The Impact of Capital Structure Choice on Firms' Financial Performance: Evidence from Manufacturing PLCs in Tigrai Region, Ethiopia

Niway Ayalew Admassu

Department of Accounting and Finance, Arba Minch University, Arba Minch, Ethiopia

Abstract

The purpose of this study is to examine the impact of capital structure choice on firm's financial performance using seven years data from year 2006 to 2012 by taking evidence from 15 manufacturing PLCs in Tigray Region, Ethiopia. The study used two financial performance measures (Return on equity and return on assets). capital structure of companies were measured by leverage ratios of short term debt to total asset ratio, long term debt to total asset ratio, total debt to total asset ratio and also firm growth, firm size, tangibility, and liquidity were used as control variables. Two accounting-based measures of financial performance i.e, return on asset and return on equity were used as the dependent variables. Purposive sampling method was employed in order to collect data.. For the analysis of the collected data descriptive statistics and Random Effect panel data regression model have been employed. The study result revealed a significantly negative relationship between capital structure ratios (short term debt, long term debt, and total debt ratios) financial performance measured by Return on Assets and Return on Equity.

Keywords: Manufacturing Companies, Capital structure, financial performance

1.   Introduction

Capital structure is defined as the mix of debt and equity that the firm uses in its operation (Akhtar&Javed, 2012). In other words, it is the mix of company's long term debt, short term debt, and equity maintained by a firm. In today's highly dynamic, competitive and vibrant business environment, capital structure decision is crucial for any business organization. The decision is important because the organization need to maximize return to various stakeholders and also have an effect on the value of the firm and because of the impact such a decision has on a firm's ability to deal with its competitive environment. Besides, how an organization is financed is important to the managers of the firm because if inappropriate mix of finance is employed, the performance and the continued existence of the business firm may be severely affected (Abor, 2005).Ahmad, Hasan, &Roslan (2012) further explained that, capital structure decisions represent another important financial decision of a business firm apart from investment decision. It is important since it involves large amount of money and has long- term implications on the firms' goals and objectives.

Modigliani and Miller (1958) argue that, capital structure is independent of the value of the firm. In other words, the value of the business firm is determined by its earning power and the risk of its existing assets, and is independent of the way it chooses financing sources to its activities. But, their arguments were based on very restrictive assumptions. Following the works of Modigliani and Miller (1958 & 1963), a number of theories have also been advanced in finance to explain the capital structure of a firm. Static trade off theory assumes that, the tax-related benefits of debt such as interest tax-shield were offset by financial distress and the agency costs arising between creditors and owners. Pecking order theory of capital structure also stated that, the firms have a perfect hierarchy for financing decisions (Rasian& Kim, 2011). This theory advocates that, firms will initially rely on internally generated funds (retained earnings), and then they will turn to debt if additional funds are needed and finally they will issue equity to cover any remaining. Thus, according to pecking order theory, profitable firms that generate high earnings from its business activates are expected to use less debt capital than those who do not generate high earnings (Myers &Majluf, 1984).

Furthermore, based on the implications of capital structure theories, many researchers have studied the relationship between capital structure and firms' financial performance from different perspectives in different environments However, the researchers found mixed results. Hence, this lack of consensus on the relationship of capital structure and financial performance has initiated the need for this research. Besides; prior studies done largely in developed countries having developed secondary market and most of the research studies on capital structure have used data on listed companies to evaluate the relationship of capital structure and firm's financial performance. As Eldomiaty (2007) argue that, in emerging economies capital markets are less efficient, incomplete and suffers from higher level of information asymmetry than capital markets in developed countries. Particularly in Ethiopia, there is no stock exchange market and the financial sector is under developed and mostly companies can get source of finance from banks. Therefore, this environment of the market may cause financing decisions of a firm to be incomplete and subject to a considerable degree of irregularity.

Hence, this study provides further evidence to the capital structure theories related to Ethiopia, a

developing country that lacks a secondary capital market, by investigating the impact of capital structure choice on firms' financial performance of private limited manufacturing companies in Tigray Region, Ethiopia.

2.   Statement of the Problem

Today, capital structure decision is one of the most important decisions made by financial managers in this modern era. In addition, how an organization financed is a paramount importance to the managers of the firm because, if inappropriate mix of finance is employed, the performance of the business enterprise may be seriously affected (Abor, 2005). He also argues that, poor capital structure decisions may lead to a possible reduction/loss in the value of the firm.

Many researchers have studied the relationship between capital structure and firms' financial performance from different perspectives in different environments such as (Abu-Rub, 2012; Berger &Bonaccorsidipatti, 2006; Degryse, Goeij, &Kappert, 2010; Gill, Biger, &Mathur, 2011;Lindblom, Sandahl, &Sjogren, 2011; O'Brien, 2003; Rajan&Zingales, 1995). However, the researchers found mixed results. Besides; prior studies done largely in developed countries having developed secondary market and most of the research studies on capital structure have used data on listed companies to evaluate the relationship of capital structure and firm's financial performance. As Eldomiaty (2007) argue that, in emerging economies capital markets are less efficient, incomplete and suffers from higher level of information asymmetry than capital markets in developed countries. Particularly in Ethiopia, there is no stock exchange market and the financial sector is under developed and mostly companies can get source of finance from banks. Therefore, this environment of the market may cause financing decisions of a firm to be incomplete and subject to a considerable degree of irregularity.

Hence, this study provides further evidence to the capital structure theories related to Ethiopia, a developing country that lacks a secondary capital market, by investigating the impact of capital structure choice on firms' financial performance of private limited manufacturing companies in Tigray Region, Ethiopia.

3.   Literature review

The relationship between capital structure and firm value has been the subject of considerable debate, both theoretically and empirically. The hot debates concerning the issue of capital structure and firm performance has been started since the influential work of Miller and Modigliani (1958). According to Miller and Modigliani (1958) argument, the value of a firm is independent of capital structure. Following the works of Miller and Modigliani (1958) the numbers of different capital theories has emerged. Static trade off-theory states that the firm's capital structure decisions involve a tradeoff between the tax benefits of the debt and cost of financial distress and firms thus choose an optimal capital structure that trades off the marginal benefits and costs of debt (Myers, 1984). Agency cost theory initiated by Jensen and Meckling (1976), agency costs rise from separation of ownership and control and conflicts of interest between agents (managers), shareholders, and debt holders. According to this theory, an optimal capital structure can be obtained by trading off the agency cost of debt against the benefit of debt. Agency costs are costs due to conflicts of interest. The pecking order theory is developed by Myers and Majluf (1984) which stated that capital structure is determined by firm's desire to finance new investments, first internally generated funds, then with low-risk debt, and finally if all fails, with equity finance.

In addition, based on the implications of capital structure theories, many researchers have studied the relationship between capital structure and firms' financial performance from different perspectives in different environments and found mixed results. The study by Gill et al. (2012) who extended the work of Abor (2005) examined the relationship between capital structure and firm profitability by taking evidence from USA manufacturing and service industry firms. The findings of the study showed a positive relationship between short-term debt to total assets, total debt to total assets, and profitability of service industry and short term debt to total assets, long term debt to total assets, total debt to total assets and profitability of manufacturing industry.

Gansuwan and Onel (2012) tested the influence of capital structure on firm's performance of 174 non-financial Swedish firms. The results of the study revealed that there is a significant negative relationship between capital structure and firm performance of listed Swedish firms. Ebaid (2009) investigated the impact of capital structure choice on firm performance in Egypt and result of the study exposed that firm performance has weak to no relationship with capital structure choice. Abu-Rub (2012) also analyzed the impact of capital structure on firm performance of firms in Palestine,the results showed that firm's capital structure had a positive impact on the firm's performance measures, in both the accounting and market's measures

Kyereboah-Coleman (2007) also carried out study using data of microfinance institutions in Ghana and shows that higher leverage firm has higher profit efficiency. Hence, the study confirms that a positive relationship between total debt ratio and profitability. Luper and Isaac (2012) examined the impact of capital structure on the performance of 15 Nigerian manufacturing companies .The results show that there is a negative and insignificant relationship between short-term debt to total assets, long term debt to total assets and return on

asset and profit margin; while total debt to equity is positively related with return on asset and negatively related with profit margin. Short-term debt to total assets is significant using return on asset while long term debt to total assets is significant using profit margin. The work concludes that statistically, capital structure is not a major determinant of firm performance

Further, the firm's level of leverage, its debt maturity structure is also affects firm's performance and failure (Tian & Zeitun, 2007). Barclay and Smith (1995) investigated and provide evidence that large firms and low growth rate firms prefer to issue long-term debt. In addition, the study by Stohs and Mauer (1996) suggested that less risky and larger firms usually use more long-term debt. The finding of this study revealed that debt maturity is negatively related to the firm's risk, corporate tax, and earnings. In the same token, the debt structure choice could have an impact on both firm performance and failure risk. Therefore, it is important to test the relationship between capital structure, debt structure and the financial performance of the firm to make sound capital structure decisions.

In summary, there is no single theory of debt-equity choice and empirical studies have given inconclusive results regarding the capital structure choice and its effect on firms' performance. Thus, this study attempts to seek the extent of debt usage and differentiate which debt level give effects to the firms' financial performance.

4.   Conceptual Frame work

From the theoretical frameworks and review of previous empirical studies discussed above, the diagrammatical representation of the conceptual framework for the impact of capital structure on firms' financial performance is structured as follows:
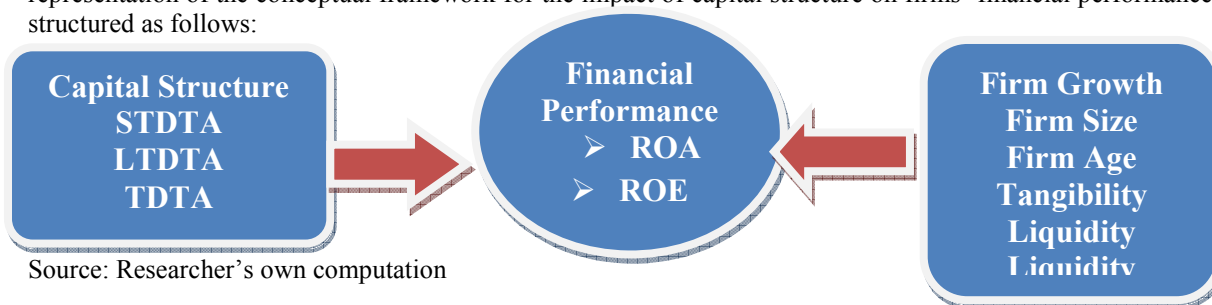
Source: Researcher's own computation

5.   Methodology

This study is an explanatory research type and its design is x-post design because secondary data were used to examine the impact of capital structure on firm's financial performance. According to (Gebregziabher, 2009), research design that plans to use past data, instead of experimental data, is known as ex-post design. In examining the impact of capital structure choice on firms' financial performance, a panel data from 15 private limited manufacturing companies drawn from Tigrai Region, Ethiopia were used. These 15 companies are purposely selected due to data availability and accessibility. It is because of the following requirements. The first criterion that was used to select sample units to be included in the study is holding a complete seven years financial statement data. Therefore, firms with missing data for a period covering seven years from 2006 to 2012 are also excluded from the study. Similarly, firms that ceased operation at any point during the period of study were excluded.

5.1. Data Source

In this study, the data required for the purpose of analysis was only obtained from secondary sources, financial statements including balance sheet and income statement of sample companies for a period of six years (2007-2012). To increase the reliability of the data used in the study and in order to avoid possible distortion of the data, and to get the necessary data at one place audited financial statements of the companies that were submitted for income tax purpose from Ethiopian Revenue and Customs Authority (ERCA) were collected and used.

5.2. Variables

Dependent Variables: Dependent variables are variables that are used to measure the financial performance of firms. There is no single ideal measure of long-term firm performance (Tian & Zeitun, 2007). Market based measures are viewed as somewhat more robust measure of performance given that they are not subject to direct manipulation by management which is the case for accounting measure of performance (Tian & Zeitun, 2007). However, the absence of secondary market in Ethiopia makes using market based measure of performance impossible. Therefore, only accounting based measures of financial performance were used in this study as dependent variables which are, return on assets (ROA), and return on equity (ROE).

Independent Variables: Similar to previous literatures Abor (2005 and 2007); Ebaid (2009) ;Ahmed et al.(2012); Zeitun & Tian (2007) capital structure was measured in this study by three most important measures

of capital structure that are short term debt to total assets ratio, long term debt to total assets ratio, and total debt to total assets ratio.

　　　Firm size, firm growth rate, firm age, asset tangibility, and liquidity are included as a control variable in this study as used in (Abor,2005; Adekunle & Sunday ,2010; Gansuwan & Onel, 2012;Tariku,2012; Zeitun & Tian,2007).

　　　The panel character of the data collected allows the researcher to use a panel data methodology which combines the features of both time-series and cross-sectional data. Therefore, the random-effect regression model of panel data has been selected based on result of model specification tests in this study. In connection to this, the general model for this study, as is mostly found in the existing literature is represented by:

$ROE\ it = \alpha_{it} + \beta 1\ STDTA_{it} + \beta 2 LTDTA_{it} + \beta 3 GROW_{it} + \beta 4\ SIZE_{it} + \beta 5\ AGE_{it} + \beta 6\ TAN_{it} + \beta 7\ LIQ_{it} + \varepsilon it$　　　(1)

$ROE\ it = \alpha_{it} + \beta 1 TDTA it + \beta 2 GROW_{it} + \beta 3\ SIZE_{it} + \beta 4\ AGE_{it} + \beta 5\ TAN_{it} + \beta 6 LIQ_{it} + \varepsilon it$　　　　　(2)

Where:

$ROA it:$ Return on asset of firm i in time t

$ROE it$: Return on asset of firm i in time t

$STDTA it$:　Short term debt to total assets ratio of firm i in time t

$LTDTA\ it$: Long term debt to total assets ratio of firm i in time t

$TDTA it$:　Total debt to total assets ratio of firm i in time t

$GROW it$: Growth of firm i in time t

$SIZE\ it$: Size of firm i in time t

$AGE it$: Age of firm i in time t

$TAN it$:Asset tangibility of firm i in time t

$LIQ it$: Liquidity of the firm i in time t

6.　　　Research Hypotheses

To achieve the objectives of this study, the following three literature driven hypotheses were used.

Hypothesis 1: There is a significant negative relationship between short term debt and financial performance.

Hypothesis 2: There is a significant negative relationship between long term debt and financial performance.

Hypothesis 3: There is a significant negative relationship between total debt and financial performance.

7.　　　Regression Results and Discussion

Table1: Descriptive statistics of the study variables

VAR.	Obs	Mean	Std. Dev.	Min	Max
ROA	90	0.0197038	0.1509207	-0.3708928	0.5107852
ROE	90	0.0448187	0.3184424	-0.8992734	0.8770193
STDTA	90	0.2821271	0.2072467	0.0055488	0.8990915
LTDTA	90	0.2579997	0.2486858	0	0.6241167
TDTA	90	0.5401268	0.3660065	0.0454775	1.816819
GROW	90	0.2321651	0.4950038	-0.3519399	2.541585
SIZE	90	16.95228	1.854175	12.36764	21.36601
AGE	90	11.7	4.981877	3	21
TAN	90	0.5208331	0.243662	0.0023126	0.9858459
LIQ	90	2.848276	2.958199	0.0728066	18.68998

　　　As it's shown in Table 1 above, the mean value of total debt to total assets ratio (TDTA) is 54 percent. This result suggests that about 54 percent of total assets of are financed by debt. The average ratio of short term debt to total assets ratio (STDTA) and ratio of long term debt to total assets (LTDTA) are 28.2 and 25.8 percent respectively. These results suggest that sample manufacturing private limited companies utilized relatively more STD for financing their operations compared with LTD. Hence, this relative utilization of more STD by sample manufacturing firms rather than LTD could be a result of the absence of an established public debt market, so mostly the long-term source of financing available to sampled manufacturing private limited companies is direct borrowing from banks. Further, the maximum and minimum value of TDTA ratios is 182 and 4.5 percent respectively. This result shows that all sample manufacturing private limited companies used debt finance in their capital structure and the existence of highly levered firms in the sample. In addition, the maximum and minimum value of LTDTA ratio is 62.4 and 0 percent respectively; while the maximum and minimum value of STDTA ratio is 89.91 and 0.6 percent respectively. These results indicate that, all sample firms utilized short term finance; however, there is a firm in sample that did not utilize long term debt finance. This may be due to firms may prefer relatively cheapest sources of finance (i.e. short term finance) or due to restrictive requirements of banks to give long term loan for firms or lack of alternative debt capital market.

　　　In order to examine the impact of capital structure on sample manufacturing firm's financial

performance four panel data regression models were estimated. The regression analysis enables the researcher to empirically test the proposed hypothesis and to achieve the research objective. Random-effect panel data regression models have been run in order to examine the impact of explanatory variables on financial performance measures.

Table 2: Random Effect Regression Analysis for Capital Structure and Financial Performance Measured by ROA

	Financial Performance-ROA							
	Regression Model 1				Regression Model 2			
Variable	Coef.	Std.Err	p-value	t-value	Coef.	Std.Err	p-value	t-value
STDTA	-0.1459836	0.0650721	0.025**	-2.24				
LTDTA	-0.1640296	0.0528881	0.002*	-3.10				
TDTA					-0.1596481	0.0443232	0.000*	-3.60
GROW	0.002092	0 .0156905	0.894	0.13	0.0020627	0.0156474	0.895	0.13
SIZE	0 .0490183	0 .0118039	0.000*	4.15	0.0492452	0.0116314	0.000*	4.23
AGE	-0.008458	0 .003689	0.022**	-2.29	-0.0087235	0.003614	0.016**	-2.41
TAN	0.0922338	0.0624002	0.139	1.48	0 .0854933	0.0559721	0.127	1.53
LIQ	0.0019029	0.0624002	0.629	0.48	0.0013923	0.0034696	0.688	0.40
-Cons	-0.6827484	0.0039435	0.000	-3.51	-0.6757905	0.1891548	0.000	-3.57
No of obs. 90 **Over all R² 0.5425** **chi2 25.99** **Prob >(chi2) 0.0005**					No of obs. 90 Over all R² 0.5483 chi2 27.14 Prob >(chi2) 0.0001			

Regression Model 1: ROAit= $α_{it}$ + β1 STDTA$_{it}$ + β2LTDTA$_{it}$ + β3GROW$_{it}$ + β4 SIZE$_{it}$ + β5 AGE$_{it}$ + β6 TAN$_{it}$ +β7 LIQ$_{it}$ + εit

Regression Model 1: ROAit= $α_{it}$ + β1TDTA$_{it}$ + β2GROW$_{it}$ + β3 SIZE$_{it}$ + β4 AGE$_{it}$ + β5 TAN$_{it}$ +β6 LIQ$_{it}$ + εit

Note: * Significant at 1% level; ** Significant at 5% level and *** Significant at 10% level

Table: 3. Random Effect Regression Analysis for Capital Structure and Financial Performance Measured by ROE

	Financial Performance–ROE							
	Regression Model 1				Regression Model 2			
Variable	Coef.	Std.Err	p-value	t-value	Coef.	Std.Err	p-value	t-value
STDTA	-0.4149496	0.1582551	0.009*	-2.62				
LTDTA	-0.2716789	0.1274186	0.033**	-2.13				
TDTA					-0.334665	0.1030282	0.001*	-3.25
GROW	0.0372372	0.0402852	0.355	0.92	0.0397312	0.0404028	0.325	0.98
SIZE	0.1110682	0.0262488	0.000*	4.23	0.1111961	0.0254903	0.000*	4.36
AGE	-0.0287231	0.0085053	0.001*	-3.38	-0.0285929	0.0082858	0.001*	-3.45
TAN	0.0402478	0.1512491	0.790	0.27	0.0867351	0.1346265	0.519	0.64
LIQ	0.0000115	0.0100023	0.999	0.00	0.0031369	0.0088312	0.722	0.36
-Cons	-1.344458	0.4343249	0.002	-3.10	-1.388242	0.4135519	0.001	-3.36
No of obs. 90 **Over all R² 0.5276** **chi2 31.46** **Prob >(chi2) 0.0001**					No of obs. 90 Over all R² 0.5294 chi2 33.18 Prob >(chi2) 0.0000			

Regression Model 1: ROEit= $α_{it}$ + β1 STDTA$_{it}$ + β2LTDTA$_{it}$ + β3GROW$_{it}$ + β4 SIZE$_{it}$ + β5 AGE$_{it}$ + β6 TAN$_{it}$ +β7 LIQ$_{it}$ + εit

Regression Model 1: ROEit= $α_{it}$ + β1TDTA$_{it}$ + β2GROW$_{it}$ + β3 SIZE$_{it}$ + β4 AGE$_{it}$ + β5 TAN$_{it}$ +β6 LIQ$_{it}$ + εit

Note: * Significant at 1% level; ** Significant at 5% level and *** Significant at 10% level

Table 2 and3 above presents the results of the Random Effect Regression Models (RERM) (Model 1and

Model 2) that have been estimated to examine the impact of capital structure on the financial performance (ROA and ROE) of selected manufacturing companies controlling the effect of firm specific variables.

Regression model 1 tests the relationship between capital structure measured by ratios of STD to total assets and LTD to total assets and firms' financial performance measured by return on assets (ROA). On the other hand, regression model 2 estimated the relationship between capital structure measured by total debt to total assets ratio (TDTA) and firms' financial performance measured by return on assets (ROA). The overall explanatory powers of the two regression models (Model 1 and Model 2) are 54.25 percent and 54.83 percent respectively. This is a signal that the variability of the variables used in Model 1 and Model 2 causes 54.25 percent and 54.83 percent of the changes in dependent variables respectively. The P- values for model 1 and for model 2 prove the validity of the estimated models. Also, the coefficients are statistically significant at 1 percent level of significance.

As revealed in table 2 above, the result of regression model 1 indicates a significant negative relationship between capital structure and financial performance measured, which suggests that an increase in debt associated with decrease in financial performance (ROA and ROE). This result also explained by the fact that long-term debts are relatively more expensive, and therefore employing high proportions of them could lead to low profitability. This result is consistent with the findings of previous studies such as (Abor, 2007; Gansuwan & Onel; Luper & Isaac, 2012; Zeitun & Tian, 2007). However, the negative and significant relationship of STDTA does not support Abor's (2005) argument that short term debt increases a firm's performance, which could be due to relative lower cost and low interest rate.

8.   Summary and Conclusion

The capital structure decision is important for any business organization. The decision is important because of the need to maximize returns to various organizational stakeholders, and also because of the impact such a decision has on an organization's ability to deal with its competitive and dynamic business environment. The results of the study revealed on average 54 percent of sample manufacturing firms' assets are financed by debt during the study period. From this result the researcher can conclude that sample manufacturing firms utilized more debt capital relative to equity capital during the study period. Moreover, the descriptive result shows out of this 54 percent total debt ratio, 28.2 percent financed by short term liabilities/debt and the remaining 25.8 percent financed by long term debt. This result indicates sample manufacturing firms utilized relatively more short term debt finance than long term debt finance for financing their activities during the study period. This result also provide further evidence that due to lack of developed long term debt market in Ethiopia, sample firms utilized relatively more short term debt for financing their operations. In Ethiopia the only source of long term debt finance can obtained from banks therefore, it's difficult to get alternative long term finance sources.

In addition, the result shows negative and significant relationship between all capital structures variables (short term debt to total assets, long term debt to total assets, and total debt o total assets ratios) and two financial performance measures (return on assets and return on equity).

The result proves that with the increase in leverage negatively affects the performance of firms'. The outcome provides evidence in support of the pecking order theory of capital structure which suggests that profitable firms initially rely on less costly internally generated funds before looking out for external finances. It is therefore, expected that highly profitable manufacturing firms will require less debt finance. Moreover, it may provide support for the proposition that due to agency conflicts; companies use more leverage, thus affecting their performance negatively.

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