

The Influence of Capital Structure on the Performance of Manufacturing Companies: Empirical evidence from listed companies in East Africa

Mutaju Isaack Marobhe

Assistant Lecturer

School of Real Estate Studies, Ardhi University, P.o Box 35176

Dar es Salaam-Tanzania

Abstract

This paper evaluates the influence of capital structure on the performance of manufacturing companies listed in various stock exchanges in East Africa. This study used panel secondary data, where the financial statements of 12 manufacturing companies were selected from (2005-2012). Data analysis was done using multiple regression analysis which established the relationship between performance expressed by Return on Assets (ROA), Return on Equity (ROE) and Earnings per Share (EPS) and capital structure which was represented by Long Term Debts to Total Capitalization (LTDTC)/ (gearing), Short Term Debts to Total Assets (STDTA), Long Term Debts to Total Assets (LTDTA), Debt to Equity (TDE) and Interest cover (IC). The study confirmed statistically a significant negative relationship between profitability and capital structure using ROA however the remaining profitability measures ROE and EPS showed insignificant relationship with capital structure. It is recommended that manufacturing companies in East Africa should strive to maintain low leverage so as to be profitable.

Keywords: Capital Structure, Performance, Listed Manufacturing Companies

1. Introduction

Capital structure refers to the combination of debt and equity that is used to finance the company's investment in assets. Maintaining the optimum capital structure is very important to the company due to the cost-benefit relationship associated with debt and equity respectively. Having excess debt in the capital structure has its own benefits and costs and this is also the case in equity. Azhagaiah and Gavoury (2011) depict that too much debt may result into high gearing ratio, greater risk of bankruptcy and possibly high interest rates which may cause profits to deteriorate and eventually resulting into losses and bankruptcy. However debts have the benefit of providing tax savings due to the fact that interest is a tax allowable expense, this is why most entities use the mix of debt and equity.

The famous agency theory by (Jensen and Meckling, 1976) narrates that the use of debt financing usually causes agency costs to monitor the relationships between owners and managers, and those existing between lenders and shareholders. This shows that the issue optimum capital structure is still controversial due to the benefits and costs associated with

leverage levels. There is no an agreeable level of capital structure among scholars or researchers that is said to be optimum, this depends on the company's own operations. In the light of these concerns it can be theoretically observed that capital structure decisions affect profitability of a company. For instance a highly geared company may obtain tax savings from its interest expenses which may improve profitability but at the same time it may increase agency costs which may decrease profitability.

Modigliani and Miller (1958) theory tried to hypothesize the relationship between capital structure and firm's value. It was stated that firm's value is independent of its capital structure. However it was assumed that the market is fully competitive market, there is no income tax, no bankruptcy costs, no agency costs and existence of information asymmetry between capital market participants. However, the application of this theory in practice is limited because its assumptions are unrealistic; hence it has not shown what the optimum capital structure is.

There are few studies that have been conducted in East Africa about the similar topic. Bundala (2012) assessed the capital structures of listed non-financial companies in Tanzania more specifically whether they practice pecking order theory, agency cost theory or trade-off theory. However the study did not show the impact of capital structure on performance, which creates a research gap that this study had managed to fill.

In the light of these issues, this study has empirically examined the influence of capital structure on profitability of the manufacturing companies listed in various East African stock markets. The study used various variables to represent capital structure, these include; Long Term Debt to Total Capitalization (LTDTC), Total Debt to

Equity (D/E), Short Term Debts to Total Assets (STDTA), Long Term Debts to Total Assets (LTDTA), Interest Cover (IC). Profitability was represented by two (2) key variables which are Return on Assets (ROA) Return on Equity (ROE) and Earnings per Share (EPS). The study also used Company Size (Total assets) and Sales Growth (SG) as the controlling variables. The study employed data from the annual reports of these companies in the period 2005 to 2012.

2. Literature Review

The topic of capital structure and profitability has been widely researched all over the world. A study by (Akintoye, 2008) assessing the sensitivity of company's performance to capital structure discovered that the performance indicators which are; profit before interest and taxes, earnings per share and dividend per share were significantly influenced by the company's capital structure. Cai and Zhang (2005) studied this matter and discovered that there is a strong relationship between gearing changes and return on equity.

A research conducted in companies listed in New York Exchange by (Forsberg and Ghosh, 2006) came up with the result that showed the negative relationship between capital structure and Return on Assets (ROA). It was further observed that these results have been contributed by the fact that companies listed in New York Exchange use 5% - 8% excess debts than other companies. The findings of this study were similar to those of (Rajan and Zingales, 1995); (Chiang & et al, 2002) and (Titman and Wessels, 1988) which all concluded that increase in gearing results into decreased profitability.

An analysis of capital structure by (Eriotis et al, 2002); (Zeitun and Tian, 2007) and (Ramachandra et al, 2008) also discovered a strong negative effect of leverage on performance. Dimitrov and Jain (2003) from their study narrated that if the firm has access to private information about future decline in profitability, they will increase leverage which is not a good sign and implies poor future performance.

However other studies observed a positive relationship between capital structure and profitability. Anil and Zenner (2005) found out that gearing is positively related with profitability; hence they proposed that those companies with large and stable profits should strive to make greater utilization of debt so as to take advantage of interest tax savings.

Abor (2005) evaluated the relationship between capital structure and performance; he evaluated this relationship using short term debts and long term debts separately. His findings revealed something important about short term and long term debts. It was observed that short term debts had a significant positive influence on profitability while long term debts had a significant negative relationship with profitability. Also a study by (Shubita and Alsawalhah, 2009) found a significantly negative relation between debts and profitability, hence concluding that profitable firms rely more on equity as their most crucial financing option.

Other studies showed different results from the above discussed researches, these include (Faramarzi, 2007); (Long and Malitz, 1986); (Asghari and et al, 2009) and (Fama and French, 1998) all of which found a very weak relationship between capital structure and profitability.

3. Research Methodology

3.1. Research design

This study evaluated the influence of capital structure on companies' profitability using a case study of manufacturing companies listed in various East African Stock exchanges. The study conducted the analysis of twelve (12) manufacturing companies listed in the East African stock exchanges in the period (2005-2012).

3.2. Sources of data

Data for this study was obtained from the annual reports of the chosen manufacturing companies and stock markets. These were accessed from the companies' official websites and those of stock exchanges for instance Nairobi Stock Exchange website. However some other stock exchanges for instance in Uganda do not provide the financial statements of listed companies in their websites hence limiting the use of more companies in the study.

3.3 Population of the study

The population of this study was comprised of listed manufacturing companies in various East African stock exchanges for the period (2005-2012). The population is comprised of manufacturing companies listed in Dar es Salaam Stock Exchange (DSE), Nairobi Stock Exchange (NSE) and Kampala Stock Exchange (KSE).

3.4 Study sample

All manufacturing companies listed in East African Stock exchanges with readily available data were selected to test the capital structure and profitability phenomenon. Some of the companies were not included in the sample because their financial statements could not be found after a reasonable effort was done to access them. Three (3) companies in the sample were manufacturing companies listed in Dar es Salaam Stock exchange (DSE) in Tanzania, a total of about six (6) manufacturing companies are listed at DSE but the annual reports of some of these companies could not be easily obtained. The remaining nine (9) companies included in the sample were those listed in Nairobi Stock Exchange (NSE) whose data were readily available. The data for manufacturing companies listed in the other East African countries i.e. Uganda could not be found because their stock markets have a small number of companies listed and the financial information for these companies is not available neither the companies' websites nor the stock exchange website.

East African countries use different currencies, due to the fact this study used Kenyan and Tanzanian companies, the Kenyan companies' financial information used to compute the variables needed to be translated to from Kenyan Shillings to Tanzanian shillings. The income statement items were converted using average exchange rate for the respective year between these two (2) currencies. The statement of financial position items were converted using the closing rate ruling at the balance sheet rate. This has been done in accordance to International Accounting Standard (IAS) 21 "*The effect of changes in foreign exchange rates*". The exchange rate statistics were obtained from the Bank of Tanzania (BoT) documentations.

3.5. Selection of Variables

The selection of variables was done after reviewing other studies of similar nature conducted in other countries. The variables that were used for analysis were adopted from studies such as (Amjed, 2007); (Umar et al, 2012) and (Shubita and alsawalhah, 2012). The selected variables and their computations were as follows;

Return on Assets (ROA) = PBIT/Total Assets

Return on Equity (ROE) = PAT/Total equity

Earnings per Share (EPS) = PAT – Non Controlling interests/weighted average number of ordinary shares outstanding at the end of the period

Long term debt to Total Capitalization = Long term debts/ (Long term debt + Equity)

Total Debt to equity = Total debt/Equity

Short term debts to total assets = Short term debts/Total assets

Long term debts to total assets = Long term debts/Total assets

Interest cover = Profit before interest and tax/Interest expense

Size = Natural logarithm of Total assets

Sales growth = $\frac{\text{Sales in the current period} - \text{Sales in the previous period}}{\text{Sales in the previous period}}$

e = error term

Multiple regression analysis was conducted to analyze the relationship between capital structure and profitability. The following regression models were estimated;

$Y_{ROA} = \beta_0 + \beta_1 LTDTC + \beta_2 TDE + \beta_3 STDTC + \beta_4 LTDTC + \beta_5 IC + \beta_6 Size + \beta_7 SG + e$

$Y_{ROE} = \beta_0 + \beta_1 LTDTC + \beta_2 TDE + \beta_3 STDTC + \beta_4 LTDTC + \beta_5 IC + \beta_6 Size + \beta_7 SG + e$

$Y_{EPS} = \beta_0 + \beta_1 LTDTC + \beta_2 TDE + \beta_3 STDTC + \beta_4 LTDTC + \beta_5 IC + \beta_6 Size + \beta_7 SG + e$

3.6 Study hypothesis

The following hypotheses were developed to evaluate the influence of capital structure on profitability;

H1 There is a significant relationship between total debt to total capitalization and profitability.

H2 There is a significant relationship between Short term debts to total assets and profitability.

H3 There is a significant relationship between long term debts to total assets and profitability.

H4 There is a significant relationship between debt to equity and profitability.

H5 There is a significant relationship between interest cover and profitability.

4. Empirical Results

4.1 Descriptive statistics

Descriptive statistics provide a summary of the mean, standard deviation, minimum and maximum figures of each selected variables.

Table 1. Summary of descriptive statistics for the study variables in the period (2005-2012)

	Minimum	Maximum	Mean	Std. Deviation
EPS	-189.1620	576.2280	162.541861	160.9556657
TDE	.1911	2.8719	.823726	.6029551
LTDTC	.0619	.6698	.220124	.1287184
STDTA	.0399	.8294	.231709	.1619174
LTDTA	.0174	.5922	.169561	.1160085
IC	-408.7533	1339.0048	70.158071	183.9963149
TA	23.4457	27.6462	25.624281	1.2265903
SG	-.2619	.4991	.125472	.1574333
ROA	-.4466	.5022	.217499	.1486586
ROCE	-.4651	.7805	.304212	.2122845
ROE	-.4438	.6895	.244049	.1844080

The descriptive statistics from table 1 above has shed some light on some critical issues about capital structure of listed manufacturing companies in East Africa stock exchanges. It can be observed from Table 1 that LTDTC, STDTA and LTDTA are 0.220124, 0.231709 and 0.169561 respectively. This indicates that East African listed companies are financed to the large extent by equity as compared to long term debts as the gearing is 0.220124, this may be less risky but it may also hamper the company to take advantage of external financing e.g. interest tax shield and create more discipline to the managers in the allocation of funds i.e. the funds are from external sources. The other thing that has been noted from table 1 is that the assets of the manufacturing companies in East Africa are financed approximately equally by both short term debts and long term debts. This is due to the fact that the mean STDTA and LTDTA are 0.220124 and 0.231709 respectively.

4.2 Multiple Regression Analysis

The multiple regression analysis was conducted three (3) times; this is due to the fact that there are three (3) dependent variables namely, ROA, ROE and EPS. The multiple regression analysis was conducted for each dependent variable in isolation but using the same independent variables namely LTDTC, LTDTA, STDTA, IC and TDE respectively. The study also used total assets and sales growth as control variables in estimating the relationship between capital structure and profitability.

4.2.1 Multiple regression analysis between ROA and independent variables

The results of the multiple regression analysis between ROA and independent variables are presented in the following tables

Table 2: Multiple regression analysis results for ROA and independent variables

Model		Standardized Coefficients Beta	t-statistic	Sig.		
(Constant)			-2.235	.028		
LTDTC		-1.599	-2.713	.008		
LTDTA		1.345	2.589	.012		
STDTA		.475	1.932	.057		
IC		.335	3.508	.001		
TDE		-.016	-.051	.960		
TA		.273	2.897	.005		
SG		.279	2.827	.006		
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson	
2	.665 ^b	.442	.389	.1161576	1.618	
Model	Sum of Squares	df	Mean Square	F	Sig.	
Regression	.792	7	.113	8.381	.000 ^c	
Residual	.998	74	.013			
Total	1.790	81				

The results from table 2 show that LTDTC, LTDTA and IC have a significant impact on profitability (ROA) due to the fact that they all have the sig (*p*) value of less than 0.05 significance level. However both TDE and STDTA have insignificant relationship with ROA. LTDTC is negatively related to ROA which shows that increase in gearing may decrease ROA. Both LTDTA and IC have positive correlation to ROA, which implies that East African manufacturing companies should finance their assets using long term debts and not short term debts because long term debts have a significant positive impact on profitability while short term debts have insignificant impact on profitability. These results were inconsistent with those of Zeitun and Tian (2007) who found a significant relationship between ROA and STDTA.

The R-square value is 0.442 or 44.2% which means that 44.2% of the variations in ROA are explained by the independent variables namely LTDTC, LTDTA, STDTA, TDE and IC. This result is satisfactory and shows that the multiple regression model is significant. This model is also significant because the significance level is 0.000 which is less than 0.05 The Durbin-Watson value is between 1 and 3 i.e. 1.618 hence it shows that there is no auto correlation problem.

Due to the fact that LTDTC or gearing is significantly negatively related to ROA i.e. -2.713, then capital structure is negatively related to profitability (ROA). These results are consistent with those of Chakraborty (2010) who also found a significant relationship between capital structure and ROA

4.2.2 Multiple regression analysis between ROE and independent variables

The results of the multiple regression analysis between ROE and the selected independent variables are presented in the table below;

Table 3: Multiple regression analysis results for ROE and independent variables

Model		Standardized Coefficients Beta		t-statistic	Sig.	
(Constant)				-3.596	.001	
LTDTC		-.935		-1.555	.124	
LTDTA		.761		1.438	.155	
STDTA		.544		2.170	.033	
IC		.280		2.875	.005	
TDE		-.044		-.137	.891	
TA		.388		4.038	.000	
SG		.283		2.817	.006	
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson	
2	.648 ^b	.420	.365	.1469206	1.688	
Model		Sum of Squares	df	Mean Square	F	Sig.
Regression		1.157	7	.165	7.658	.000 ^c
Residual		1.597	74	.022		
Total		2.755	81			

The results from table 3 show that only IC and STDTA have significant positive relationship with profitability (ROE) while the other independent variables namely LTDTA, LTDTC and TDE showed insignificant relationships. These results are contrary to those of (Shubita and Alsawalhah (2012) who found a significant negative relationship between short term debts and ROE.

The R-square value is 0.420 or 42%, this helps to explain the significance of the multiple regression model as 42% of the variations in ROE are explained the selected independent variables. The model is also significant because the significance level of 0.000 is below the threshold of 0.05 used as benchmark. Also there is no autocorrelation problem because the Durbin-Watson value of 1.688 is between (1) and three (3).

Due to the fact that there is no significant negative relationship between LTDTC or gearing with ROE then it can be stated that capital structure has an insignificant impact on profitability (ROE). These results are consistent with those of the study by (Saeedi & Mahmoodi, 2011), this study also found an insignificant relationship between capital structure and profitability (ROE).

4.2.3 Multiple regression analysis between EPS and independent variables

The results of the multiple regression analysis between EPS and the selected independent variables are as follows;

Table 4: Multiple regression analysis results for EPS and independent variables

Model		Standardized Coefficients Beta		t-statistic	Sig.	
(Constant)				-1.995	.050	
LTDTC		-.277		-.411	.682	
LTDTA		.056		.094	.925	
STDTA		-.074		-.263	.793	
IC		.264		2.416	.018	
TDE		.038		.105	.917	
TA		.275		2.556	.013	
SG		.217		1.930	.057	
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson	
2	.522 ^b	.272	.204	143.6456949	.932	
Model		Sum of Squares	df	Mean Square	F	Sig.
Regression		571522.492	7	81646.070	3.957	.001 ^c
Residual		1526922.340	74	20634.086		
Total		2098444.832	81			

The results from table 4 show that the relationships between EPS and (LTDTC, LTDTA, STDTA and TDE) are not significant while a significant relationship was only with IC. These results are consistent with those of Salteh et al (2009) who also found insignificant relationship between ROE and LTDTA, STDTA and TTDTA) though they are contrary to those of (Frank and Goyal, 2003) which showed a significant positive correlation between capital structure and profitability (EPS).

The independent variables reasonably cause variations in EPS by 0.272 or 27.2% which is the R-square value. Also there may be an auto correlation problem because the Durbin-Watson value is 0.932 which is below one (1), this indicates that some variables may be auto correlated which may affect the significance of the regression model. In general there is no significant relationship between EPS and LTDTC or gearing, so it can be generalized that gearing has an insignificant influence on profitability measured by EPS.

5. Conclusions

This study evaluates the influence of capital structure on the company's profitability. A sample of 12 manufacturing companies listed in the stock exchanges of East African countries was chosen. This choice was based on the availability and accessibility of the annual reports of these companies. The study employed the multiple regression analysis to statistically test for the relationship between capital structure and profitability. Profitability which is the dependent variable was expressed using three (3) measures namely; ROA, ROE and EPS while capital structure was represented by LTDTC, LTDTA, STDTA, TDE and IC. The analysis was done for each of the three (3) measures of profitability and it was found that capital structure has a significant negative relationship with ROA but weak relationship with ROE and EPS. These results are consistent to those of (Akbarpour and Aghabeygzadeh, 2011) and (Amjed, 2007) for the cases of relationship between capital structure and ROA.

It is therefore recommended that manufacturing companies in East Africa should use more long term debts as compared to short term debts to finance their investment in assets because it was statistically shown that LTDTA is significantly positively correlated with ROA. However the financial managers of these companies should make sure that they control the gearing ratio i.e. LTDTC because if long term debts are increased without the increase in equity then gearing will eventually increase which may will decrease profitability. This implies that manufacturing companies in East Africa should use more equity than long term debts to be profitable i.e. low gearing.

6. References

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