

Determinants of Capital Structure of Listed Oil Marketing Companies in Ghana

Isaac Doku^{a*}, Elvis Adjei^b, Harrison Adjimah^c, John Akuma^d

^aData Link Institute, P. O. Box C0 2481, Tema/Ghana

^bGhana Institute of Management and Professional Accountants, P. O.Box AH50, Achimota/Accra/Ghana

^cHo Polytechnic, P.O.Box 217, Ho/Ghana

^dData Link Institute, P. O. Box C0 2481, Tema/Ghana

^aEmail: isaacoberkoh27@gmail.com

^bEmail: elvis.a.adjei@gmail.com

^dEmail: atamayorr@yahoo.com

Abstract

Capital structure decisions are the most crucial decisions taken by corporate organizations, as these decisions have massive impact on the overall cost of capital weighted average and the resultant profitability and market value of shares. Most of the researches conducted on capital structure concluded that there is an optimal capital structure that is affected by a variety of internal and external factors. These factors usually differ from country to country and industry to industry. This paper using a case study methodology, investigated the determinant of capital structure of oil companies in Ghana. The study examined how internal factors such as profitability, asset tangibility, growth, size and riskiness of a firm impacts on the capital structure of the two listed oil marketing companies in Ghana (GOIL and TOTAL) for the period between 2005 and 2014 using ordinary least square regression. The findings indicated that all the factors have significant impact on financial leverage.

Keywords: Capital structure; financial leverage; Optimal; Listed Oil Companies in Ghana.

1. Introduction

Ghana is a crude extracting and exporting country, but currently does not process crude oil into finished goods. Finished petroleum products are imported from foreign countries like Nigeria and other OPEC countries.

* Corresponding author.

The sole right has been given to Bulk Distribution Companies (BDC's) and Oil Marketing Companies (OMC's) to import and market finished petroleum products. Since July, 2015 the government of Ghana has left the right of determining the prices of petroleum products in the hands of BDC's and OMC's due to a number of factors. Government of Ghana owes this BDC's and OMC's more than GHc 800 million by way of subsidies as at June, 2015 in the face of rising depreciation of the cedi. This has usurped the capital of these firms and threatened their survival. There is the need for their finance managers to determine the optimum capital structure needed to sustain these firms.

The low capital base of the oil and gas companies necessitated the establishment of mutual fund to raise more capital to support the sector. Weston Oil and Gas Mutual Fund recently set up by two young fund managers raised GHc50 million by selling 500,000 shares within the first three weeks and subsequently sell 250,000 shares to support the sector (Association of Oil Marketing Companies, 2015, aomcs.org). The board chairman of the fund explained that Ghana is currently producing just 120,000 barrels per day which is far lower than the 250,000 barrels produced by one oil field in Nigeria per day. The board chairman added that Ghana has an oil field not an oil industry due to inadequate human resource capacity and funding. Although Ghana has a lot of oil marketing companies, the chairman of the fund posited that they lack the needed capital to expand across the country and several other agencies that needed funding to undertake capacity building to ride the country from 'rent collectors' in the industry to real owners. Others in the sector who prefer more debt finance to equity finance argued that it will be unwise for firms in the sector to resort to the use of equity to raise capital for investment, considering the tax shield importance of the use of debt in the capital structure of a firm. Capital structure refers to the different options used by firms in financing their assets. The capital structure of a company is a particular combination of debt, equity and retained earnings to finance its long-term asset. The key partitions in capital structure are between debt and equity. The proportion of debt funding is measured by gearing or leverages. There are different factors that affect a firm's capital structure, and all firms face a challenge to determine what its best mix of financing is. But determining the precise optimal capital structure is not a science, so after analyzing a number of factors, a firm would establish a target capital structure which it believes is most favorable.

The capital structure theories have compared the effects of sources of finance, tax advantages associated to leverages, and the investors' required rate of return on the overall cost of capital and the resultant returns to investors. Most of the researches conducted on capital structure concluded that there is an optimal capital structure that is affected by a variety of internal and external factors. These factors usually differ from country to country and Ghana is not an exception, and even from industry to industry within the same country. Most significant of these include taxes, state of industry, macroeconomic indicators, financial, social, legal and managerial factors. For that matter, this study examines the major internal determinants of the capital structure of listed oil marketing companies in Ghana.

2. Literature Review

Both theoretical and empirical literature on capital structure are briefly examined in this section

2.1 Theoretical Literature Several theories and researches have tried to explain capital structure of firms.

Foremost is the study by [12] known as irrelevance theory of capital structure? They posited that no capital structure is better than the other. They demonstrate and finally conclude that the “capital structure is irrelevant” in a perfect financial market, considering no-tax case in the “pie model”, Firm value determined through its real asset not by the capital structure [8]. These restrictive conditions do not apply in real world. In real world amount of leverage in capital structure reduce agency conflict among managers and shareholders and have a great impact on market value of firm.

The second and most popular capital structure theory is the Pecking Order Theory (POT), POT tried to generate ideas that firms use a hierarchy of financing. First, they will tend to use internal funds, otherwise, if it does not fulfill the requirement, they will finance with external funds with debt [11]. The last to fall on is equity finance [16].

The third theory that will be considered in this study is the static trade-off theory; this theory is of the view that an optimal capital structure can be derived from the balance between the costs of debt against the benefits of debt. Debt financing provide tax shield and reduce agency cost [16]. Some of the cost includes bankruptcy cost and agency cost whereas the benefits include tax deductibility of interest income and reduction of free cash flow agency problem [5]. For firms to reach an optimal capital structure they need to strike a balance between the marginal cost of debt and marginal benefit of tax.

2.2 Empirical Literature

The study reviewed prior literature in line with each variable of the study

2.3.1 Profitability

Profitability of a firm can be measured by return on assets. Profitability is used as a measurement for firm value because it evaluates the efficiency with which plant, equipment, and current assets are transformed into profit. The study by author [19] showed that profitability had a significant inverse relation with all types of book and market value debt ratios. He showed that the results confirmed findings of earlier studies and were consistent with pecking order theory [16] that postulated a negative relationship between profitability and debt ratio. The negative relationship between profitability and debt ratios contradicted with the tax shield hypothesis. He also showed that profitability seemed to be the most dominant determinant of debt ratios of Malaysian firms as it generally had high beta coefficients and t-statistics that were significant at 1% level of significance.

2.3.2 Tangibility

Asset tangibility means any asset of a company that exist physically. Asset tangibility of a firm is measured by expected assets. Asset values repeatedly fall sharply once assets are placed slight of the firm. When this happens, investors have less incentive to impose their right to settle or reorganize the firm. Instead; they may allow an underperforming business to carry on and may even performance it under its current management. The

problem that this creates is that firm insiders then have fewer incentives to implement value enhancing policies. Continuation is less likely to occur, however, when assets can fetch high values outside of the firm.

The study by [13] measured tangibility as the ratio of property, plant and equipment to total assets. The findings showed a significant positive relation between tangibility and financial leverage across each of the four surveys, and were statistically significant at a better level than the 0.05 level for each survey except for the result in 2003. The coefficients ranged from 0.073 to 0.171, indicating that a 100 basis point increase in the tangible asset ratio was associated with a 7.3 to 17.1 basis point increase in the loan-to-asset ratio. According to [6] the relation between tangibility and leverage was reliably positive in cross-sectional studies of publicly traded firms. Their results for privately held firms were broadly consistent with this finding.

2.3.4 Growth

Growth is the percentage of change in firm's asset in comparison with the previous year. The authors [21] tested leverage predictions of the trade-off and pecking order models. They used panel data to test the empirical hypotheses over a sample of 6482 Spanish SMEs during the five-year period between 1994 and 1998. Their results showed a positive and statistically significant impact between growth opportunities and firm leverage. This result is consistent with the study by [14]'s argument, based on the idea that in SMEs the trade-off between independence and financing availability is more pronounced and the major part of debt financing is short term.

2.3.5 Size

Firm size was measured by natural logarithm of firms' assets. The study by [21] found that firm size and leverage were found to be positively related. They explained that this relationship could come from the fact that small and medium scale enterprises (SMEs) have to face higher bankruptcy costs, greater agency costs and bigger costs to resolve the higher informational asymmetries. Even within this firm category, SMEs of greater size could access higher leverage.

The study by [19] found that size is positively related to all types of book and market value of debt ratios and all of the coefficients were significant at 1% level of significance. The study showed a positive correlation between size and debt ratio to confirm the hypothesis, which larger firms tended to be more diversified and less prone to bankruptcy and the direct cost of issuing debt or equity and consistent with the trade-off theory.

2.3.6 Risk

There are varied conclusions on the relationship between capital structure and risk of firms. The authors of [4] in their study found the relationship between leverage and volatility to be negative. They also showed that their finding supports both the trade-off theory which predicts that firms with a more volatile cash flow increase their probability of default, and the pecking order theory which postulate that issuing equity is more costly for firms with volatile cash flows than issuing debt.

On the other hand, the study by [10] found a positive relation between total leverage and volatility. This result is consistent with [9] that firms with higher leverage level tended to make riskier investment. They found that companies with high leverage in China tended to make riskier investments. They further explained that in China, the credit market was still regulated and the term structures of interest rates were decided by the central bank rather than by the market forces. Banks only have the right to determine whether borrower's application was approved or not and the listed companies generally were regarded as best companies in China. As a result, the companies with high business risk still could get bank loans at regulated interest rate, which was lower than market rate if interest rate was deregulated. Most developing countries such as Ghana, are likely exhibit the similar result of China. .

3. Methodology

This study employs a cross sectional data analysis and the ordinary least squares regression equation. Following the study by [5] and other studies an 18 (2*9) firm year study from 2005 to 2014 is used. The study employs descriptive and inferential statistics to analyze the collected data using Stata 11 software. A cross sectional data is used because both dependent and independent variables are derived using ratios to eliminate the time varying effect. Ordinary least square regression is used due to the fact that it exhibits BLUE (best, linear, unbiased estimator) characteristics. Capital structure of a firm is proxied using financial leverage, whereas the independent variables of the study included profitability, asset tangibility, growth of a firm, riskiness of a firm and size of a firm.

3.1 Model specification

The regression equation to be analysed is stated as follows

$$\text{(Financial Leverage)} = \beta_0 + \beta_1 \text{(Profitability)}_i + \beta_2 \text{(Asset Tangibility)}_i + \beta_3 \text{(Growth)}_i + \beta_4 \text{(Firm Size)}_i + \beta_5 \text{(Risk)} + \varepsilon_i$$

(1)

The variables in the regression equation above are estimated as follows

Dependent Variable

LG = Leverage of firms

Leverage is measured by: $\text{Leverage} = \text{Total Debt} / \text{Total Assets}$

Independent Variables

PF = Profitability of firms

Return on Assets = $\text{Net Income} / \text{Total Assets}$

TN = Tangibility of firms

Tangibility = Total gross fixed assets / Total asset

Growth is measured by: Growth = Annual percentage change in total assets.

SZ = Firm size

Size is measured by: Size = Log of sales

RK = Risk

Risk is measured as ∂ PBITD / Total asset

From the regression equation, the variables $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4,$ and β_5 are the coefficients of the independent variables, whereas ϵ_i is the error term or the residuals.

3.2 Data Source

This study makes use of the secondary method of data collection. Here, data was collected from the annual financial statements and reports of all the listed oil marketing companies on the GSE. The data collected span from 2005 to 2014 for TOTAL and GOIL. The year 2005 was chosen because GOIL was listed in 2007 but had available data from 2005.

4. Results

The first part of this sub section analyses the descriptive statistics of the variables involved in the study and the second part presents the regression results.

4.1 Descriptive statistics

The study makes use of a cross sectional data type by employing an 18 (2*9) firm year period for the study. 2 is the number of firms and 9 is the period under study, which spans from 2005 to 2014. Table 5.1 below indicates a low level of variability among the determinants of the capital structure of listed oil and gas firms in Ghana, as showed by their low level of standard deviation.

Financial leverage showed a mean of 42.22% which implies that listed oil and gas firms in Ghana on the average holds 42% of their structure in debt whereas equity finances the rest. The table above further shows that profit of the firms grow by 8.11%, which is higher than the total profitability average of the listed firms on the GSE of 1.361% [5]. Riskiness of the firms stood at 3.957% which indicates a lower volatility or riskiness of the firms.

Tangibility of a firm shows the collateralised ability of a firm, thus, the ability of the firm to provide enough

collateral to secure a loan. Table 5.1 above indicates a tangibility value of 34.43% on average, which implies that 34% of the total assets of the listed oil and gas firms are fixed assets. Firms with higher tangibility figures can borrow more cheaply due to a high collateralised value of their firms.

Table 1: Summary Statistics between 2005-2013 for GOIL and TOTAL

Variable	Mean	Standard Deviation	Minimum	Maximum
Financial Leverage	0.4221687	0.2959493	0.0361208	1.032869
Profitability	0.0811188	0.498585	0.0109973	0.2049063
Risk	0.0395737	0.1114348	-0.313855	0.2206644
Tangibility	0.3442968	0.0904518	0.2101181	0.5392782
Growth	0.3088361	0.2952078	-0.042496	1.274
Size	6.610673	1.373205	5.137132	8.532541

Source: Financial statements from GSE between 2005 to 2014

Growth of the firms under study is 30.88% averagely, showing that the firms year on year growth is 30.88% which is quite low as compared to the growth of all listed firms on the GSE which stood at 56.53% [5]. The size of the two listed oil and gas marketing companies on average is relatively small (6.610673) as compared to the average of the total listed firms on the GSE that stood at 13.163.

4.2 Regression Result

This subsection explains the multiple regression results in answer to the research objectives and questions. The objectives of the study are analysed according to subheadings and the regression results are presented on table 5.2 below. R^2 measures the in sample predictive power of the estimator. The regression result shows a coefficient of determination (R^2) of 84.93% which implies that 84.93% of the variation in financial leverage is explained by the explanatory variables, that is profitability of the firm, riskiness, tangibility of the firm, growth and size of the firm.

4.2.1 Profitability

The first objective of the study is to ascertain the nature of relationship between profitability and financial leverage of listed oil marketing companies in Ghana. Column two row two of table 5.2 below shows a negative significant relationship between profitability and financial leverage. This indicates that as listed oil marketing companies make more profit there is a less likelihood that they will hold more debt in their capital structure. This is significant at 1% since it has a p value of 0.009 as indicated by ***. This finding harmonises with the study by [5] that found same negative relation between profitability and leverage for all listed firms on the GSE. The result affirms the prediction of the POT that holds that firms prefer internal financing to external financing such as debt and equity. Since a higher profit implies a higher retained earnings and lower external sources of

finance.

4.2.2 Tangibility

The second objective of the study is to illustrate the relationship between tangibility which looks at the collateralised ability of a firm and financial leverage. Row four column two of table 5.2 below posits a negative significant relationship between tangibility and financial leverage of a firm. This is significant at 1% which has a p value of 0.004 which is less than 0.01. Listed oil marketing companies indicate that the higher their tangibility or fixed asset, the lower the probability of borrowing to finance their investment which is in harmony with the POT but against the static trade-off theory. The result contradicts the studies by [1] who found a strong positive relationship between tangibility and financial leverage for listed Pakistanian firms.

Table 5.2: Cross Sectional Regression Results

Financial Leverage	Coefficients	Standard Errors	P Values
Profitability	-4.070805	1.237408***	0.009
Risk	3.088194	0.6945644***	0.002
Tangibility	-2.483566	0.6403799***	0.004
Growth	0.9069001	0.2392391***	0.004
Size	-0.082421	0.0420788**	0.082
	R ²	0.8493	

The standard errors have ***, ** and * which signifies 1%, 5% and 10% level of significance. The data generated were conducted using stata 9.

4.2.3 Riskiness

The third objective of the study is to find the nature of relationship between riskiness or return variability and financial leverage of listed oil marketing firms in Ghana. The findings from table 5.2 above hold that there is a significant positive effect of risk on the financial leverage of listed oil marketing firms in Ghana and significant at 1% by a probability value of 0.02. This implies that the higher the riskiness of a firm the higher the probability of borrowing to finance investment. Riskiness measures the degree of variability in the returns of a

firm and in some studies known as degree of variability. This result is shocking but is in line with the agency theory whereas it contradicts the predictions by both the POT and static trade-off theory. According to the study by [1] the issue of underinvestment reduces when firm volatility of returns increases.

4.2.4 Growth and Size

Growth and size are not major variables in the study but they act as control variables in the regression equation. The findings pointed a significant positive relation between growth and financial leverage. The results in table 5.2 above shows a p value of 0.004 implying that it is significant at 1%. The findings mean that larger firms due to higher collateralized assets borrow more as compared to smaller oil marketing firms in Ghana. This result affirms the predictions of the POT and also the study by [5] for all listed firms in Ghana. The study by [10] found contradictory result that indicates a negative significant relationship between growth and financial leverage according to the static trade-off theory.

4.2.5 Size

Size of the firm being the other control variable shows a negative significant relationship with financial leverage. It is significant at 10% since it has a probability value of 0.082 which is less than 0.1. The result indicates that larger firms borrow less whereas smaller firms borrow more. This may be due to the fact that larger firms can easily access other forms of credit other than increasing their debt due to their reputation. This result is consistent with the predictions of the pecking order theory but contradicts the result of the static trade-off theory.

5. Conclusion and Recommendation

Conclusion and appropriate recommendations of the study is analysed under this subsection. The findings indicated a significant negative relation between profitability and financial leverage of listed oil marketing firms. The results further indicated that asset tangibility of firms have a significant negative relation with financial leverage. Size of the firm being the other control variable shows a negative significant relationship with financial leverage for listed oil marketing companies in Ghana. The findings pointed a significant positive relation between growth and financial leverage. The findings lent its support to the pecking order theory as against the static trade-off theory. One of the results postulated a significant positive relationship between riskiness and financial leverage. These findings contradicted the predictions of both pecking order theory and the static trade-off theory but rather supported the agency theory.

From the findings, it can be concluded that most oil marketing companies in Ghana would borrow less to finance their investment during periods of higher profitability. Management would increase retained earnings that is internal sources of finance than falling on any external sources of finance as predicted by the pecking order theory. It is clear from the findings that oil marketing firms with more tangible asset and good reputations are less likely to borrow to finance their operations but rather fall on other sources of finance. The findings showed that all listed oil marketing companies in Ghana follow a financing procedure predicted by the pecking order theory. Finally, more risky firms will want to hold more debt in their capital structure than less risky firms.

Based on the findings it is indicative that management of listed oil marketing companies are interested in using more retained earnings to finance their investment and operations than the use of debt. Anytime firms make profit they prefer to retain greater part to finance their investment and pay less out as dividends. For firms to increase their market value, it is recommended that they have to pay higher amount of dividends and borrow more to finance their operations to take advantage of the tax shield importance of debt use.

References

- [1] Ali, I. "Determinants of Capital structure: Empirical Evidence from Pakistan", MPhil Thesis, University of Twente, Netherland, 2011, pp. 25-80
- [2] Amoto and Wilder, "Alternative Profitability Measures and Tests of the Structure-Performance Relationship": *Review of industrial Organization*, 1995, 10: pp. 21-31.
- [3] Banker, Chang and Majumdar, "Analyzing the Underlying Dimensions of Firm Profitability": *Managerial and Decision Economics*, 1993, Vol. 14, No. 1, pp. 25-36.
- [4] Drobetz, W., & Fix, R. (2005). "What are the determinants of capital structure? Evidence from Switzerland": *Schweizerische Zeitschrift für Volkswirtschaft und Statistik*, 141, 2005, pp. 71-114.
- [5] Fumey, A. and Doku, I. "Dividend Pay Out Ratio in Ghana: Does the Pecking Order theory Holds Good: *Journal of Emerging Issues in Economics, Finance and Banking (JEIEFB)*, Volume:2 No.2 August 2013.
- [6] Frank, Murray Z. and Vidhan K.Goya, "Testing the Pecking Order Theory of Capital Structure": *Journal of Financial Economics*, 2003, pp. 67,217-24.
- [7] Graham, John R. and Rogers, Daniel A. "Do Firms Hedge in Response to Tax Incentives?": *Journal of Finance*, 2002, Vol. 57, pp. 815-839.
- [8] Hatfield, G.B., L.T.W. Cheng and W.N. Davidson III , "The Determination of Optimal Capital Structure: The Effect of Firm and Industry Debt Ratios on Market Value", *Journal of Financial and Strategic Decisions*, Vol.7, 1994, No. 3
- [9] Hsia, C. C., "Coherence of the modern theories of finance," *Financial Review*, Winter, 1981, 2742.
- [10] Huang, Samuel G. H. and Song, Frank M. "The Determinants of Capital Structure: Evidence from China": *HIEBS (Hong Kong Institute of Economics and Business Strategy) 2002, Working Paper*, pp. 1-35. See at http://www.hiebs.hku.hk/working_papers
- [11] Hutchinson, P., "The capital structure and investment decision of small owner – managed firm: some exploratory issues," *Small Business Economics*, 1995, 7, 231-239.

- [12] Kwon, Yin and Han, “The effect of differential accounting conservatism on the “over-valuation of high-tech firms relative to low-tech firms”, *Rev Quant Finance Accounting*, 2016, 27: pp. 143–173.
- [13] Leland Hayne E. “Agency Costs, Risk Management, and Capital Structure”: *Journal of Finance*, American Finance Association, vol. 53(4), 1998, pages 1213-1243, 08.
- [14] Michaelas, N. Chittenden, F. and Poutziouris, P. “Financial policy and capital structure choice in UK SMEs: empirical evidence from company panel data,” *Small Business Economics*, 1999.
- [15] Modigliani Franco and Merton H. Miller, “Corporate Income Taxes and the Cost of Capital: A Correction”, *The American Economic Review*, 1963, Vol. 53, No. 3, pp. 433-443.
- [16] Myers C.S. and S.N. Majluf, “Corporate Financing and Investment decisions when Firms have Information that Investors do not have”. *Journal of Financial Economics*, Vol. 13, 1984, PP. 187-221.
- [17] Myers, S. and R. Rajan’ “The Paradox of Liquidity”: *Quarterly Journal of Economics*, 1998, pp.113, 733-771.
- [18] Nordheim and Russell, “Indicator Variables Model of Firm’s Size-Profitability”, 2003.
- [19] Pandey, I. M. “Capital Structure and the Firm Characteristics: Evidence from an Emerging Market,” IIMA Working Paper, No. 2001-10-04, 2001
- [20] S. Ross, “The Determination of Financial Structure: The Incentive-Signaling Approach”, *Bell Journal of Economics*, Vol. 8 (Spring), 1997, 23–40.
- [21] Sogorb, Mira F, López-Gracia J., “Pecking order versus trade-off: An empirical approach to the small and medium enterprise capital structure,” *Instituto Valenciano de Investigaciones Económicas (IVIE) working paper*, WP-EC 2003-09, 2003, pp. 1-36.