

Capital Structure and Firm Value: Empirical Evidence from Ghana

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Abstract

This study seeks to provide evidence on the impact of capital structure on a firm's value. The analysis was implemented on all the 34 companies quoted on the Ghana Stock Exchange (GSE) for the year ended 31st December 2010. The ordinary least squares method of regression was employed in carrying out this analysis. The result of the study reveals that in an emerging economy like Ghana, equity capital as a component of capital structure is relevant to the value of a firm, and Long-term-debt was also found to be the major determinant of a firm's value. Following from the findings of this study, corporate financial decision makers are advised to employ more of long-term-debt than equity capital in financing their operations since it impacts more on a firm's value.

Key Words: Capital structure, firm value, Ordinary Least Squares, Agency Cost

1.0 Introduction

The Modigliani and Miller theory, proposed by Modigliani and Miller (1958 and 1963), forms the basis for modern thinking on capital structure. In their seminal article, Modigliani and Miller (1958 and 1963) demonstrate that, in a frictionless world, financial leverage is unrelated to firm value, but in a world with tax-deductible interest payments, firm value and capital structure are positively related. Miller (1977), added personal taxes to the analysis and demonstrates that optimal debt usage occurs on a macro level, but it does not exist at the firm level. Interest deductibility at the firm level is offset at the investor level. In addition, Modigliani and Miller (1963) made two propositions under a perfect capital market condition. Their first proposition is that the value of a firm is independent of its capital structure. Their second proposition state that the cost of equity for a leverage firm is equal to the cost of equity for an unleverage firm plus an added premium for financial risk. However, other theories such as the trade –off theory (Myers,1984), pecking order theory (Myers and Majluf,1984) and agency cost theory (Jensen and Meckling, 1976) argue that if capital structure decision is irrelevant in a perfect market, then, imperfection which exist in the real world may be adduce for its relevance.

Such imperfections include bankruptcy costs (Baxter, 1967, Kraus and Litzenberger, 1982; and Kim, 1998), agency cost (Jensen and Meckling, 1976), gains from leverage-induced tax shields (De Angelo and Masulis, 1980) and information asymmetry (Myers, 1984). Taking it turn from the above, Pandey (2004) states that the capital structure decision of a firm influences its shareholders return and risk. Consequently, the market value of its shares may be affected by the capital structure decision. The objective of a firm should therefore be directed towards the maximization of its value by examining its capital structure or financial leverage decision from the point of view of its impact on the firm value.

Following from this, the objective of this study therefore is; to find out whether the amount of equity used in a firm affect its market value and also to find out whether the amount of debt used in a firm affect its market value. The question now is does the capital structure decision of the firm affect its value? In this research work, effort will be made to provide answer to this question and others.

1.1 Literature review

The relationship between capital structure and firm value has been the subject of considerable debate, both theoretically and in empirical research. Throughout the literature, debates have focused on whether there is an optimum capital structure for an individual Firm or whether the proportion or level of debt usage is irrelevant or relevant to the Firm's value (Hatfield, Cheng and Davidson, 1994). Pandey (2004) opines that, the capital structure decision of a firm should be examined from the point of its impact on the value of the firm. He further states that if capital structure decision can affect a firm's value, then firms would like to have a capital structure which maximizes their value. The aim of a firm should centre therefore on the maximization of its value through capital structure decisions. However, there exist conflicting theories on the relationship between capital structure and firm's value that it becomes necessary to capture them into some broad groups. Harris and Raviv (1991) for example, organized their survey of literature around the driving forces behind financial policy and capital structure. They produce a classification based on taxes, bankruptcy cost, agency cost, information asymmetry, interaction with input/or product and corporate control considerations. Sanders (1998) adopted a different approach and classified capital structure theories base on whether particular theory presumes the existence of optimal financial policy and how the theory describes it.

According to his classification, there are theories in support of the existence of an optimal debt-equity mix (that is, the trade-off theory), the existence of optimal financial hierarchy (the pecking order theory) and the Modigliani and Miller irrelevance theory of capital structure in relation to a firm's value. The capital structure in this study means the term used to represent a combination of long-term debt and equity. Long term debt includes obligations that are not due to be repaid within the next twelve months. Such debt consists mostly of bonds or similar obligations, including a great variety of notes, capital lease obligation and mortgage issues. Generally, debt is money that has been borrowed from another party and must be repaid at an agreed date. The cost of using this money, which also must be paid, is interest. In addition to the requirement to pay interest, debt may also carry restrictive covenants that the borrower must satisfy to prevent default (Jane, Malonis and Cengage, 2000). Thus, a major cost of issuing debt is the possibility of financial distress. (Jane Malonis and Cengage, 2000). According to Ehrhard and Bringham (2003), the value of a business based on the going concern expectation is the present value of all the expected future cash flows to be generated by the assets, discounted at the company's weighted average cost of capital (WACC). From this it can be seen that the WACC has a direct impact on the value of a business. (Johannes and Dhanraj, 2007). The choice between debt and equity aims to find the right capital structure that will maximize stockholder wealth. WACC is used to define a firm's value by discounting future cash flows. Minimizing WACC of any firm will maximize value of the firm (Messbacher, 2004).

Debt policy and equity ownership structure "matter" and the way in which they matter differs between firms with many and firms with few positive net present value project (McConnel and Servaes, 1995). Leland and Pyle (1977) propose that managers will take debt-equity ratio as a signal, by the fact that high leverage implies higher bankruptcy risk (and costs) for low quality firms. Since managers always have information advantage over the outsiders, the debt structure may be considered as a signal to the market. Ross's (1977) model suggests that the values of firms will rise with leverage, since increasing the market's perception of value. Early empirical evidence on the trade-off theory (e.g., Bradley, Jarrell, and Kim, 1984) yielded mixed results. However, recent studies examining capital structure response to change in corporate tax exposure (Givoly et al., 1992; Mackie-Mason, 1990; Trezevant, 1992) provide evidence supporting the trade-off theory. Myers (1984) argues that the trade-off theory also fails to predict the wide degree of cross-sectional and time variation of observed debt ratios. Return on stock increases for any announcement of issuer exchange offers. Overall, 55 percent of the variance in stock announcement period returns is explained (Masulis, 1983). Under some conditions capital structure does not affect the value of the firm. Splitting a fund into some mix of shares relating to debt, dividend and capital directly adds value to the company (Gemmlie, 2001). The issue of whether financial structure influences economic growth or not. Through heterogeneous panel it was found that significant effects of financial structure on real per capita output, which is in sharp contrast to some recent findings (Arestis and Luintel, 2004).

Firms have increased their level of debt relative to their profit. As a result, firm debt in general has risen substantially. They found that those firms having lower debt have higher value than the firm, which has high debt. Thus, firm can maximize its value by choosing low debt or zero debt (Kinsman and Newman, 1998). When the firm's investment is large, countervailing incentives lead both high and low cost firms to choose the same capital structure in capital structure in equilibrium, thus decoupling capital structure from private information. When investment is small or medium size, the model may admit separating equilibrium in which high cost firms issued greater equity and low cost firms rely more on debt financing (Spiegel and Spulber, 1997). The presence of corporate tax shield substitutes for debt implies that each firm has a unique interior optimum leverage decision and when firms, which issue debt, are moving toward the industry average from below, the market will react more positively than when the firm is moving away from the industry average. The overall finding is that the relationship between a firm's debt level and that of its industry does not appear to be of concern to the market (Hatfield et al., 1994). Debt ratios are found to be decreasing in cash flow or profitability and increasing in the investment of the firm in both countries. The study found positive with pecking order approach and generally inconsistent with the tradeoff approach (Benito, 1999). The firm-specific nature of strategic assets implies that they should be financed primarily through equity; other less specific assets should be finance through debt.

Firms are likely to suffer increased costs and decrease performance if they do not adopt suitable governance structures in their transactions with potential suppliers of funds (Kochhar, 1997). It is considered "customer-driven" financial distress where prices for the firm output decline whenever firm has poor financial status. "Employee driven" financial distress originates from loss of intangible assets when firm revenue decline. Babenko (2003) examines the state tax effect on optimal leverage and yield spreads to find out the optimal capital structure at the time of financial distress. A negative relationship exists between the ownership of shareholders with large blocks, on the one hand, and the degree of control, on the other hand, with regard to firm value, the second relationship being significant. However, endogenous treatment of these variables then reveals a positive effect for the ownership of the major shareholders on firm value. Leland and Pyle (1977) and Ross (1977) propose that managers will take debt/equity ratio as a signal, by the fact that high leverage implies higher bankruptcy risk (and cost) for low quality firms. Since managers always have information advantage over the outsiders, the debt structure may be considered as a signal to the market. Ross's model suggests that the value of firms will rise with leverage, since increasing leverage increases the market's perception of value.

Suppose there is no agency problem, i.e. management acts in the interest of all shareholders. The manager will maximize company value by choosing the optimal capital structure; highest possible debt ratio. High-quality firms need to signal their quality to the market, while the low-quality firms' managers will try to imitate. According to this argument, the debt level should be positively related to the value of the firm. Assuming information asymmetry, the pecking order theory (Myers and Majluf, 1984) predicts that firm will follow the pecking order as an optimal financing strategy. The reason behind this theory is that if the manager act on behalf of the owners, they will issue securities at a higher price than they are truly worth. The more sensitive of the security, the higher the cost of equity capital, since the action of the manager is giving a signal to the market that the securities is overpriced. Stulz (1990) argues that debt can have both a positive and negative effect on the value of the firm (even in the absence of corporate taxes and bankruptcy cost). He develops a model in which debt financing can both alleviate the overinvestment problem and the underinvestment problem. Stulz (1990) assumes that managers have no equity ownership in the firm and receive utility by managing a larger firm. The "power of manger" may motivate the self-interested managers to undertake negative present value project. To solve this problem, shareholders force firms to issue debt. But if firms are forced to pay out funds, they may have to forgo positive present value projects. Therefore, the optimal debt structure is determined by balancing the optimal agency cost of debt and the agency cost of managerial discretion.

1.2 Equity and Firm Value

Equity unlike long-term debt includes paid-up share capital, share-premium, reserves and surplus or retained earnings. Igben (2004) defines paid-up capital as the portion of the called-up capital which has been paid-up by the shareholders. He also describes reserves as amounts set aside out of profits earned by the company, which are not designed to meet any liability, contingency, commitment or diminution in value of assets known to exist at the balance sheet date. Reserves may be voluntarily created by directors or statutorily required by law. Share premium is the excess amount derived from the issue of shares at a price that is above its par value.

And lastly, retain earnings are profit plough back in to a company in order to create more resources for operations and invariably increase in the value of the firm. This generates our first hypothesis that there is no relationship between equity and firm value.

1.3 Long-term Debt and Firm Value

Leland and Toft (1991) state that, the value of a firm is the value of its assets plus the value of tax benefits enjoyed as a result of debt minus the value of bankruptcy cost associated with debt. Modigliani (1980) points out that, the value of a firm is the sum of its debt and equity and this depends only on the income stream generated by its assets. The value of the firm's equity is the discounted value of its shareholders earnings called net income. That is, the net income divided by the equity capitalization rate or expected rate of return on equity. The net income is obtained by subtracting interest on debt from net operating income. On the other hand, the value of debt is the discounted value of interest on debt. Consistent with agency costs theory, prior literature indicate that debt is value reducing for high growth firms and it is value enhancing for low-growth firms. Jensen (1986) posits that when firms have more internally generated funds than positive net present value projects; debt forces the managers to pay out funds that might otherwise have been invested in negative net present value projects. This over-investment problem can be lessened if managers are forced to pay out excess funds for servicing debt, therefore enhancing the firm's value. Myers (1993) suggests that, a firm with outstanding debt may have the incentive to reject projects that have positive net present value if the benefits from accepting the project accrue to the bondholders without also increasing shareholders' wealth.

This under – investment problem can harm the value of firms, especially for the firms with high levels of future investment opportunities. Building on Jensen's (1986) over-investment discussion and Myer's (1993) under-investment discussion, Stulz (1988) argues that debt can have both positive and negative effect on firm value. Aggarwal and Kyaw (2006) also posit that, debt can have both positive and negative effects on the value of the firm so that the optimal debt structure is determined by balancing the agency costs and other costs of debts as a means of alleviating the under and over-investment problems. Specifically, when firms have surplus cash flows, debt will force managers to pay out funds that might otherwise have been invested in negative net present value projects. However, firms with outstanding debt may have incentives to reject projects that have positive net present value if the benefit from accepting the project accrues to the bondholders without also increasing shareholders' wealth. In addition, McConnell and Servas (1995) posit that, the seeds of under-investment problem lie in the solution of over investment problem. They investigate the relationship between corporate values, leverage and equity ownership of U.S. firms. They discover that for firms with high P/E ratios or for high-growth firms, value is negatively related to leverage and that in firms with low P/E ratio or low-growth firms, value is positively related to leverage. Their evidence supports the contention that for low-growth firms, leverage act as a monitoring mechanism to enhance firm value, whereas for high-growth firms, leverage causes under investment and destroys the value of a firm. This generates the second hypothesis in this study: That there is no relationship between long term debt and firm value.

2.0 Methodology

2.1 Study Area and Source of Data

The population of study is made up of all the 34 companies quoted on the Ghana stock Exchange as at 31st December 2010. The cross-sectional survey research design was adopted in this study. This is because the data used in this study were collected at a particular point in time for each and every year. The sample was made up of all the companies quoted on the Ghana Stock Exchange as at 31st December 2010. The secondary source of data was employed. The data were collected from annual reports and statements of account of the companies under consideration. The regression method of data analysis was adopted in this study. To be specific, the Ordinary Least Square (OLS) technique was adopted. Since this study sets out to test the relationship (association) between firm value and capital structure, the OLS correlation method is appropriate.

2.2 Model Specification

The model to be regressed in this study is presented in a relational form as follows:

Firm value = f (capital structure)

Firm value = f (Equity, Debt)

With the linear expression of the model being:

$$FV = a_0 + b_1 \text{EQUITY} + b_2 \text{LTDEBT} + \mu$$

a_0 , b_1 and b_2 are parameters to be estimated.

The apriori expectation is to follow the line of,

$$b_1 > 0 \text{ and } b_2 > 0$$

Where; FV = firm value

EQUITY = equity capital.

LTDEBT = Long- term debt

μ = error term.

3.0 Data Analysis and Result

The purpose of this study as mentioned in the introductory section of this paper is to examine the relationship between capital structure and firm value in Ghana. The regression result obtained from the ordinary least square is presented below:

Table 1: Ordinary Least Square Estimation

Regressor	Coefficient	Standard Error	T-Ratio	Probability
INPT(Firm Value)	1.19209	2.23795	0.53267	0.59805
EQUITY	0.96872	6.42624	1.55611	0.00000
Long Term Debt	0.99876	1.6108	6.20807	0.00000
R-Squared	1.00000	R-Bar-Squared	1.00000	
S.E. of Regression	1.21676	F(Stat)	1.74706 (0.00000)	
DW-Statistic	1.854			

$$\text{FIRM VALUE} = 1.19 + 0.96872 \text{ EQUITY} + 0.99876 \text{ LTDEBT}$$

(0.53) (1.56) (6.21)

R squared = 1.00

R Bar-squared = 1.00

F-stat = 1.75

DW-Stat = 1.9

From the above regression result using the Ordinary Least Square (OLS) estimation technique, it would be observed from the adjusted coefficient of determination (R-Bar-squared = 1.0) that about 100% of systematic variation in the dependent variable (firm value) is explained by the independent variables. This implies that the model is a very good fit with a very good predictive power. The F-test which measures the existence of linear relationship between the dependent and independent variable revealed that a significant relationship exist between the variables. The F-calculated value of 1.75 is higher or greater than the Fcritical value of 0.10 at 5% level of significance. Also, from the result, the Standard Error of Regression (SER) is 12.2% which is considered relatively good enough to confirm the predictive power of the model. Therefore, with the SER value, the model above is a very good model for policy making purposes. However, the observed value of DW is 1.9 which is approximately 2.00, revealed that there is the absence of serial correlation in the OLS results. This implies that the result can be used to draw policy suggestion. Furthermore, the analysis of the parameter estimates and their t-ratios; indicative of the individual statistical significance of the explanatory variables shows that a significant positive relationship exist between Long-term Debt and Firm Value given that the t-calculated (6.21) is greater than the t-theoretical values at 5% (2.06) and 10% (1.70) levels of significance respectively. This indicates that as Long-term Debt increases, the Firm Value also increases. Thus, we reject the null hypothesis that Long-term Debt is not positively related to Firm Value. Furthermore, the results also reveal that Equity is related to Firm Value. The relationship is also statistically insignificant at 1% and 5% significance levels respectively. Consequently; we reject the null hypothesis that Equity is not positively related to Firm Value. The DW-statistic of 1.9 shows that, the existence of stochastic dependence between successive units of the stochastic error term is unlikely; thus, we should be more confident that the estimated coefficient obtained in the study is unbiased.

Table 2: Diagnostic Tests

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*****
* Test Statistics LM Version F Version
*****
A:Serial Correlation CHSQ( 1)= 16.2823[.003] F( 1, 7)= 2.6586[.123]
B:Functional Form CHSQ( 1)= 16.7585[.000] F( 1, 10)= 16.3634[.002]
C:Normality CHSQ( 2)= .20337[.903] Not applicable
D:Heteroscedasticity CHSQ( 1)= .40197[.526] F( 1, 25)= .37782[.544]
*****
A:Lagrange multiplier test of residual serial correlation
B:Ramsey's RESET test using the square of the fitted values
C:Based on a test of skewness and kurtosis of residuals
D:Based on the regression of squared residuals on squared fitted values
The null hypothesis of the tests above has no serial correlation, correct functional form, normal distribution and homoskedasticity. Using the F test we reject only the null hypothesis for the functional form. Thus the model does not suffer from serial correlation (autocorrelation) and heteroscedasticity.
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4.0 Discussion

Following from the above regression results of long- term- debt and equity as components of capital structure, Long-term-debt was found to be the major determinant of firm’s value. This is consistent with the findings of Myers and Majluf’s (1984) pecking order theory, Myer’s (1984) trade-off theory, and the traditionalist theory. The reason for this agreement is because both the finding of this research work and the findings of the above mentioned theories took cognizance of the market imperfections present in the real world. These imperfections include bankruptcy cost, agency costs, gains from leverage- induced tax shields and information asymmetries. This finding is however, inconsistent with M&M (1958) theory and Millers (1977) hypothesis with corporate and personal taxes, who find out that long-term-debt, is not related to firm’s value.

Also, Miller (1977) opines that capital structure is unrelated to the value of a firm because the tax benefits which is adduced for the relevance of capital structure in relation to firm’s value is offset by the fact that shareholders pay more tax than bondholders. This position of Miller (1977) is in consonance with that of Myers (1977) who opines that a firm with outstanding debt may have the incentive to reject projects that have positive NPV which may harm the firm’s value.

Furthermore, this study reveals that in an emerging economy like Ghana, equity capital as a component of capital structure is relevant to the value of a firm. This is in agreement with the claims put forward by the proponents of the pecking order theory and the traditionalist theory of capital structure relevance. However, it is not in agreement with the capital structure irrelevancy theory of Modigliani and Miller (1958), which states that equity capital is unrelated to firm value; and Millers (1977) hypothesis with corporate and personal income tax, which states that the capital structure of a firm does not impact on its market value.

5.0 Conclusion

This research work has examined the capital structure theory and its relationship with the value of the firm in the Ghanaian setting, taking into cognizance 34 listed firms. All other theories, except the M-M theory (1958), have attempted to resolve the capital structure puzzle enunciated by M-M (1958) propositions. Each of this theory relaxes conditions under which the M-M (1958) theorem was derived. Based on this and the findings of this study, we can conclusively state that: capital structure decisions have various implications and one of them is its effect on the value of the firm which formed the basis of our study. It is recommended that Firms are strongly advised to always compare the marginal benefit of using long-term-debt to the marginal costs of long-term-debt before concluding on using it in financing their operations. This is because as shown by this work, long-term-debt impacts positively on firm’s value just like equity capital.

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Appendix 1: Listed Companies and Their Capital Structure, December 2010

	Firms	Equity	Long Term Debt	Firm Value
1	Golden web	677250	2763712	3440962
2	Sam-Woode	331840	331839	663679
3	African Champion Industries	5236083	0	5236083
4	Aluworks	27361000	7031000	34392000
5	AngloGold Ashanti	4113000000	4442000000	8555000000
6	Ayrton Drug Manufacturing	14520354	0	14520354
7	Benso Oil Palm Plantation	29530000	0	29530000
8	CAL Bank	76519000	109390000	185909000
9	Camelot Ghana	513940	415262	929202
10	Clydestone Ghana	298208	0	298208
11	Cocoa Processing Co.	155224	124176906	124332130
12	Ecobank Ghana	227646000	80162000	307808000
13	Ecobank Transnational Inc.	18944449216	383348198	19327797414
14	Enterprise Group	31676000	0	31676000
15	Fan Milk	5216000	1735000	6951000
16	Ghana Commercial Bank	173623000	129911000	303534000
17	Ghana Oil Company	33448448	762964	34211412
18	Golden Star Resources	640640	180392	821032
19	Guinness Ghana Breweries	45163	5227000	5272163
20	HFC Bank Ghana	69775606	60847152	130622758
21	Mechanical Lloyd Co.	14595270	3465475	18060745
22	Pioneer Kitchenware	363735	12892	376627
23	Produce Buying Company	23624595	8427357	32051952
24	PZ Cussons Ghana	25263490	1668192	26931682
25	SG-SSB	118885753	1300507	120186260
26	SIC Insurance Company	83840538	3537383	87377921
27	Standard Chartered Bank Ghana	195981000	258206000	454187000
28	Starwin Products	1864283	401639	2265922
29	Total Petroleum Ghana	66206000	3691000	69897000
30	Transaction Solutions Ghana	1705173	43699	1748872
31	Trust Bank -The Gambia	290990000	0	290990000
32	Tullow Oil	5720823040	4431095040	10151918080
33	Unilever Ghana	41340000	5296000000	5337340000
34	UT Bank	51087000	8832000	59919000

Appendix 2

Cochrane-Orcutt Method AR (2) converged after 5 iterations

Dependent variable is FIRMVALU

34 observations used for estimation from 1 to 34

Regressor	Coefficient	Standard Error	T-Ratio	[Prob]
INPT	1.19209	2.23795	.53267	[.59805]
LTDEBT	.99876	1.6108	6.20807	[.00000]
EQUITY	.96876	6.42624	1.55611	[.00000]

R-Squared 1.00000 R-Bar-Squared 1.00000
 S.E. of Regression 1.21676 F-stat. F (4, 117) 1.74706[.000]
 Mean of Dependent Variable 9.42 S.D. of Dependent Variable 4.08
 Residual Sum of Squares 9.83E+22 Equation Log-likelihood -3109.6
 Akaike Info. Criterion -3114.6 Schwarz Bayesian Criteria -3121.6
 DW-statistic 1.854

Parameters of the Autoregressive Error Specification

$$U = -.51413 * U(-1) + -.21440 * U(-2) + E$$

(*NONE*) (*NONE*)

T-ratio(s) based on asymptotic standard errors in brackets
