that of firms that were high geared was 4.35% (SD = 7.42). The p-value was .003, implying that the difference in means was statistically significant at the .05 level of significance. Hence, the null hypothesis was rejected and thus the study concluded that capital structure had a significant negative influence on a firm's profitability. This result corresponds well with the finding of Booth et al (2002) who noted that a firm that uses equity finance is able to make its performance better since there is direct control and because all the equity holders are the residual claimants, they have to ensure that resources are allocated efficiently to be able to maximize shareholders wealth.

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**APPENDICES****Appendix 1: Capital Structure of Companies Listed at the NSE**

	N	Mean (%)	Std. Deviation
Debt Equity Ratio: 2013	49	237.6	219.8
Debt Equity Ratio: 2012	49	240.9	218.4
Debt Equity Ratio: 2011	49	241.2	234.4
Debt Equity Ratio: 2010	49	219.8	212.7
Debt Equity Ratio: 2009	49	221.4	228.8
Average Debt Equity Ratio: 2009 to 2013	49	232.2	214.7

**Appendix 2: Average Debt Equity Ratios (2009 to 2013)**

Debt Equity Ratio	Frequency	Percent
Less than 100% (Low Geared)	20	40.8
100 to 199% (Moderately Geared)	9	18.4
200% and Above (High Geared)	20	40.8
Total	49	100.0

Appendix 3: Industry and Average Debt Equity Ratio (2009 to 2013) Cross Tabulation

		Average Debt Equity Ratio Category			
		1=Low	2=Moderate	3=High	Total
Agricultural	Count	5	0	1	6
	% within Industry	83.3%	.0%	16.7%	100.0%
Automobiles & accessories	Count	0	1	0	1
	% within Industry	.0%	100.0%	.0%	100.0%
Banking	Count	0	0	11	11
	% within Industry	.0%	.0%	100.0%	100.0%
Commercial & Services	Count	5	0	2	7
	% within Industry	71.4%	.0%	28.6%	100.0%
Construction & Allied	Count	1	3	1	5
	% within Industry	20.0%	60.0%	20.0%	100.0%
Energy & Petroleum	Count	0	1	3	4
	% within Industry	.0%	25.0%	75.0%	100.0%
Insurance	Count	1	1	1	3
	% within Industry	33.3%	33.3%	33.3%	100.0%
Investment	Count	2	1	0	3
	% within Industry	66.7%	33.3%	.0%	100.0%
Investment Services	Count	1	0	0	1
	% within Industry	100.0%	.0%	.0%	100.0%
Manufacturing & Allied	Count	4	2	1	7
	% within Industry	57.1%	28.6%	14.3%	100.0%
Telecommunication & Technology	Count	1	0	0	1
	% within Industry	100.0%	.0%	.0%	100.0%
	Count	20	9	20	49
	% within Industry	40.8%	18.4%	40.8%	100.0%

## Appendix 4: Industry and Debt Equity Ratio Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	44.305	20	.001
Likelihood Ratio	50.615	20	.000
N of Valid Cases	49		

## Appendix 5: ROCE and Debt Equity Ratio Group Statistics

	Average Debt Equity Category (2009 - 2013)	N	Mean	Std. Deviation	Std. Error Mean
Average ROCE (2009 to 2013)	1 (Low Geared)	29	12.45	17.10	3.18
	2 (High Geared)	20	4.35	7.42	1.66

## Appendix 6: ROCE \* Debt Equity Ratio Independent Samples Test

t-test for Equality of Means							
		T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	
Average ROCE (2009 to 2013)	Equal variances assumed	1.99	47	0.05	8.10	4.08	
	Equal variances not assumed	2.26	40.89	0.03	8.10	3.58	

## Appendix 7: ROCE \* Debt Equity Ratio Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.887 <sup>a</sup>	4	.018
Likelihood Ratio	14.147	4	.007
Linear-by-Linear Association	9.622	1	.002
N of Valid Cases	49		

## Appendix 8: ROCE and Debt Equity Ratio Cross Tabulation

			Average Debt Equity Category (2009 - 2013)		
			1	2	Total
Average ROCE Category (2009 to 2013)	1	Count	3	8	11
		% within Average ROCE	27.3%	72.7%	100.0%
	2	Count	7	8	15
		% within Average ROCE	46.7%	53.3%	100.0%
	3	Count	9	3	12
		% within Average ROCE	75.0%	25.0%	100.0%
	4	Count	6	0	6
		% within Average ROCE	100.0%	.0%	100.0%
	5	Count	4	1	5
		% within Average ROCE	80.0%	20.0%	100.0%
Total		Count	29	20	49
		% within Average ROCE	59.2%	40.8%	100.0%