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Financing Policy of Ethiopian Manufacturing Firms

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FINANCING POLICY OF ETHIOPIAN MANUFACTURING FIRMS

Strictly as per the compliance and regulations of:



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Hamdu Kedir Mohammed^α, Sabir Fayso Abdullahi^σ & Yonas Mekonnen Wetere^ρ

Abstract- The aim of this study is to explore factors that affect the capital structure of manufacturing firms with the absence of secondary market and to investigate whether the capital structure models derived from Western settings provide some convincing explanation for capital structure decisions of Ethiopian firms. Theories of capital structure are reviewed in order to formulate testable factors concerning the determinants of capital structure of the manufacturing firms. The investigation is performed using panel data procedures for a sample of 32 firms during 2006-2010 G.C. Profitability as measured by return on asset, tangibility and the business risk level of firm are found to be significant determinant factors of capital structure. The findings of this study are consistent with the predictions of the pecking-order followed by agency theory which shows that capital structure models derived from Western settings does provide some help in understanding the financing behavior of firms in Ethiopia.

Keywords: capital structure, pecking order, agency cost theories, business risk.

I. INTRODUCTION

Any organization needs a capital for its establishment and expansion, and that capital can come from debt or equity. Debt has an advantage that interest paid is tax deductible, which lowers debt's effective cost and debt holders get a fixed return, so stockholders do not have to share their profits if the business is highly successful. However, debt has its own disadvantage that the higher the debt, the higher its cost of debt and equity; and if the company fall on hard time and fall to pay its interest, its shareholders will have to make up the shortfall, and if not bankruptcy will result. Too much debt can keep the company from getting success and wipe out the stockholders (Booth et al., 2001).

A firm's mix of financing method is called its capital structure. In other way, it is the proportion of firm value financed with debt, the leverage ratio. The term capital structure refers to the mix of different types of securities (Long-term debt, common stock, preferred stock) issued by a company to finance its assets.

A company is said to be unlevered as long as it has no debt, while a firm with debt in its capital structure is said to be leveraged. Note that there exist two major leverage terms: operational leverage and financial leverage. While operational leverage is related to a company's fixed operating costs, financial leverage is

related to fixed debt costs. Loosely speaking, operating leverage increases the business (or the operating) risk, while financial leverage increases the financial risk. Total leverage is then given by a firm's use of both fixed operating costs and debt costs, implying that a firm's total risk equals business risk plus financial risk. In this study of capital structure and its determinants, with leverage, it means financial leverage, or its synonym gearing (Chandra Sekhar Mishra, 2011).

Capital structure decision is strongly correlated with the debt to equity mix of the firm. An alert in the capital structure mix has strong effect on the debt to equity structure of the firm, which ultimately affects the value of the firm. It can be understood that capital structure decision put footprint on cost of capital (cost of debt and Equity), Net profit margin (profitability), earning per share, and dividend payout ratio and liquidity statues of the firm. Jointly these variables and other variables determine the value of the firm (ibid).

II. REVIEW OF LITERATURE

A question whether capital structure affects the value of a firm or not has been confusing the mind of both finance managers and academicians for so many years, especially after the publication of findings by Franco Modigliani and Merton Miller in 1958. Their capital structure irrelevance theory is perfectly valid only in a perfect capital market, which is not existed yet. There is no commonly accepted model as to what combination of debt and equity maximize the value of the firm till now. Modigliani and Miller proved that the choice between debt and equity financing has no material effects on the firm value, therefore, management of a firm should stop worrying about the proportion of debt and equity securities because in perfect capital markets any combination of debt and equity securities is as good as another. However, Modigliani and Miller's debt irrelevance theorem is based on restrictive assumptions which do not hold in reality, when these assumptions are removed then choice of capital structure becomes an important value-determining factor (Chandra Sekhar Mishra, 2011). For instance, considering taxes in their analysis Modigliani and Miller (1963) proposed that firms should use as much debt as possible due to tax-deductible interest payments. Moreover, the value of a levered firm exceeds that of an unlevered firm by an amount equal to the present value of the tax savings that arise from the use

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of debt. Following on from the pioneering work of Modigliani and Miller (1958) on capital structure, three conflicting theories of capital structure have been developed. They are namely: static trade-off, pecking order, and agency cost theories.

Decisions concerning capital structure are vital for every business organization. In the corporate form of business, generally it is the job of the management to make capital structure decisions in a way that the firm value is maximized. However, maximization of firm value is not an easy job because it involves the selection of debt and equity securities in a balanced proportion keeping in view of different costs and benefits coupled with these securities. A wrong decision in the selection process of securities may lead the firm to financial distress and eventually to bankruptcy. The relationship between capital structure decisions and firm value has been extensively investigated in the past few decades. Over the years, alternative capital structure theories have been developed in order to determine the optimal capital structure. Despite the theoretical appeal of capital structure, a specific methodology has not been realized yet, which managers can use in order to determine an optimal debt level. This may be due to the fact that theories concerning capital structure differ in their relative emphasis; for instance, the trade-off theory emphasizes taxes, the pecking order theory emphasizes differences in information, and the free cash flow theory emphasizes agency costs. However, these theories provide some help in understanding the financing behavior of firms as well as in identifying the potential factors that affect the capital structure.

The empirical literature on capital structure choice is vast, mainly referring to industrialized countries (Myers, 1977; Titman and Wessels, 1988; Rajan and Zingales, 1995; Wald, 1999) and a few developing countries (Booth et al., 2001). However, findings of these empirical studies do not lead to a consensus with regard to the significant determinants of capital structure. This may be because of variations in the use of long-term versus short-term debt or because of institutional differences that exist between developed and developing countries. Over the past years, much of the capital structure research has advanced theoretical models to explain the capital structure pattern and also to provide empirical evidence concerning whether the theoretical models have explanatory power when applied to the real business world.

The focus of both academic research and practical financial analysis has been on those large corporations with has publicly traded debt and equity securities that dominate economic life throughout the developed world.

Even if, the majority of the capital structure research has focused on understanding the factors that influence corporate financing behavior of the U.S. firms, capital structure research has become gradually more

internationalized in recent years, which provides researchers the opportunity to make cross-sectional comparisons between countries and between various industries around the world. In particular, Rajan and Zingales (1995) applied the capital structure models derived from a U.S. setting to firms in the G-7 countries and found that the variables that were found to have association with leverage in the United States were also associated with leverage of firms in other G-7 countries. While the majority of the research results has been derived from the experience of developed economies that have a lot of institutional similarities, little effort has been done to advance our knowledge of capital structure within developing countries that have different institutional structures (Rajan and Zingales, 1995; Chui et al., 2002; Wald, 1999; Ozkan, 2001). Booth et al. (2001) provided the first empirical study to test the explanatory power of capital structure models in developing countries. This study used 10 developing countries to evaluate whether capital structure theory was portable across countries with different institutional structures. They provided evidence that firms' capital choice decisions in developing countries were affected by the same variables as they were in developed countries. On the other hand, there were persistent differences of institutional structure across countries indicating that specific country factors were at work. Similarly, Booth et al. (2001) selected the countries that operating in a market orientated economic system, which bore many similarities to developed countries. It is interesting and important to know how capital structure theories work in a transitional economy environment within which institutional structures differ not only from developed countries but also from developing economies.

The issue of capital structure is an important strategic financing decision that firms have to make. It is therefore important for policy to be directed at improving the information environment. Most study regarding determinants of capital structure focused on developed countries.

The business environment of these countries is different from the developing one on the variables that includes economic level, politics, capital market existence, investment flow, business policy, demographics, culture and corporate governance. Because of these differences, the determinant factors of developed nation's capital structure cannot be directly replicable on the developing nations. Thus, it demands to study these determinant factors separately on the context of developing countries business environment dynamics. Specifically, this research focuses on one of developing country, Ethiopia, with respect to identifying the determinants of capital structure of the Large Privet Manufacturing Firms. In developing countries like Ethiopia, there is no sufficient research conducted

regarding this controversial issue of finance (i.e., the determinants of capital structure).

III. RESEARCH QUESTION

- ✓ Which factors, those tested in the context of developed countries, affects the capital structure of Ethiopian large private manufacturing firms?
- ✓ How Ethiopian large private manufacturing firms' managers *behave* in line with different capital structure theories with the absence of efficient capital market?

IV. OBJECTIVES OF THE STUDY

The following are specific objectives of the study:

- a) To investigate the possible impact of eight variables (return on asset, operating margin, size, tangibility, liquidity, non-debt tax shield, growth and earnings volatility) on the Capital Structure of Ethiopian Firms.
- b) Identifying factors that really determine the Capital Structure of Ethiopian Firms.
- c) So as to answer the question that which Capital Structure Theory can more explains the financing mix decisions of Ethiopian firm managers.

V. STUDY VARIABLE

According to the research objectives and statement of the problem this study has set the variables that used in this study and there measurements which are largely adapted from existing literature. This will help to show to what extent and which capital structure theory explains the financing mix of Ethiopian managers in the context of Large Tax Payer Manufacturing Firms. The dependent variable is Total Leverage and the independents are Profitability (Return on Asset and Operating Margin), Size, Tangibility, Non-debt tax shields, Growth, Earning volatility (Business Risk) and Liquidity.

Table 1 : Measurement of variables

Research variables	Abbreviated as:-	Measurement of variables
Total Debt Ratio	TDR	(Total Debt)divided by (Total Asset)
Return on Asset	ROA	(Net income) divided by (Total Asset)
Operating margin	OM	(EBIT) divided by (Sales)
Tangibility	TANG	(Fixed Asset)divided by (Total Asset)
Non-debt tax shields	NDTS	(Depreciation)divided by (Total Asset)
Earning Volatility	VOL	Standard deviation of Return on Asset
Size	SIZE	Natural logarithm of Total Asset

Growth	GROW	Percentage growth of Total Asset
Liquidity	LIQU	(Current Asset) divided by (Current Liability)
<i>Source: Different empirical studies, literatures and capital structure theories.</i>		

VI. MATERIALS AND METHODS

a) Sampling Design

In order to have some representative sample for this study, the researchers used different stages of sample restriction criterion. First, to be included in the sample frame the firm must be large tax payer. According to Ethiopian Revenue and Customs Authority (ERCA) definition, large tax payers are those firms that include all banks, insurance companies and others with annual turnover of 15 million birr (USD 775,274) and above.

Firms with incomplete financial statement or no financial statement for the study period covering from 2006 up to 2010 G.C. where excluded from the sample frame. The data belonging to the year 2005 G.C used only to calculate the variable growth for the year 2006 G.C (i.e., percentage changes in total asset) and the value of standard deviation (Volatility measure) of this year.

The sample firms are determined using the sample size determination formula that developed by Cochran (1977). During the time of data collections, 46 firms where recorded by the Ethiopian Revenue and Custom Authority as Large Private Limited Manufacturing Company. Out of them only 36 firms are workable populations for this study purpose. Let the margin of error be 5% which balances type one and type two errors with 0.5 proportion of success that gives the maximum possible sample size given the amount of population (Cochran, 1977). The value of Z-score at 5% margin of error is 1.96, taking this information the optimum sample size is around 32 firms.

b) Data Source and Collection Method

The data used in this study are extracted from Ethiopia Revenue and Customs Authority (ERCA) that is compiled for the purpose of collecting tax from large tax payer companies. The location of the authority is at Addis Ababa (Capital City of Ethiopia) main branch. The collected data is the audited financial statement submitted by the tax payers for this authority. It covers a time period from 2007 through 2011G.C were the 2007 data used only as a base year so as to calculate asset growth rate and business risk.

c) Panel Data Model

Panel regression model used for the estimation of the parameters of the study variables. The panel regression equation differs from a regular time-series or cross-section regression by the double subscript

attached to each variable. The general form of the model can be specified as:

$$TDR_{it} = \alpha_0 + \sum \beta_k X_{itk} + \varepsilon_{it} \quad (1)$$

Where;

k = Number of Parameters to be estimated

α_0 = Common y-intercept

i = A Particular Firm

t = Number of Time Period for Firm i

β = Coefficient of the independent variable

X = Independent Variable

TDR_{it} = Total debt ratio of firm i at time t

The subscript i denoting the cross-sectional dimension and t representing the time series dimension. The left-hand variables represent the dependent variables in the model, which are the firms' debt ratio. The symbol of X_{itk} contains the set of explanatory variables in the estimation model; α_0 is the constant and β_k represents the coefficients of the parameters. The regression model employed for this study is also in line with what was used in previous studies, with some modifications for the analysis. The model for the empirical investigation is therefore given as follows:

$$TDR_{it} = \beta_0 + \beta_1 ROA_{it1} + \beta_2 OM_{it2} + \beta_3 SIZE_{3it} + \beta_4 TANG_{4it} + \beta_5 NDTs_{5it} + \beta_6 GROW_{6it} + \beta_7 VOL_{7it} + \beta_8 LIQU_{8it} + \varepsilon_{it} \quad (2)$$

i. Testing the CLRM assumption

The linearity of the parameter is assumed since the model applies linear ordinary least square (OLS). The numbers and types of variables are specified from the theory and empirical studies. The objective of the model is to predict the strength and direction of association among the independent and dependent variables.

ii. Normality of the error term

One assumption of classical linear regression model (CLRM) is the normal distribution of the residual part of the model. This assumption has to be tested and pass the test to use the data for further inference.

Table 2 : Residual Normality Test of the Model

Shapiro-Wilk W test for normal data					
Variable	Obs	W	V	z	Prob>z
TDR	160	0.75385	30.272	7.757	0.0000

Source: Financial statements of large manufacturing sample firms from 2007-2011 G.C.

The result of table 2 states the normality test of the residual part of the model. The P-value of zero predicts the residual of the model is not normally

distributed that violates the CLRM assumption. However, the central limit theorem (CLT) assumes that distribution of error terms becomes normal as the sample size is large. This model used large sample size and, therefore, no need of worry about the normality of the error term.

iii. Heteroskedasticity

The homoscedasticity assumption states that the variance (var. (ε_{it})) of the unobservable error (ε_{it}), conditional on the explanatory variables, held constant. Homoscedasticity violated whenever the variance of the unobservable changes across different segments of the population, which are determined by the different values of the explanatory variables.

Table 3 : Breusch-Pagan/Cook-Weisberg test for heteroskedasticity

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	
Ho: Constant variance	chi2(1) = 0.98
Variables: fitted values of TDR	Prob> chi2 = 0.3231

Source: Financial statements of large manufacturing sample firms from 2007-2011 G.C.

The result of table3 indicated that the hypothesis of constant variance cannot be rejected at 5% significance since the p-value is large which is greater than 0.025 (5%/2) of two tail. Therefore, the variances of error terms are statistically significantly constant from one variable to the other. Thus, there is no heteroskedasticity problem exhibited in this study.

iv. Multicollinearity

The term multicollinearity indicates the existence of association between two or more of explanatory variables. This association level might be nil that can be ignored or high that significantly affects the estimation of the parameters. If multicollinearity is perfect, the regression coefficients of the independent variables are undetermined and their standard errors are immeasurable. If multicollinearity is less than perfect, the regression coefficients, although determinate, possess large standard errors, which mean the coefficients cannot be estimated with great precision or accuracy (Gujarati 2003). This problem can be tested using variance inflation factor (VIF) and pair-wise correlations.

v. Pearson correlation coefficient matrix

In table 4 if there exist high value of coefficient (more than 0.8), it indicates the existence of more collinearity between the variables (Gujarati 2003). The more collinearity between the explanatory variables exists, the more multicollinearity becomes the problem and vice versa.

Table 4 : Pearson correlation coefficient matrix

Variables	TDR NDTS	ROA GROW	OM VOL	SIZE LIQU	TANG	
TDR	1					
ROA	-0.5649	1				
OM	0.0768	0.1695	1			
SIZE	-0.2412	0.1279	0.2017	1		
TANG	0.5942	-0.6612	0.0019	-0.2539	1	
NDTS	0.2523	-0.3226	-0.2317	-0.4547	0.3823	1
GROW	-0.0975	0.0386	0.0151	0.2144	0.0929	0.08611
VOL	0.3438	-0.5646	0.0446	0.136	0.4272	
LIQU	0.1925	0.4383	1			
	0.0143	-0.0014	-0.0689	0.215	0.0472	-
	0.106	-0.0213	-0.0316	1		

Source: Financial statements of large manufacturing sample firms from 2007-2011 G.C.

The only coefficient above 65% is that exist between ROA and TANG. Majority of them are below 0.50 and it can be confident to say there is no significant multicollinearity since any of them are above the conventional 0.80.

vi. Variance inflation factor (VIF) Test

The variance inflation factor, VIF, is a measure of the reciprocal of the complement of the inter-correlation among the predictor variables: $VIF = 1/(1 - r^2)$; where r^2 is the multiple correlations between the predictor variable and the other predictors. VIF values greater than 10 indicate significant problem of multicollinearity exist.

Table 5 : Variance Inflation Factor (VIF) Test

Variable	VIF	1/VIF
ROA	2.49	0.401199
VOL	2.41	0.415739
TANG	2.08	0.480952
GROW	1.52	0.657058
SIZE	1.51	0.663364
NDTS	1.5	0.668379
OM	1.19	0.84158
LIQU	1.07	0.931621
Mean VIF	1.72	

Source: Financial statements of large manufacturing sample firms from 2007-2011 G.C.

Referring table 5, there is no VIF score above value 10 suggesting that there is no significant collinearity among independent variables. The two tests made above verify the absence of multicollinearity since there is no exaggerated correlation and VIF value more than 10.

vii. Model Specification Test

On the basis of theory or introspection and prior empirical work, the model developer believe to capture the essence of the subject under study. Then, the researcher subjects the model to empirical testing. After the results obtained, it is possible to begin the examination, keeping in mind the criteria of a good model. It is at this stage that we come to know if the chosen model is adequate.

Model specification error can occur when one or more relevant variables are omitted from the model. The consequence of omitted variable is that the usual confidence interval and hypothesis-testing procedures are likely to give misleading conclusions about the statistical significance of the estimated parameters. As another consequence, the forecasts based on the incorrect model and the forecast (confidence) intervals will be unreliable (Gujarati 2003).

viii. Ramsey's RESET Test

Ramsey has proposed a general test of specification error called RESET (regression specification error test). This helps to test whether the model omitted relevant variables. In this model, Ramsey RESET tests the null hypothesis that states model has no omitted variables using the powers of the fitted values of TDR.

Table 6 : Omitted Variable Test using powers of the fitted values of TDR

Ramsey RESET test using powers of the fitted values of TDR	
Ho: model has no omitted variables	
F(3, 148) =	1.24
Prob> F =	0.3061

Source: Financial statements of large manufacturing sample firms from 2007-2011 G.C.

As the rule of the test, the null hypothesis is rejected with small P-value. From table 6, the null cannot be rejected at 5 percent level of significance since P-value of 0.3061 is statistically large. Therefore, it is concluded that the model has no omitted variable problem. All relevant variables are included to fit the model and safe to use it for further statistical inference.

ix. Model Selection

Model selection in panel data set involves the problem of identifying whether fixed or random effect best fits the given data. To identify the best model, let equation 3 represents the general regression function

$$TDR_{it} = \alpha_0 + \sum \beta_k X_{itk} + v_{it} \quad (3)$$

Where; $v_{it} = \delta_i + \varepsilon_{it}$

ε_{it} = time varying error or idiosyncratic errors

δ_i = unobserved firm specific constant factor

If we can assume the δ_i are uncorrelated with all X_{it} , then the random effects (RE) method is appropriate. But if the δ_i are correlated with some explanatory variables, the fixed effects (FE) method (or first differencing) is needed. Comparing the FE and RE estimates can be a test for whether there is correlation between the δ_i and the X_{it} , assuming that the idiosyncratic errors and explanatory variables are uncorrelated across all time periods. Hausman (1978) first suggested this test.

a. For Hausman test

H_0 = If δ_i is not correlated with X_{it} , then use random effect model.

H_1 = If δ_i is correlated with X_{it} , then use fixed effect model.

If the estimates for the random-effects estimator are not significantly different from the estimates for the fixed-effects estimator, then the null hypothesis is accepted and conclude that δ_i is not correlated with X_{it} , and therefore the random-effect model is the appropriate model. If the estimates for the random effect estimator are significantly differ from the estimates for the fixed-effect estimator, the null is rejected and conclude that δ_i is correlated with X_{it} , and therefore the fixed-effect model is the appropriate model. The following table 7 provides the detail of the test:

Table 7 : Fixed and random effects test comparison

---- Coefficients ----				
Variable	(b) Random effects	(B) Fixed effects	(b-B) Difference	S.E.
ROA	-0.1205109	-0.0884725	-0.0320385	0.0132415
OM	0.2307417	0.1502467	0.0804951	.
SIZE	-0.183653	0.2060135	-0.3896664	.
TANG	0.1326307	0.1839149	-0.0512842	.
NDTS	-0.0055241	0.7791671	-0.7846912	.
GROW	-0.0092751	0.0026681	-0.0119432	0.0059966
VOL	0.0206148	-0.1238996	0.1445144	.
LIQU	0.0001161	-0.000043	0.0001591	0.000041

Notes: Wald Chi2 (8 df) = 72.85; Prob>chi2 = 0.0000

Source : Financial statements of large manufacturing sample firms from 2007-2011 G.C.

The decision rule, for hausman test, is rejecting the null hypothesis when the p-value is small. Accordingly, the small p-value of 0.0000 indicates that the null hypothesis is not accepted and fixed effect model is appropriate for the given data set.

VII. RESULT AND DISCUSSION

a) Descriptive Statistics

Table 8 : Descriptive statistics summery of study variables Variable

	Obs	Mean	Std. Dev.	Min	Max
TDR	160	0.4686156	0.2004772	0.0178415	0.738456
ROA	160	0.0795369	0.1381673	-0.3266786	0.4060249
OM	160	0.0886626	0.2238319	-0.6013652	0.5120955
SIZE	160	7.753089	0.3296925	7.00299	8.513951
TANG	160	0.6695566	0.1592004	0.0498683	0.809972
NDTS	160	0.1280832	0.1167917	0.0009126	0.359286
GROW	160	0.1657903	0.2646498	-0.872163	0.9352877
VOL	160	0.2239808	0.9601034	0.0006407	7.295534
LIQU	160	12.42121	121.141	0.2266895	1534.608

Source : Financial statements of large manufacturing sample firms from 2007-2011 G.C.

Closely observing table 8 it indicates some general information about the distributions of the variables. The variable TDR indicates that, on average, Ethiopian large manufacturing firms have the debt levels

of 46.86 percent out of the total assets held by them. From one firm to another the level of leverage varies at an amount of 20.05 percent. Among the firms the maximum amount of debt ratio is 0.7385 levels out of total asset while the minimum is 0.0178 which is computed as the proportion of debt to asset.

The financial performance of the sample firms is measured by Return on Asset (ROA) and Operating Margin (OM). This firms, on average, generated 7.9540 percent of ROA which measured by Net Income divided by Total Asset. Similarly, the OM ratio is 8.87 percent that computed by dividing earnings before interest and tax (EBIT) to sales. This result indicates that both measure of performance prevails approximately the same amount. The average standardized variability of this performance measure (ROA and OM) is 13.82 and 22.38 percent, respectively per year which indicates OM is more variable than ROA. The ROA variable potentially has the maximum of 40.60 and the minimum of negative 32.67 percent indicating that there are some firms reported losses in the sample period. On the same way, OM of these manufacturing firms is with the range of negative 60.14 and positive 51.21 percent which shows the existence of more variability as compared to ROA above.

In the Capital Structure of the firms, as one determinant factor, tangibility (the extent to which asset of the business are fixed) is very interesting variable. This is because the more proportion of tangible asset the firm holds, the more the creditors felt safe to give more loans to the borrower. So, it is interesting in a

sense that this variable has strong correlation with the level of financial leverage that the firm holds. Looking at Table 8, we can tell that Ethiopian Manufacturing Firms have assets with more of tangible or fixed, on average, at the level of 0.6695 proportions which is measured by the ratio of total fixed asset to total asset. However, each firm's proportion of tangible asset can deviate from the mean (0.6695) by 15.92 percent of standard deviation. Among the sample firms the levels of tangible asset vary from the mean by 15.92 percent standard deviation. The proportional maximum and minimum score of this variable is 0.0498 and 0.8099, respectively.

The variability, income generating ability of a firm, indicates the level of business risk which is found by computing the standard deviation of Return on Asset (ROA). In the summery table, the average volatility (business risk) of the industry is 22.40 percent.

However, this firm group's exhibited very high variation in their business risk level which is found by computing the standard deviation of ROA for each firm and time, which is 96.01 percent. Thus, these manufacturing firms held very high Business Risk. The minimum and the maximum amount of risk for the pool of the firm is 0.0006 and 7.2955 respectively.

The remaining of explanatory variable can be discussed in the same manner. On the above table 8, there are 160 observations which are found by multiplying the number of sample firms (32 firms) with number of study periods (5 years) which gives a balanced panel data.

b) Regression Result Analysis

Table 9 : The effect of explanatory variables on the total debt ratio (TDR) using the fixed effects estimation model

Robust					
TDR	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
ROA	-0.0884725	0.0347754	-2.54	0.016	[-0.1593973-0.0175476]
OM	0.1502467	0.1781945	0.84	0.406	[-0.21318340.5136767]
SIZE	0.2060135	0.2927745	0.7	0.487	[-0.39110410.803131]
TANG	0.1839149	0.0490983	3.75	0.001	[0.08377830.2840515]
NDTS	0.7791671	0.2413499	3.23	0.003	[0.28693071.271403]
GROW	0.0026681	0.0090569	0.29	0.77	[-0.01580350.0211398]
VOL	-0.1238996	0.0536272	-2.31	0.028	[-0.2332731-0.0145262]
LIQU	-0.000043	0.000043	-0.77	0.446	[-0.00015640.0000705]
_cons	-1.349553	2.288252	-0.59	0.56	[-6.0164733.317368]

Source : Financial statements of large manufacturing sample firms from 2007-2011 G.C.

R^2 is a popular measure of Goodness of Fit in ordinary regression. In the Fixed Effect Panel Data Regression, it's reported within R-square is the R^2 that obtained by running the OLS regression. Thus, from the

above table 9, it can be indicated that, for this Fixed Effect Model, the R-square value of 0.5954 shows the 59.54 percent of variation in leverage is explained by the variation in independent variables and the rest (40.46

percent) are captured by the residual of the model. The residual (error term) part of the model, that accounts for the minority of the variation, captures other explanatory variables, measurement errors and other disturbances.

However; the overall model is capable enough to explain and predict the variation of leverage as a function of the explanatory variables as it can be observed from small p-value of the F-statistics at 5 percent level of significance. In addition, the total numbers of observations are 160 with 32 firm groups and the model is predicted with balanced panel data.

It is indicated that the profitability, tangibility, business risk (volatility) and non-debt tax shields variables are significant determinants of Ethiopian large manufacturing firm's capital structure while others are not, at least statistically, since they are not significant. This indicates that firm managers and creditors, in one way or another, do not take in to account the insignificant variables (Operating Margins, Size, Growth and Liquidity) in their business decisions.

Profitability is measured by two proxies which are Return on Asset (ROA) and Operating Margin (OM) variables, even if OM is not significant enough to determine the variation in leverage. Profitability variable of ROA has a significant negative coefficient that shows the inverse relationship between profitability (as measured by ROA) and debt level of the firm. This indicates, the more the company generates profit, the less it demand external source of finance. This relation predicts the tendency of managers in large manufacturing sectors to finance new projects giving more priority for internally generated funds and vice versa. Operating Margin is not statistically significant enough to determine firm's financing behavior.

The regression result indicates the proxy for tangibility is positive and significant implying that the more the firm holds tangible assets, the more creditors are willing to give loan as far as the tangible asset serve as a collateral value. The value of this coefficient tells that, other thing held constant, a one percent change in tangible asset results in 18.40 percent change in debt of the firm on the same direction.

The variable, non-debt tax shield on the regression result has positive and statistically significant coefficients. The small P-value of 0.003 indicates that NDTS variable is statistically significantly different from zero and hence has the ability to determine managers financing behavior. The coefficient of the variable prevails that a one percentage change in NDTS can results in 77.92 percentage of change in the amount of the gear that the firm holds on average on the same direction, *ceteris paribus*. This coefficient is the largest of all others and therefore can influence the variation of independent variable at high amount of change. The positive sign tells that firms prefer to add more debt to their capital structure when the amount of non-debt tax shield increases, which contradict with theory.

The Business Risk (volatility) variable also predicts a significant inverse relationship with debt ratio of the sample firms. It shows the coefficient of negative 12.40 and P-value of 0.028 which is statistically small enough to reject the null hypothesis that say the parameter of VOL is equal to zero. The coefficient tells that a one percentage change in VOL can results in 12.40 percentage of change in the amount of the gear that the firm holds, on average, on the same direction, *ceteris paribus*. Thus, it can be concluded that managers prefer to finance the new requirement of fund by considering the level and the direction of their business risk level. In other words, they behave in outsourcing more of the funds required when the level of business risk decreases.

Regarding other explanatory variables, that statistically not capable enough to predict the managers financing behavior can also be explained and discussed on the same way, as it is stated above. Beside this, the estimated Generalized Least Square (GLS) Fixed Effect Multivariate Regression Model equation for Panel Data set is stated as follows:

$$T\hat{D}R_{it} = \alpha_0 + \sum \beta_k X_{itk} + \varepsilon_{it}$$

$$T\hat{D}R_{it} = -1.3494 - 0.0885ROA_{it} + 0.1505OM_{it} + 0.2060SIZE_{it} + 0.1838TANG_{it} + 0.7792NDTS_{it} + 0.0027GROW_{it} - 0.1239VOL_{it} - 0.00004LIQU_{it} + \varepsilon_{it} \quad (3)$$

c) Empirical Discussions

When firms become more profitable, they may want to finance their growth and expansion using equity sources or just borrow. Their financing pattern (equity or debt) of managers may convey some information with regard to which theory more they favor. As of this study; return on asset (ROA), as a proxy of profitability, has significant and inverse relationship with leverage. This indicates that these managers follow the behavior of pecking order theory and hence, they prefer to financing new project using internal source, then move to external debt and the remaining by issuing new equity. Further, this finding tells tax shield from being more profitable is not their concern which indicates the rejection of tread-off theory. Such a decision might be because of the reason that underdevelopment of capital market in Ethiopia let them not to borrow with competitive cost of capital and some other factors that is not captured by this model. However; when profitability is measured by operating margin, the result is different. This variable is not statistically significant to be the determinant of capital structure of manufacturing firms even if it has a positive sign just to support tread-off theory.

Table 10 : The expected sign (+/-) of variables based on theory and empirical evidence

Explanatory Variables	Trade-off Theory	Pecking-Order Theory	Agency Cost Theory
Profitability	+	-	?
Tangibility	+	+	+ (Debt Cost) - (Equity Cost)
Non-debt tax shield	-	?	?
Volatility	-	-	-
Size	+	-	+
Growth	?	+	-
Liquidity	+	-	?

Notes: A positive sign “+” indicates a direct relationship, whereas a negative sign “-” indicates an inverse relationship exists between the dependent and independent variables. A sign of “?” Shows that there is no clear prediction or ambiguous relationship exists.

Source: Myers, 1984; Myers and Majluf, 1984; Titman and Wessels, 1988; Jensen and Meckling (1976); Wald, 1999; Kale et al., 1991; Stulz, 1990 and other studies including Capital Structure Theory.

In the Capital structure of the firm, as one determinant factor, tangibility (the extent to which assets of a business are fixed) is the critical factor that can be expected to affect the structure positively. Capital structure theory in general explains the existence of positive relationship between tangibility and leverage. On this study, tangibility is also uncovered as determinant factors that affect gearing positively as expected by theory and many empirical studies. Ethiopian economy has no capital market (debt and equity market) that firms get financed easily and efficiently. Investors (debt and equity) cannot easily shift their investment from one company to the other since the market is not liquid. Once the firm acquired the loan from the bank, bankers may not influence their behavior and just wait what comes out at the end of the maturity period. They have no option to sell the bond to other more risk taker investors if the banker feels that the borrower is adding more risk factor to the business.

This creates a barrier to borrow by increasing cost of debt and more collateral (tangible asset) requirements. This is so because bankers have no other means to reduce the risk of loan investment that extended to firms in the absence of bond market. In Ethiopian context, private limited companies have limited menu of external source of finance. They are highly characterized by acquiring the major part of debt finance from the bank.

Capital structure theory in general explains the existence of positive relationship between tangibility and leverage. This study proved, at least empirically, that

these managers do not favor trade of theory as far as profitability is concerned. Therefore, the uncovered positive coefficient of the variable, tangibility, does not tell they borrow to get tax shield since the relationship with profitability is negative. As a result, tangibility does not show whether managers act in accordance of trade-off theory and irrelevant here. In Ethiopian firms context managers do not worry about information asymmetry problem with the absence of efficient capital market and they borrow if they run out of internally generated funds. Even if managers borrow when they run out of internally generated funds, it doesn't indicate the existence of pecking-order theory as it exists in the economy with efficient capital market. However; to indicate Ethiopian managers follow the same financing pattern with those countries that have efficient capital market, it can be concluded that Ethiopian managers follow pecking-order theory.

More debt with more of tangible asset may indicate the manager's financing behavior in accordance of one or more of the theory; the selection depends on different situations. Using tangible assets as a collateral, they may borrow; to shield some of the profit from the tax, because of information asymmetry exists and to discipline managers to avoid agency cost of equity. Thus, the existence of tangible asset creates the capacity to borrow whatever the theory they hold up. In this study, the uncovered positive relation of this variable supports pecking-order theory as discussed above and, the agency cost of debt since banks do not extend loan without collateral for such manufacturing firms. This is because if firms take more debt, it is expected that they transfer wealth from debt holders to equity holders by different means. For instance, they may shift resource from less risky business to more risky projects. This in turn creates firms probability (risk) of default. That is why banks required more collateral as indicated by strong positive relation of tangibility with debt ratio. Jensen and Meckling (1976) and Myers (1977) finding suggested that the shareholders of highly leveraged firms have an incentive to invest sub optimally to expropriate wealth from the firm's debt holders to equity holders. However, debt holders can confine this opportunistic behavior by forcing them to present tangible assets as collateral before issuing loans just to avoid agency cost of debt. Therefore, the positive direction of this variable indicates the existence of agency cost theory that explains Ethiopian managers' financing pattern. Several empirical studies have reported a positive relationship between tangibility and leverage (Wald, 1999; Zou and Xiao, 2006). However, Booth et al. (2001) have reported a negative relationship between tangibility and leverage for firms in Brazil, India, Pakistan, and Turkey. Some other empirical studies have also reported a negative relationship between tangibility and leverage (Ferri and Jones, 1979; Bauer, 2004 and Mazur, 2007). Local studies reported different

result. Mintesinot (2009) studying large manufacturing firms found positive but insignificant relation. Samuel (2009), in some selected firms of all sectors, reported inverse relationship of leverage and tangibility.

The level of risk is said to be one of the primary determinants of a firm's capital structure (Kester, W.C, 1986). Table 9 indicates that the estimated coefficient of earnings volatility has the predicted negative sign and is statistically significant at 5% level of significance. From this result, firms' capital structure is substantially affected by the level of business risk they hold with inverse direction. Further, it indicates that creditors (bankers) extension of loan is the inverse function of this industry amount of risk. The more a firm in this sector is adding business risk, the less qualified to get more credit. Whatever theory that supports manager's behavior of financing a new project, the more business risk is increasing, the less bankers willing to give loan to these managers. It is not their behavior of financing or the theory they think for, it is all about how risky they are that determines the amount of loan permitted and the level of cost of capital charged. As tangibility determines firms capacity to borrow, so does the risk factor in determining how much they should borrow. Regarding which theory supports this variable, tread-off theory is not appropriate here since it is rejected with the reason stated there above. It is discussed that when firms become more profitable they inclined to use their profits to finance a new project than debt that supports pecking-order theory. Obviously, the more volatile the business is, the more they stick to internally generated funds since borrowing capacity decreases and the cost of debt increases with business risk level. According to Johnson (1997), firms with more volatile earnings may experience situations in which cash flows are too low for debt service and hence, it is expected negative relation in the context of agency cost theory. Managers may act in the interests of stockholders and that the risk of default is significant. For instance, they could invest in riskier assets or shift to riskier operating strategies deliberately by putting more debt on this riskier business that clearly creates agency cost of debt (Jensen and Meckling, 1976).

Empirical investigation has led to contradictory results. A number of studies have indicated an inverse relationship between risk and debt ratio (see Bradley et al., 1984; Titman and Wessels, 1988). Other studies suggest a positive relationship (Michaelas et al., 1999). Studies in Ethiopia also reported contradictory results. Mintesinot (2009) studying large manufacturing firms, Ashenafi (2005) and Usman (2011) reported significant negative relation exists. However, Samuel (2009) reported significant positive relationship.

In their study, DeAngelo and Masulis (1980) argue that non debt tax shields are substitutes for the tax benefits of debt financing. Therefore, the tax advantage of leverage decreases when other tax

deductions like depreciation increase that leads to expect inverse relation between non-debt taxes shield (NDTS) and leverage. As discussed above, it is proved that these managers of the firms do not take tax shield advantage that makes them not to behave in accordance of tread-off theory. The finding of this paper indicates considerable positive relation of debt level and non-debt tax shield which doesn't give logic and irrelevant, with the rejection of tread-off theory. This variable only exists just to support the tread-off theory but it fails since this theory is not practiced by this managers.

Empirical findings are mixed on this issue. Bradley et al. (1984) have shown a strong direct relationship between leverage and the relative amount of non-debt tax shields. Titman and Wessels (1988) didn't found any support for the cause and effect between debt ratio and non-debt tax shields. Wald (1999) and Deesomsak et al. (2004) reported a significant negative relationship between leverage and non-debt tax shields. Bauer (2004) has shown a negative but less significant relationship between non-debt tax shields and the measures of leverage. Studies in Ethiopia also reported contradictory results. Mintesinot (2009) studying large manufacturing firms and Samuel (2009) reported trivial negative relationship while Usman (2011) reported significant direct relationship.

Regarding empirical discussion of this study, four variables discussed above found to be significantly determinant of the capital structure of Ethiopian large manufacturing sector even if non-debt tax shields doesn't give sense to be a positive determinant with the absence of tread-off theory. This means, the significance of non-debt tax shield is not an indicator of as to which theory privileged. The remaining variables (Size, growth, operating margin and liquidity) that included in this model assumed as a determinant factor supports those studies that conclude these factors are not significantly influential to lead managers behave supporting either of the theory. It is not worthy enough to have further discussion on these variables as far as they are not determinant factors and not the major concern of this study.

From all this discussion, it is possible to reach on the major findings of the study and to say something about as to which theory privileged by Ethiopian managers including determinant factors that affects their financing mix of debt and equity. This paper explicitly stated that profitability as measured by return on asset, tangibility (the extent of holding fixed assets over time) and the business risk level or income volatility of the firm are found to be significant determinant factors of capital structure in the context of an economy where such firms and managers operate. Referring to these variables, Ethiopian managers are found to behave mainly in accordance with Pecking-order theory followed by Agency cost theory while they select one source of

finance over the other (debt or equity) even if they have thin and few menus as an alternative source of capital. This finding also supported by those local researchers arguing the determinants of capital structure identified in the western context are able to explain much of the variation in financial leverage and the pecking-order theory more explains the financing behavior of manufacturing firms in Ethiopia (Samuel, 2009; Mintesinot, 2009; Usman, 2011 and Ashenafi, 2005). At the end, this study supports, to some extent, the portability of capital structure theories that exist in developed economy to the economy of developing country with the absence of secondary market and its robust explanatory power.

VIII. CONCLUSION

As the purpose of the study, it is hoped to uncover whether the determinants of capital structure factors of developed countries has some explanatory power of Ethiopian economy that characterized by the absence of efficient capital market. This study focuses on uncovering which determinant factors, those tested in the context of developed countries, affects the capital structure of Ethiopian firms. It also aimed at stating how managers behave in line with different capital structure theories with the absence of efficient capital market which is not discussed empirically as far as large manufacturing firms are concerned in Ethiopia.

After all the discussions made, it is found that profitability, tangibility, and earning volatility (business risk) are the major determinants of capital structure. The significant negative coefficient of profitability conveys managers behave in accordance of pecking order theory that makes them to reject the trade-off theory. The variable, tangibility, also exhibited positive sine indicating that firms are acquiring the major part of debt finance from the bank. In this study the uncovered positive relation of this variable supports pecking-order theory as it is discussed and, the agency cost of debt since banks do not extend loan without collateral for such manufacturing firms. It is found that firms' capital structure is substantially affected by the level of business risk they hold with inverse direction indicating managers behave supporting pecking order and agency cost of debt theory.

Regarding empirical discussion of this study, four variables discussed found to be significantly determining the capital structure of Ethiopian large manufacturing sector even if non-debt tax shield doesn't give sense to be a significant determinant with the absence of trade-off theory. The rest variables that included in this model assumed as a determinant factor supports those studies that conclude these factors are not significantly influential to lead managers behave supporting either of the theory.

This paper explicitly stated that Profitability, tangibility (the extent of holding fixed assets over time) and income volatility of the firm are found to be statistically determinant factors of capital structure in the context of an economy where such firms and managers operate. Referring to these variables, Ethiopian managers are found to behave mainly in accordance with Pecking-order theory followed by Agency cost theory while they select one source of finance over the other (debt or equity) even if they have thin and few menus as an alternative source of capital. The study also concluded that some of determinant factors and theories that tested in developed countries have robust explanatory power in the context of Ethiopian economy with the absence of efficient capital market.

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