

Does Capital Structure Matter on Performance of Banks? (A Study on Commercial Banks in Ethiopia)

Muhammed Aragie*, Ashenafi Beyene**, and Netsanet Shiferaw***

*College of Business and Economics, Jimma University

**Ethiopian Civil Service University, Addis Ababa, Ethiopia

***School of Business and Economics, Dire Dawa University

Abstract- The main intention of this study was to examine the relationship between capital structure and performance of commercial banks in Ethiopia. The investigation was based on panel data (from the year 2000-2012) collected from the annual reports of eight sample commercial banks in the country. This study establish a model to measure the association between capital structure which is proximate by total debt to total asset (TDTA) and total debt to total capital (TDTC) and performance which is measured by return on asset (ROA), return on equity (ROE) and net profit margin (NPM). The results of regression analyses indicate that on average leverage has a positive effect on the financial performance of commercial banks in Ethiopia when performance measured by return on equity. In contrast, the similar analyses indicate that leverage has a significant negative effect on performance of commercial banks in Ethiopia when performance is measured by return on asset and net profit margin. These support both trade off theory and pecking order theory of capital structure. Hence, participants in Ethiopia banking industry should make capital structure at optimal level by raising funds from equity finance by participating in the secondary market in order to enhance its performance in related with capital structure.

Index Terms- Capital structure, commercial banks, financial performance

I. INTRODUCTION

Capital structure is the method in which a firm's assets are financed. By considering different factors, the appropriate finance mix decided. After the work of Modigliani and Miller (1958) irrelevance theory of capital structure, the capital structure theory has been a study of interest for researchers and it become the ground for the development of other theory. Among the theories, the most prominent theories which explain the capital structure of the firms are static tradeoff theory, pecking ordered theory and agency theory.

Most of the studies conducted on the relationship between capital structure and performance a firm worldwide concentrated on different segments of different economies and industries, with little attention to the financial services sector. For instance,

studies made on capital structure of firms in Ethiopia focus on its determinant. They are giving little attention to area of the relationship between capital structure and performance of the firm in Ethiopia, particularly to the banking industry. According, the current study intention was to investigate the relationship between capital structure and performance of commercial banks in Ethiopia, rapidly growing sector in the country.

RATIONALE FOR THE STUDY

There are a number of studies conducted at a global level to examine the relationship between capital structure and performance. For instance, the study made by Zeitun and Tian (2007) on the companies in Jordan provide a result of significant negative association between capital structure and performance of companies. Supporting this, the results of the investigation made Pratheepkanth (2011) indicates that capital structure and performance has a negative association for the companies in Sri Lanka. The study of Saeedi and Mohoodi (2011) also revealed that capital structure has a positive or negative association with performance of the firm in Iranian.

In addition, studies conducted in Africa, such as Awunyo-vitor and Badu (2011) finds that capital structure is negatively related to the banks performance for the banks in Ghana. And capital structure is an important determinant of firm's financial performance and the direction of the relationships is reversed for the firm in Nigeria (Adekunle and Sunday, 2010).

However, most of the studies are made with reference to developed countries, which means they are not explained the issues for emerging market specifically for Ethiopian case. So, it is difficult to make generalization for the developing economy (like Ethiopia) from the result of developed economy without making any research. Furthermore, the financial sector of Ethiopian economy is dominated by the banks, which has its own unique features, such as the banking regulation did not allow foreign nationals or organization fully or partially to acquire share of Ethiopian banks, there is no secondary market, etc. In light of these, the study concerned with examining the relationship between capital structure and performance of commercial banks in Ethiopia.

OBJECTIVES OF THE STUDY

The general objective of this study was to examine the relationship between capital structure and performance of commercial banks in Ethiopia. The specific objectives were;

- 1) To identify the relationship between capital structure and return on equity of the sample commercial banks in Ethiopia.
- 2) To identify the relationship between capital structure and return on asset of the sample commercial banks in Ethiopia.
- 3) To identify the linkage between capital structure and net profit margin of the sample commercial banks in Ethiopia.
- 4) To identify the capital structure theory that best explains features of capital structure of the sample commercial banks in Ethiopia.

RESEARCH HYPOTHESIS

H01: There is an inverse relationship between capital structure and performance measured by return on asset (ROA) in the commercial banks in Ethiopia.

H02: There is a direct association between capital structure and performance measured by Return on equity (ROE) in the Ethiopian commercial banks.

H03: There is an inverse association between capital structure and performance measured by net profit margin (NPM) of commercial banks in Ethiopia.

II. REVIEW OF RELATED LITERATURE

THEORY OF CAPITAL STRUCTURE

The objective of capital structure is maximization of firm value by minimizing the overall cost of capital. A company capital is divided into debt and equity which is affected by a lot of factors. The most prominent theories which explain the capital structure of the firms are Modigliani and Miller (MM) theory, static tradeoff theory, pecking order theory and agency theory.

The original version of the trade-off theory grew when Modigliani and Miller added corporate income tax in 1963 to the original irrelevance proposition which created a benefit for debt in that it served to shield earnings from taxes (Frank and Goyal, 2005). Under static tradeoff theory, if the value of the firm is maximizing, the firm is able to interchange debt for equity or equity for debt. The optimal debt ratio is determined by the benefits and cost of borrowing holding the firm's assets and investment plans constant. Myers (1984) and Myers and Majluf (1984) developed the Pecking order theory of capital structure. Under Pecking order theory, the firm financing decision is initially made by using internal source of funds and if it is not enough external source of financing is used by the firm. Accordingly the preferences are, first target dividends, then chose debt and lastly focuses on equity (Myers, 1984). After the study made by, there are vast literatures developed on agency theory to explain the capital structure. Whereas, according to the agency theory, the agent performs certain services on the behalf of the principal. When the agent performs its activities on behalf of the principal there might be a possibility that the agent accomplish task for

their own interest instead of maximize the benefit of the principal (Jensen and Meckling, 1976).

CAPITAL STRUCTURE AND PERFORMANCE

Despite companies finance their activities by using different source of funds, the main aim of all companies is to increase the value of the firm in the industry. Optimum capital structure is the combinations of debt equity ratio that maximize the firm value by minimize the weighted average cost of capital. The capital structure which is popular in practice are; equity shares only, equity and preference shares only, equity and debentures only and equity shares, preference shares and debentures (Paramasivan and Subramanian, 2009).

Measuring performance is controversial issue; especially in finance is not an easy task. This is due to the multidimensional measure of performance. As per Zeitun and Tian (2007), performance of the firms is measured by either financial or organizational variables. To measure the financial performance of the firm; profit maximization, maximizing profit on asset and maximizing shareholders benefits variables can be used whereas growth in sales and growth in market share are some of the variables used to measure the operational performance of the firm.

The empirical studies around the world demonstrate various outcomes on the relationship between capital structure and performance of the firm. For instance, Saeedi and Mohoodi (2011) concluded that performance has positive or negative association with capital structure. Performance of the company has an inverse relationship with capital structure (Gupta, Srivastava and Sharma, 2011, Awunyo-vitor and Badu, 2011, Adekunle and Sunday, 2010). However, Ebaid (2009) concluded that, capital structure choice has a weak to no effect on performance.

Specifically, capital structure which is measured by Return on Asset (ROA) studies shows that it has a negative impact on firms' performance, such as Saeedi and Mohoodi (2011), Adekunle and Sunday (2010). While Awunyo-vitor and Badu (2011) find out capital structure has negative but statistically insignificant effect on ROA. Counter to MM (1958), many other empirical studies found a negative association between debt and return on asset. Whereas, Yaregal (2011) noted that the bank with a lower debt capital will report a lesser ROA than a bank with a higher debt capital, even if all other spreads and costs are the same.

In addition, Return on Equity (ROE) as measure of a firm financial performance, Arimi (2010) under his investigation conclude that the company which has high ROE has a good investment opportunity than that firm which has fewer amounts of ROE. Studies such as Saeedi and Mohoodi (2011) found no significant relationship between capital structure and Return on equity while other studies including Adekunle and Sunday (2010), kaumbuthu (2010) and Awunyo-vitor and Badu (2011) indicated a negative relationship between debt ratio and ROE. On the other hand some researchers such as Abor's (2005), found a

positive relationship between debt and return on equity. As anticipated by Modigliani and Miller (1963), Abor found that highly leverage firms had higher profitability as measured by return on equity.

In connection to this, considering the concern of the National Bank of Ethiopia (NBE), which regulates the commercial banks in Ethiopia, it seems that more debt has got to benefit equity holders. The concern of NBE is evident in NBE's minimum equity requirement that Ethiopian commercial banks are expected to maintain (NBE Directive No. SBB /9/1995, Article). As per this standard, Ethiopian commercial banks are expected to keep a minimum balance of 8 percent of equity as a percentage of total assets. While this has the rationale of improving diligence and unnecessary indulgence on risky projects by banks if equity holders have minimal capital at risk, it also suggest that in the absence of such requirements, banks would prefer to have more debt in their capital structure. This must be the case only if equity holders are to gain as a result of more leverage.

Furthermore, the empirical evidence provides a contradictory result on the relationship between capital structure and profitability of the firm. There are some researchers who agree with the trade off theory that the profitability of the firm has positive relationship with capital structure. According to Mayers (1984), companies which use more debt in their capital structure are profitable. Those researchers argue that levered firm receives the benefit of tax shield advantage. Additionally, if the companies use more debt to enhance financial performance, the manager tries to improve productivity in order to avoid bankruptcy. This is due to the payment of debt is obligatory while the payment of dividend is not obligatory. Siddiqui and Shoaib (2010), argue that profitability of the bank significantly increases with the increment of leverage.

Most of the empirical evidence of the previous studies on the relationship between capital structure and profitability is consistent with the pecking order theory. According to Meyers (1984) and Myers and Majluf (1984), the pecking order theory prefer to finance firms first by retained earnings then debt and as a final option, assets are financed by equity capital. Those researchers argue that internal source of finance particularly using of retained earnings is cheaper than external source of finance which is exclusively the use of debt and equity. This is because the cost that is associated with information asymmetries that exist between managers and outside market participants. Kaumbuthu (2010) state that;

"Less profitable firms facing a positive NPV investment opportunity will be more willing to use external funds if cash flows are weak. Therefore, there will be a negative relationship between leverage and profitability".

According to Fama and French (1998) cited in Gartchie and Kofi (2012), tax benefit is not necessarily generated by using debt rather financing of the firm by using high debt generate agency problems among shareholders and debt holders. For instance the study made by Gupta, Srivastava and Sharma (2011), conclude that the company which has high profitability

and good performance has less amount of debt. Additionally, the results of the analysis made by Shibru (2012) indicate that profitability has a negative relationship with leverage. Furthermore, the finding of the study made by Kebede (2011), revile that profitability has an inverse relationship with leverage. The results of those studies imply that profitable firms use less debt in their capital structure.

III. METHODOLOGY

THE REGULATORY ENVIRONMENT OF BANKING SYSTEM IN ETHIOPIA

Ethiopian commercial banks operate under a host of regulatory bounds administered by the National Bank of Ethiopia. The minimum paid-up capital amount required to establish new bank is 500 million Birr (NBE, 2011). The 500 million Birr paid-up capital shall be fully paid in cash and deposited in the NBE in the name and to the account of the bank under formation. The banking regulation allowed no foreign ownership of banks.

Commercial banks in the country also required to maintain adequate capital proportionate to their risk exposure as a means of ensuring financial solvency of banks. Hence, the minimum capital requirement is set at 8 % of risk weighted assets. This liquidity requirement made to meet the need of customer on day-to-day cash deposit withdrawal from commercial banks. In addition, banks shall maintain liquid assets of not less than 15% of its total demand deposit, saving deposit and time deposits and similar liabilities with less than one month maturity period. They need to submit their weekly liquidity position (Geda, 2006).

As per the directive (Directive No SBB/4/95) of National Bank of Ethiopia all commercial banks are required to transfer 25% of its profits to its legal reserve account annually until the reserve amount equals the bank's capital. The annual transfer of profits will equal 10% of profits of the bank at a time when the reserve equals the bank's capital.

METHOD OF DATA COLLECTION

The study followed a mixed research approach. The study relied on secondary data. In order to avoid the risk of distortion in the quality of the data, audited annual financial statement used which is obtained from the head office of each sample banks and the NBE.

SAMPLE SELECTION METHOD

After identifying those commercial banks in the country that are operated for more than thirteen years and established for giving commercial bank services only as a sample frame, the researcher used purposive sampling.

Performance is not a one night process rather it comes by making operation for some consecutive years. Hence, the researcher used 13 years data (2000 - 2012) from eight sample commercial banks. The study made by Sauna (2010), used thirteen years data to see the relationship between capital structure and performance of the banking industry in US for the

period from 1995 – 2007 serve as a framework for the current study.

MODEL SPECIFICATION

Most prominent previous research works conducted on capital structure and performance used capital structure as independent variable which is measured by the ratio of total debt to total asset (TDTA) and the ratio of total debt to total capital (TDTC) where as performance is an dependent variable and measured by return on asset (ROA), return on equity (ROE), and net profit margin (NPM). In this respect, the current study to examine the relationship between capital structure and performance of commercial banks in Ethiopia adopted a model that is existed in most literature and has the following general form;

$$Y_{it} = \beta + \alpha X_{it} + \varepsilon_{it}$$

Where Y_{it} is the dependent variable for firm i in year t , β is the constant term, α is the vector of coefficient of the independent variables of interest that the study want to estimate, X_{it} is the vector of the independent variable for firm i in year t and ε_{it} is the normal error term.

This study was based on the conceptual model adapted from Ebaid (2009) and Khan (2012). The estimated models to be used in this study are modified and presented as follow;

$$ROA_{i,t} = \beta_0 + \beta_1 TDTA_{i,t} + \varepsilon_{i,t}$$

$$ROA_{i,t} = \beta_0 + \beta_1 TDTC_{i,t} + \varepsilon_{i,t}$$

$$ROE_{i,t} = \beta_0 + \beta_1 TDTA_{i,t} + \varepsilon_{i,t}$$

$$ROE_{i,t} = \beta_0 + \beta_1 TDTC_{i,t} + \varepsilon_{i,t}$$

$$NPM_{i,t} = \beta_0 + \beta_1 TDTA_{i,t} + \varepsilon_{i,t}$$

$$NPM_{i,t} = \beta_0 + \beta_1 TDTC_{i,t} + \varepsilon_{i,t}$$

Where;

$ROA_{i,t}$ = Return on asset assets for firm i in year t .

$ROE_{i,t}$ = Return on equity for firm i in year t .

$NPM_{i,t}$ = Net profit margin for firm i in year t .

$TDTA_{i,t}$ = Total debt to total assets for firm i in year t .

$TDTC_{i,t}$ = Total debt to total capital for firm i in year t .

β_1 = The coefficients of the explanatory. They can be by the use of OLS technique.

$\varepsilon_{i,t}$ = the error term. The mean of the error term is zero, has constant variance and they are uncorrelated.

DEFINITION OF VARIABLES

The study used financial leverage ratio as independent variable which is measured by the ratio of total debt to total asset (TDTA) and total debt to total capital (TDTC). For example, Khan (2012), Saeedi and Mohoodi (2011) and Abu-Rub (2012) are some of the researchers who use these variables to measure the capital structure of the company. Besides, it is also difficulty to split the total debt of the banks as short and long term debt.

Total debt to total asset (TDTA) is one of the explanatory variables used in the study. It is computed by the ratio of total liabilities of the bank to total asset. The ratio is used to determine the extent that commercial banks in Ethiopia are depending on debt to finance their activities. In this study TDTA is calculated

by dividing total debt by total asset. Total debt to capital (TDTC) is the other explanatory variable which is used to measure the financial leverage of the banks. It is computed by dividing total debt by total capital of the banks. The ratio is important to compare the total debt of the banks with it total capital. If the total debt to capital ratio is high, the largest proportion of the bank's capital is comprised of debt.

The study also used financial performance as dependent variable which is measured profitability ratios. These are return on asset (ROA), return on equity (ROE), and net profit margin (NPM). Abor (2005) and Ebaid (2009), Adekunle and Sunday (2010), Saeedi and Mohoodi (2011), Abu-Rub (2012), Siddiqui and Shoaib (2010), Gupta, Srivastava and Sharma (2011) and Awunyo-vitor and Badu (2011) are some of the researchers utilize these variables to measure performance of a firm.

According to Zeitun and Tian (2007) the market measures will not provide a good result in the country, since stock market is not highly developed and active. In Addition to this, the data for the study is drawn from the financial statement of the banks which disclose information about the accounting based variable which is important to measure the operating performance and the net worth of the banks.

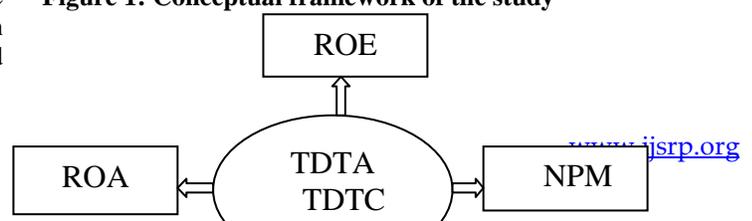
Return on asset (ROA) calculated by dividing the net income of the bank by the amount of its assets. It is a useful measure of how well a bank manager is doing on the job because it reflects the bank management ability to generate profits by using the available financial and real assets. Return on equity (ROE) is used as a measure the financial performance of the banks in terms of profitability and it concerned about how much the bank is earning on their equity investment. It is calculated as the net income divided by Shareholders' Equity. Net profit margin (NPM) is the other dependent variable used in this study.

Furthermore, the study considered the firm's size as a control variable which is measured by the Natural logarithm of total assets of the bank. Total assets appear to be a good proxy for firm size, since a great variation in banks occurred in the amount of their asset. According to Gatsi and Akoto (2012), the use of natural logarithm has a capacity to standardize values to get the real total assets of the banks thus bringing them on the same platform for a more efficient analysis to be done. Siddiqui and Shoaib (2010), Adekunle and Sunday (2010) and Awunyo-vitor and Badu (2011) were used natural logarithm of total assets to measure firm's size.

CONCEPTUAL FRAMEWORK

The major objective of the study is to examine the relationship between capital structure and performance of commercial banks in Ethiopia. Based on the main objective of the study, the following conceptual model is contracted in the study.

Figure 1: Conceptual framework of the study



IV. DATA PRESENTATION AND ANALYSIS

The banks that are included in the study are those banks that operate for greater than thirteen year. The data for this study were drawn from eight banks for the period from 2000 to 2012. Therefore, total 104 observations were analyzed in order to examine the relationship between capital structure and performance of commercial banks in Ethiopia.

Source: Researcher own computation

The purpose of this diagram is to examine the effect of independent variables; TDTA and TDTC on the financial performance of the commercial banks which is measured by ROA, ROE and NPM.

DESCRIPTIVE STATISTICS

The descriptive statistics for the variables computed from the financial statements were summarized in table 1 below. The total observation for each dependent and explanatory variable was 104. The table demonstrates the mean, standard deviation, minimum, median and maximum values for the dependent and independent variables for sample banks from 2000 to 2012

Table 1: Summary of descriptive statistics

Variable	Observation	Mean	Standard Deviation	Minimum	Median	Maximum
ROA	104	.0228798	.0099869	.0008842	.0249622	.0402093
ROE	104	.2176538	.118602	.0141844	.21171	.7035215
NPM	104	.2846488	.1164662	.0141685	.3229915	.4992204
TDTA	104	.8832151	.0480568	.7056075	.8892919	.9625666
TDTC	104	8.997961	4.237166	2.396825	8.033103	25.71411

Source: Computed from the financial statement of sample commercial banks in Ethiopia

Where: ROA = Return on Asset, ROE = Return on Equity, NPM = Net profit Margin, TDTA= Total debt to asset and TDTC = Total Debt to Capital.

The Return on asset measured by the net income of the bank divided by total asset has a mean of 2.30 and median 2.50 percent. These indicate that the sample banks on average earned a net profit of 2.3 percent of total asset.

The ROA indicate that how the bank manager utilize the available financial and real assets to generate profits by utilizing the available assets of the bank. Thus, if the ratio of ROA is high, it indicates that it is better performance in order to generate profit. Even though, there is no standardize measures for ROA, when it is compared the empirical evidence of neighbor market, made by Awunyo-Vitor and Badu (2012) for Ghanaian banks which get the mean value for ROA of 4.38 and revealed poor performance of banks in Ghana, commercial banks in Ethiopia had also low performance with regard to ROA in the study period.

On the other hand, ROE measures how much the bank is earning on their equity investment. Return on equity measured by

the net income of the bank divided by capital and reserve. The amount of mean and median of return rate which is measured by ROE for commercial banks in Ethiopia has the value of 21.76 percent and 21.17 percent respectively, which means that the sample banks on average earned a net profit of 22 percent of total equity. The Net profit margin measured by dividing the net income of the bank by the sum of interest and non interest income has a mean value of 28.46 percent and median of 32.29 percent. This shows that, for the sample period the banks earned on average 29 percent from interest and non interest income. The above results indicate that that during the study period the sample banks have relatively good performance which is measured by ROE and NPM when it compare with ROA. In general the descriptive analyses of performance measurement variables have report different mean values. This has an indication that performance of the bank varies with respect to the variables used to measure performance.

The total debt to capital ratio reveals that the amount of debt and equity that the banks used to finance it is asset. The mean and median of total debt to capital is that 9 percent and 8.03 respectively. This indicates that commercial banks were financed with debt at approximately 9 times greater than equity. This is occurred as a result of the difficulty to finance their activities by using equity fund in developing countries. This is due to the stock market of developing countries are not efficient as well as liquid as of developed countries. The ratio of Total debt to asset is used to determine the amount of leverage being used by commercial banks in Ethiopia to finance their activities. If the ratio is high it indicates that the banks are highly levered institution where as if it is low percentage represents the opposite. The mean and median of TDTA ratio for the sample banks is 88.32 percent and 88.92 percent respectively. These indicate that, the amount of debt for the sample commercial banks were 88% of the capital of the bank. Thus, the capital structure of commercial banks in Ethiopia is dominated by debt or this sector operates with significant level of financial leverage. This is due to the financial market of the country is neither well developed nor diversified consequently; most of the funds are come from the deposit of customer which has an effect to increase the liability of the banks. Leverage ratio for the sample banks was ranged from 71 percent to 96 percent with standard

deviation of 5 percent. In general when compared with performance measure variables, the ratio used to measure leverage has high amount of mean value.

CORRELATION ANALYSIS

PEARSON CORRELATION COEFFICIENT MATRIX

The results of correlation analysis in table 2 indicate that ROA has negative correlation with TDTA and TDTC while it has a positive correlation with size. While the correlation between ROE and NPM with TDTA, TDTC and size is positive. The correlation result for NPM is consistent with trade off theory. That is more profitable firms utilize debt for finance their activities. In addition, the result shows there no significant multicollinearity problem among dependent and independent variables since any of them are not above the conventional 0.80. Problem for multicollinearity is occurred if the correlation is about 0.8 or larger (Gujarati 2003). To handle such problem the independent variables are used in separate regression model for each independent variable for every performance measurement variables. Also the correlations among other variables are statistically significant at 1% level of significance, except the correlation coefficient of capital structure which is measured by TDTA and TDTC and performance which is measured by NPM.

Table 2: Pearson correlation coefficient matrix

Variables	ROA	ROE	NPM	TDTA	TDTC
ROA	1.0000				
ROE	0.6157(0.000)	1.0000			
NPM	0.8513(0.000)	0.7917(0.000)	1.0000		
TDTA	-0.2071(0.0350)	0.4498(0.000)	0.0148(0.882)	1.0000	
TDTC	-0.2648(0.00660)	0.5405(0.000)	0.0738 (0.456)	0.8311(0.000)	1.0000

Source: Computed from the financial statement of commercial banks in Ethiopia

Where: ROA = Return on Asset, ROE = Return on Equity, NPM = Net profit Margin, TDTA= Total debt to asset and TDTC = Total Debt to Capital.

TESTS FOR THE CLASSICAL LINEAR REGRESSION MODEL (CLRM) ASSUMPTIONS
TEST FOR MULTICOLLINEARITY

Table 3 below indicates that the correlation matrix made among the independent variables which reveal the slight existence of Multicollinearity problem. A serious problem for

Multicollinearity is occurred if the correlation is about 0.8 or larger (Gujarati 2003). Also as stated in Brooks (2008), zero correlation among explanatory variables is not occurring in any practical work. Thus, even though there is some indication for the existence of correlation among the explanatory variables, it does not have a great effect on the accuracy the model.

Table 3: Pearson correlation coefficient matrix

Variable	TDTA	TDTC
TDTA	1.0000	
TDTC	0.8311	1.0000

Source: Computed from the financial statement of commercial banks in Ethiopia

As indicated in table 3 above the only coefficient above 80% is existed between TDTA and TDTC. To handle this problem, the study uses the independent variables in separate regression model. By having separate model for each independent variable, it is possible to make less problematic for the Multicollinearity problem among the independent variables. The study used two regression models which is estimated via OLS by changing the independent variables. In the first model, the independent variable is total debt to asset ratio while in the second model the independent variable is defined as debt to equity ratio. The Multicollinearity among other variable are below 0.80 and it can be confident to say there is no significant Multicollinearity since any of them are not above the conventional 0.80.

TEST OF AUTOCORRELATION

The assumption of autocorrelation considers that the average values of the residual or error term are zero. This assumption is maintained if the regression model has constant term as noted in Brooks (2008). Since this study utilize panel data model of analysis and the model has a constant term, the model is not concerned about autocorrelation problem.

TEST OF HETEROSCEDASTICITY

As stated in Wooldridge (1999), in order to maintain the validity for the assumption of heteroscedasticity, it is better to use robust standard error at the time when the sample size become large whether the error terms have constant variance or not. The study used robust standard error to keep the soundness of the model. The robust standard errors were applied to the

standard errors in order to tackle any instantaneous effect of autocorrelation in turn this maintain the reliability of the result.

MODEL SELECTION: RANDOM EFFECT VERSUS FIXED EFFECT MODELS

The model used is panel data model which is estimated by using fixed-effects model or random-effect model. As per the Hausman specification test that checks a more efficient model against a less efficient model. The decision rule, for Hausman test, is rejecting the null hypothesis when the p-value is significant. Accordingly, the first model has a p-value of 0.0008 for the regression Model of ROA, TDTA and Size. These indicate that the null hypothesis is not accepted and fixed effect model is appropriate for the given data set. The p-values of the other models are insignificant. So, this indicates that the null hypothesis is accepted and random effect model is appropriate for the given data set.

REGRESSION ANALYSIS

Multiple regression models are established to predict the impact of each explanatory variable on the dependent variables. The regression of the models was made and the coefficients of the variables were estimated by using OLS techniques available with STATA version 11 software.

Table 4 below presents the result of the regression analysis made to test the relationship between capital structure and bank performance measured by ROA by using two model; Model 1 and Model 2. In both cases the dependent variable is the ratio of return on asset while the independent variable for the first Model is the ratio TDTA whereas, the independent variable for the second model is TDTC.

Table 4: Capital structure and performance measured by ROA

Variables	Performance (ROA)	
	Model 1	Model 2
TDTA	-0.0983301(0.010)	*
TDTC	*	-0.0014395(0.000)
R ²	0.3276	0.4619
# of Observations	104	104

Source: Computed from the financial statement of commercial banks in Ethiopia

As shown form the above table 4 total debt to asset and total debt to capital has a significant negative effect on the financial performance of the bank measured by return on asset. Apart from this, the control variable; size of the bank has significant positive relation with bank performance which is measured by return on asset.

When comes to individual coefficient among independent variables, in the first model TDTA has a coefficient of -.0983301

with p-value of 0.010 indicate that one percent increase in TDTA reduce ROA by 9.8percent however this relationship is significant at 1 percent level of significant. While in the second model TDTC has a coefficient of -.0014395 with p-value of 0.000 indicate that 1 percent increase in TDTC reduce ROA by 0.1 percent however as the case of TDTA this relationship become significant at 1 percent level of significant. On the contrary in both model size played a robust positive effect on

financial performance of the banks. As size increases the financial performance of commercial banks also improve.

Furthermore, the above table shows that the R square is 0.3276 for the first model and 0.4619 for the second model this indicate that about 33 percent and 46 percent of variability in return on asset is explained by the variables used in the first and in the second model respectively. This is due to the explanatory variables are included in separate regression model. The general results of the regression analysis indicate that banks capital

structure has a negative relationship with performance of the bank in Ethiopia as it is measured by return on asset.

Table 5 below present the second set of the two regression result made to examine the relationship between capital structure measured by the ratio of TDTA in first model as shown under the column of model 1 and the ratio of TDTC in the second model as shown under the column of model 2 and bank performance measured by return on equity. The result indicates that capital structure of the firm which is measured by ROE had a positive relationship with bank capital structure (table 5).

Table 5 Capital structure and performance measured by ROE

Variables	Performance (ROE)	
	Model 1	Model 2
TDTA	0.2280445(0.205)	*
TDTC	*	0.0063372(0.031)
R ²	0.5364	0.5630
# of Observations	104	104

Source: Computed from the financial statement of commercial banks in Ethiopia

The result of regression analysis for the individual coefficient of independent variable indicate that the coefficient of TDTA in the first model is .2280445 with p-value of 0.205 and the coefficient of TDTC in the second model is .0063372 with p-value of 0.031. This result indicates that the capital structure variable, TDTA, has positive but statistically insignificant relationship with ROE as shown in model 1 with a p-value of 0.205 whereas TDTC has positive and statistically significant relationship with ROE as shown in model 2 with p-value of 0.031.

The R- squared statistics which measures the percentage of variance in the dependent variable explained by the first model is 0.5364 and in the second model is 0.5630. This suggests that the

variables included in the first and second model explain the variability in return on equity for 54 percent and 56 percent respectively. In general the result of the regression analysis indicates that leverage has a positive effect on the financial performance of the bank measured by ROE.

Table 6 below presents the third set of the two regression models in which the dependent variable was alternatively measured by the ratio of net profit margin. Again, as in the previous case the two models are estimated by changing the capital structure Measurement. The capital structure of the bank is measured by the ratio of TDTA under the first model and the ratio of TDTC under the second model of the regression table.

Table 6: Capital structure and performance measured by NPM

Variables	Performance (NPM)	
	Model 1	Model 2
TDTA	-0.9283574 (0.000)	*
TDTC	*	-0.008218 (0.003)
R ²	0.4588	0.4203
# of Observations	104	104

Source: Computed from the financial statement of commercial banks in Ethiopia

The results of the regression analysis of table 6 indicate that TDTA and TDTC have significantly negative relationship with performance of the bank measured by net profit margin. On the other hand, size has significantly positive relation with performance of banks.

The estimated coefficient of the independent variable and the test statistics indicate that the coefficient of TDTA in the first

model is -.9283574 with p-value of 0.000 and the coefficient of TDTC in the second model is -.008218 with p-value of 0.003. As shown in table 6 the result of the regression analysis indicates that the two independent variables had statically significant negative effect on performance of commercial banks in Ethiopia when performance is measured by net profit margin.

The coefficient of determination or R-square of the first model is that 0.4588 and for the second model the coefficient of determination was 0.4203. this indicate that about 42 percent of variation of the dependent variable, net profit margin, is explained by the variables included in the first model and 46 percent of the variation of net profit margin is explained by the variables included in the second model. Therefore, based on the finding the relationship between capital structure and performance was in accordance with the expected sign.

V. DISCUSSIONS OF THE RESULTS

When examining the actual financing behavior of commercial banks in Ethiopia with the existing prominent theory of capital structure; trade-off, pecking-order and agency cost theory. These theories support different result for the relationship between capital structure and performance of the firm.

Table 7: The expected sign (+/-) of variables based on the theoretical and empirical evidence

Variabl es	Trade-off Theory	Pecking-Order Theory	Expected sign for this study	Some empirical evidence for the Expected sign
ROA	+	-	-	Adekunle and Sunday (2010), Khan (2012) and Adekunle, Sunday O (2010) Zeitun and Tian (2007)
ROE	+	-	+	Abor (2005), Ebaid (2009) and Saeedi and Mohoodi (2011)
NPM	+	-	-	Umar (2012), Luper and Isaac (2012) and Khan (2012)

Source: Myers 1984; Myers and Majluf 1984; Titman and Wessels 1988; Jensen and Meckling (1976); Wald 1999; Stulz 1990 and other studies including capital structure theory.

Notes: A positive sign “+” indicates a direct relationship, whereas a negative sign “-” indicates an inverse relationship exists between the dependent and independent variables.

RETURN ON ASSET

The study hypostasized that there is a negative relationship between capital structure and performance of commercial banks in Ethiopia which is measured by ROA. Consistent with the hypothesis, the estimated coefficient of the independent variables TDTA and TDTC and the test statistics revealed that the two independent variables had significant negative effect on the performance of commercial banks in Ethiopia when performance is measured by return on asset (Table 4). This indicates that the higher leverage has an effect to reduce return on asset of commercial banks in Ethiopia.

The finding of current study is being consistent with most past findings in other sectors and countries, seems to suggest against MM hypothesis and rather go hand-in-hand with agency argument. Increased in debt was significantly and negatively associated with return on total assets. A decline in ROA may still be compensated by the multiplier effect. The negative association between debt and return on asset may not necessary be a result of direct causation. However, return on assets may be affected by the banks efficiency, both operating and asset use efficiency. Thus, the link of the causation may go like this increase in debt has a negative influence on the banks asset or operating efficiency or both. Thus, debt diminishes the banks efficiency where by reducing their profitability or return on total assets. This may have its source to well known agency problems.

Especially in the context of commercial banks it is to be observed that much of the debt capital is obtained from small account investors. Their ability to oversee the efficient utilization of asset is far limited.

Besides, the efforts on the part of the bank management to avoid the possibility of bankruptcy with increased debt may cause good investment opportunities to be passed and in turn reduce return on asset. In addition to this, The Ethiopian banking sector is highly regulated institution in the county. As regulated institution, the sector give loans by attaching different debt covenant instrument which is difficult for the borrowing company even if they have a good repayment capacity. These may have a depressing effect for underutilization of the asset of the bank and in turn have a negative effect on the performance of the bank which is measured by ROA since ROA is computed by dividing the net income by total asset of the bank.

The finding support the pecking order argument of the capital structure theory which described as the companies utilize higher amount of debt in their capital structure has an effect to lower performance of the firm. This finding have an indication of performance of the bank is increase when the level of internal financing is increase. Thus, the bank that has more capital and reserve is the less which depends on external funds.

As hypothesized at the outset, the findings show that debt had a negative effect on total asset. This is not in line with what

MM hypothesis anticipated. It is remarkably consistent with several past empirical results from non financial sectors and other countries. Similar with this study, Salteh (2012), report that a significant negative relationship between ROA with TDTA and TDTC. The study by Adekunle and Sunday (2010) and Khan (2012) is also consistent with the current study in that the studies found similar results regarding with the relationship between debt and return on total assets. Moreover, the finding also agrees with Zeitun and Tian (2007) who found negative relation between debt and ROA in their study of non-financial Jordanian firms. These findings are also consistent with Saeedi and Mohoodi (2011) and Booth et al. (2001) who found the negative relationship between performance and capital structure. In contradict with the finding of Abor (2007) the finding of this study also indicates that capital structure is negatively related to performance measured by return on asset. Apart from the result of this study, Luper and Isaac (2012) found that a positive relationship between total debt to equity and return on asset in their study on capital structure and performance of manufacturing companies in Nigeria.

In agreement with the first hypothesis, the finding of the study indicates that the capital structure of the firm have a significant negative effect on the financial performance of the bank measured by return on asset.

RETURN ON EQUITY

As predicted in the hypothesis the capital structure of the bank has a positive effect on the performance of the bank which is measured by return on equity. However the result of the regression analysis under table 5 indicates that the coefficient of this relationship is significant with TDTC and insignificant with TDTA. The insignificant coefficient of TDTA shows that the capital structure of the bank measured by TDTA has no effect on the financial performance of the bank by using ROE as performance measurement variable. While the positive significant coefficient of TDTC shows that there is a direct relationship between leverage measured by TDTC and performance of banks measured by ROE.

The finding of the study indicates that there is a direct relationship between leverage and performance measured by ROE. But, this is not more than crude conclusion because to see whether equity holders of the banks were being awarded commensurate to the financial risks they born, it is necessary to know the return per unit of risk that accrued to equity holders. But, given the available data, such exact measures are out of reach.

To interpret the result in light of MM, as debt increases, so does the financial risk borne by equity holders of the commercial banks. Thus, it is possible to interpret the results such that the observed positive relation between debt and ROE may simply indicate that equity holders demand proportionate rewards to the higher risks they are exposed to as a result of increased debt capital in the bank's capital structure and these finding is consistent with trade off theory which assume a positive

relationship between leverage and performance of firms measured by ROE.

In agreement with the previous empirical work in other industries and countries, and in line with the implications of MM hypothesis, this study found that increases in debt in banks capital structure had a positive effect of increasing return on equity. Similar to the result obtained by Abor (2005) who studied the impact of capital structure on the performance of Ghanaian listed firms, this study, though in different setting, finds that debt, which is measured by the ratio of total debt to equity has significant positive effect on the return on equity of Ethiopian commercial banks during the period covered by the study. the result of the ratio of total debt to asset also agree with the findings of Ebaid (2009), who studied Egyptian listed firms and Saeedi and Mohoodi (2011) who studied the link age of financing choices and firm performance of Iranian firms, they found that there is no significant relationship between debt and ROE. The current study also found insignificant positive relationship between leverage and ROE. Moreover the finding of the study made by Salteh (2012), also found that insignificant relationship between TDTA and ROE while the relationship between total debt to equity denoted by TDTQ has significant relation with ROE.

In contradict with the finding of this study, the negative relation between debt and return on equity is found by Onalapo (2010) in the study of Nigerian stock exchange listed companies. Similar with the study of Onalapo (2010) the finding of the study made by Zeitun and Tian (2007) who in the study of Jordanian companies, are not born out in the current study. on the other hand the study made by Umar et.al (2012), which is made on top 100 companies in Pakistan found that a negative but insignificant relation between TDTA and ROE. This difference may be due to sector difference. Mainly, it may be because of some underlining differences between the types firms investigative. While these past studies were conducted on non financial firms, the current study was based on commercial banks. In this case, therefore, one may conclude that the impact of debt on return on equity is contingent on which sector or types of firms are being considered. In fact, by having country wise difference in terms of institution some studies are born with similar finding. For instance the finding of the current study that debt has positive effect on ROE and debt has insignificant effect on ROE is similar with the results obtained by Abor (2005) and Ebaid (2009) even if the two studies are quite different both in terms of sector as well as institutional context under which the studied firms operated.

To evaluate the finding vis-à-vis hypothesis, the second hypothesis is hypothesized a positive effect of leverage on return on equity, which is borne out by the data. As expected in the second hypothesis, an increase in leverage has a positive relation with return on equity of Ethiopian commercial banks even if TDTA has insignificant positive relation with ROE during the period investigated.

NET PROFIT MARGIN

The results of table 6 suggest that the impact of debt to total asset has the effect of decreasing NPM. Thus, debt had a significant negative effect on net profit margin of the banks. As expected in the hypothesis, the coefficient of capital structure measured by TDTA and TDTC has significant and inverse relationship with performance proxy by net profit margin (NPM).

The negative relationship between leverage and net profit margin indicate that the banking industry in Ethiopia is highly depend on the deposit of customer which become the liability of the banks. This might be because of the absence of capital and debt market specially bond market in the country. The banks incurred cost of capital for the amount of fund collected from the customer. At this time the benefit of borrowed capital might be less than the cost of other investment activities that bank incur if the bank engaged in different financial market. Or else the banks might be more profitable if the banks are engaged in diversified market like bond and other debt market than financed largely by the deposit comes from it is customer.

The finding of the study is consistent with the argument of pecking order theory in which the capital structure of the firm have a negative effect on the performance of the bank which is measured by net profit margin. Similar with that of ROA leverage and performance of the bank measured by net profit margin have an inverse relationship. This might be due to the amount of cost of capital incurred by the bank for the higher portion of external finance usually debt for this case have a negative effect on the performance of the bank measured by NPM; thus the amount of profit generating by the bank incur high cost of capital.

The finding of the study is consistent with the study made by Umar (2012) on top 100 companies in Pakistan in which the study found that significant negative relationship between leverage and NPM. Similarly the finding of the study made by Luper and Isaac (2012) report that a negative relationship between total debt to equity ratio and net profit margin. This result also support the argument made by Khan (2012) which found a high financial leverage reduce performance of the firm measured by net profit margin.

The finding of this study also agrees with the third hypothesis which is hypothesized as leverage ratio has a negatively association with net profit margin of Ethiopian commercial banks. This also corroborated by the data in the sense that estimated coefficient had the expected sign and were significant. So, the third hypothesis is not rejected since the result of the study is concurring with hypothesis that capital structure of the firm has negative relationship with performance measured by net profit margin.

VI. CONCLUSIONS

The issues of capital structure and performance of the firm are still remain controversial and a puzzle issue around the world. The overall finding of the study indicated that capital

structure has positive or negative association with performance and there is an evidence to support trade off theory as well as packing order theory of capital structure that is applicable in the Ethiopian banking industry. Hence, it is possible to conclude that capital structure choice has a significant relation with bank performance and there is an inconsistency of capital structure theory which is applicable in the Ethiopian banking industry.

VII. RECOMMENDATIONS

The findings of the study reveal that, the banking sector of the country is highly levered institution, which has an effect to lower the performance of the banks measured by ROA and NPM. So, banks should construct their capital structure at optimal level by participate in the practice of making best debt/equity ratio by raising capital from equity finance in order to improve their performance.

The study reports that the positive association between leverage and bank performance measured by ROE, which indicates that the portion of cake for equity holder is improved by using debt. However, it is known there is a direct relationship between debt and risk of equity capital, and before making decision it is important to measure a return with risk.

The findings of this study also suggest the policy implication for commercial banks in Ethiopia. Firstly, this finding can be one incentive for banks to see back their credit policy with respect to the customer status or repayment ability in connection with the collateral requirement to accept the loan requirements and if there is a possibility to relax a collateral requirements and/or search other means of giving loan in order to enhance their performance. Secondly, the study found negative linkage between leverage and performance measured by ROA and NPM. This has an inference for positive association between equity capital and ROA and NPM. Thus by considering this finding the researcher suggested an intermediary solution may be called up on to address the matter like opining secondary market.

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AUTHORS

First Author – Muhammed Aragie, College of Business and Economics, Jimma University, Jimma, Ethiopia, muhammed.aragie@ju.edu.et, muhammed@mail2best.com, +251 922-159-763, +251 471-117 -515

Second Author – Ashenafi Beyene, Ethiopian Civil Service University, Addis Ababa, Ethiopia, ashenafizb@gmail.com +251 911 44 68 32

Third Author – Netsanet Shiferaw, School of Business and Economics, Dire Dawa University, Dire Dawa, Ethiopia, nanijimma@gmail.com, +251