



# The Impact of Capital Structure on Financial Performance of Commercial Banks in Ethiopia

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**Keywords:** *capital structure, financial performance, commercial banks.*

**GJMBR-C Classification:** *JEL Code: G21*



*Strictly as per the compliance and regulations of:*



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## 1. INTRODUCTION

To survive and growth of any business the capital or resources must be needed but how can the business organizations get that capital? In the other words what is the source of finances? Capital structure decision should answer this question. An appropriate capital structure is important not only because of the need to survival and growth or maximizing returns of business organizations, but also because of the impact of such decision on firm's ability to deal with its competitive environment.

Financing and investment are two major decision areas in a firm. In the financing decision the manager is concerned with determining the best

financing mix or capital structure for his/her firm. Capital structure decision is the mix of debt and equity that a company uses to finance its business (Damodaran, 2001). Capital structure has been a major issue in financial economics ever since Modigliani and Miller showed in 1958 that given frictionless markets, homogeneous expectations; capital structure decision of the firm is irrelevant. Modigliani and Miller (M & M) (1958) wrote a paper on the irrelevance of capital structure that inspired researchers to debate on this subject. This debate is still continuing. However, with the passage of time, new dimensions have been added to the question of relevance or irrelevance of capital structure. MM declared that in a world of frictionless capital markets, there would be no optimal financial structure (Schwartz & Aronson, 1967). This theory later became known as the "Theory of Irrelevance". In MM's over-simplified world, no capital structure mix is better than another. MM's Proposition-II attempted to answer the question of why there was an increased rate of return when the debt ratio was increased. It stated that the increased expected rate of return generated by debt financing is exactly offset by the risk incurred, regardless of the financing mix chosen. The relationship of the capital structure decisions with the firm performance was highlighted by a number of theories mainly, the agency theory, information asymmetry theory, signaling theory and the trade off theory.

The most important among them is the agency problem that exists because ownership (shareholders) and control (management) of firms lies with different people for most of the firms. And for that reason, managers are not motivated to apply maximum efforts and are more interested in personal gains or policies that suit their own interests and thus results in the loss of value for the firm and harm shareholder's interests. Therefore, debt finance act as a controlling tool to restrict the opportunistic behavior for personal gain by managers. It reduces the free cash flows with the firm by paying fixed interest payments and forces managers to avoid negative investments and work in the interest of shareholders (Jensen and Meckling (1976)).

The asymmetric information theory states that the firm's manager (insiders) has more information about their firm compared to the outside investors. The well informed managers try to send positive information to the market or ill informed investors to increase the firm value. Signaling theory states that managers have

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incentives to use various tools to send signals to the market about the difference that exist between them and weaker firms. One of the key tools to send these signals is the use of debt. Employment of debt in capital structure shows that managers have better expectations about the future performance whereas equity sends a bad news about the firm performance in the future (Ross (1977)).

Trade-off theory allows bankruptcy cost to exist. It states that there is an advantage to financing with debt (the tax benefits of debt) and that there is a cost of financing with debt (the bankruptcy costs and the financial distress costs of debt). The marginal benefit of further increases in debt declines as debt increases, while the marginal cost increases, so that a firm that is optimizing its overall value will focus on this trade -off when choosing how much debt and equity to use for financing (Modigliani and Miller (1963)).

Pecking Order Theory tries to capture the costs of asymmetric information. It states that companies prioritize their sources of financing (from internal financing to issuing shares of equity) according to least resistance, preferring to raise equity for financing as a last resort. Internal financing is used first. When that is depleted, debt is issued. When it is no longer sensible to issue any more debt, equity is issued. This theory maintains that businesses adhere to a hierarchy of financing sources and prefer internal financing when available, while debt is preferred over equity if external financing is required. Thus, the form of debt a firm chooses can act as a signal of its need for external finance. The Pecking Order Theory is popularized by Myers (1984), when he argues that equity is a less preferred means to raise capital because when managers (who are assumed to know better about true condition of the firm than investors) issue new equity, investors believe that managers think that the firm is overvalued and managers are taking advantage of this over-valuation. As a result, investors will place a lower value to the new equity issuance.

In finance, capital structure refers to the way in which an organization is financed a combination of long term capital (ordinary shares and reserves, preference shares, debentures, bank loans, convertible loan stock and so on) and short term liabilities such as a bank overdraft and trade creditors. A firm's capital structure is then the composition or structure of its liabilities.

The financing or capital structure decision is significant managerial decision, as it influences the shareholder return and risk. The market of the share also is affected by the capital structure decision (Harris and Raviv (1991)). The company has to plan its capital structure initially at the time of its promotion. Subsequently, whether the funds have to be raised, a capital structure decision is involved. A demand for raising funds generates a new capital structure which

needs a critical analysis (Ruzbeh J. Bodhanwala (2003)).

The notion of performance is a controversial issue in finance largely because of its multi-dimensional meanings. Many experts define financial performance in different ways. According to (Metcalf and Titard, 1976) financial performance refers the act of performing financial activity. In broader sense, financial performance refers to the degree to which financial objectives being or has been accomplished or it is used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation (Metcalf and Tetrad, 1976).

The purpose of this paper is to investigate the relationship that exists between the capital structure and financial performance in case of selected commercial banks in Ethiopia between the years of 2011-2015.

## II. OBJECTIVES

The general objective of this study will be to investigate the impact of capital structure on the financial performance of selected commercial banks in Ethiopia.

The Specific Objectives of the study are:

1. To investigate the relationship between capital structure and financial performance of selected commercial banks in Ethiopia.
2. To evaluate the effect of debt ratio, total debt to equity and loan to deposit in the capital structure on financial performance of selected commercial banks.
3. To examine the effect of bank's size and tangibility on financial performance.

## III. LITERATURE REVIEW

Under favorable economic conditions, the financial performance increase with financial leverage. But leverage also increases the financial risk of shareholders. As a result, it cannot be stated definitely whether or not the firm's value will increase with leverage. The objective of a firm should be directed towards the maximization of the firm's value. The capital structure or financial leverage decision should be examined from the point of its impact on the value of the firm. If capital structure decision can affect a firm's value, then it would like to have a capital structure, which maximizes its market value. However, there exist conflicting theories on the relationship between capital structure and the value of a firm. The traditionalists believe that capital structure affects the firm's value while Modigliani and Miller (MM), under the assumptions of perfect capital markets and no taxes, argue that capital structure decision is

irrelevant. MM reverses their position when they consider corporate taxes.

a) *Theoretical literature review*

One of the most insightful and important concerns in corporate finance is to determine how firms should finance their investments and operations. This is known as the capital structure problem. Capital structure, in finance, according to the Modigliani Miller refers to the technique a corporation finances its assets through combination of equity, debt, or hybrid securities. Firm's capital structure is then the composition or structure of its debt and equity or the capital structure of a business is the mix of types of debt and equity the company has on its balance sheet. The capital or ownership of a business can be evaluated by knowing how much of the ownership is in debt and how much in equity. The company's debt might include both short-term debt and long-term debt (such as mortgages), and equity, including common stock, preferred shares, and retained earnings. Capital structure is considered as one of the main factors that have an impact on firm performance. Central to this argument is the agency theory, which explains the conflict of interest between shareholders and managers as well as the shareholders and bondholders.

In their pioneering work, Jensen and Meckling (1976) argue that the choice of capital structure may help mitigate agency costs. They claim that higher use of debt capital may reduce agency costs through the threat of liquidation, which causes personal losses to managers' salaries, reputation, and through pressure to generate cash flow to pay interest expenses (Grossman and Hart 1982, Jensen 1986, Williams 1987). A testable hypothesis that can be drawn from this argument is that increasing the leverage results in lower agency costs and improved firm performance, *ceteris paribus*. Conversely, when leverage becomes relatively high, further increases generate significant agency costs such as bankruptcy cost or financial distress resulting in negative impact on performance (Berger and Bonaccorsi di Patti, 2006).

Harris and Raviv (1991) argue that the debt instruments in the capital structure provide more power to investors and thereby can discipline management by reducing the discretionary power of the management on free cash flow of the firm. Emanating from this argument, leveraging is considered an appropriate method to mitigate conflicts between shareholders and managers and thereby reduce the agency cost (Jensen and Meckling, 1976). The relationship between agency cost and firm performance under agency cost hypothesis has been examined by Berger and Bonaccorsi di Patti (2006). They employ profit efficiency as an indicator of firm performance and estimate a simultaneous-equations model to account for reverse causality from perfor-

mance to capital structure. They find statistically significant relationship between higher leverage and higher profit efficiency. Their findings are consistent with agency cost hypothesis.

b) *Review of related empirical studies*

Since the pioneering work of Modigliani and Miller (1958), the financing decision of capital structure and their impact on financial performance has been a major field in the corporate finance literature. Since then, numerous studies have attempted to investigate the relationship between capital structure and financial performance of the firms. Even though, the area of capital structure and its impacts on financial performance need extreme investigation and analyzed and investigated in the other countries, it is not yet investigated in Ethiopia but some of the attempt has been made to investigate the determinants of capital structure:

The study made by Daniel Kebede (2011), is to investigate the determinants of capital structure in Ethiopia small scale manufacturing co operatives the research method which employed in the study is quantitative approach method specifically survey method. The data is collected from the financial statement of 13 small scale manufacturing co-operatives for the period from 1998 to 2002 E.C. the researcher also made unstructured interview method to collect data from concerned bodies. In the study the researcher used leverage as dependent variable whereas size, tangibility, profitability, earning volatility, growth and age are used as independent variables. The finding of the study reveal that size and tangibility has positive relationship with leverage while profitability, earning volatility, growth and age has an inverse relationship with leverage. Finally the researcher conclude that even though the three most dominant capital structure theories are appear in Ethiopian small scale manufacturing cooperatives, the best theory that explain the capital structure theory of the sector is trade off theory.

The main objective of the study made by Woldemikael Shibru (2012) is to examine the relationship between leverage and determinants of capital structure decision and to explore which capital structure theory is applicable in commercial banks in Ethiopia.

He uses profitability, tangibility, growth, risk, size and liquidity as a factor that determine the mix of debt equity ratio. The researcher use mixed research methods by combining qualitative and quantitative approach together to achieve the stated objective. The data source for the study is documentary analysis and depth interviews. The study uses eight banks data for twelve consecutive years (2000-2011). The results of the analysis indicate that profitability, tangibility, liquidity and growth have negative relationship with leverage. Size and leverage has a positive relationship. There is no

support to identify the level of leverage is affected by risk. The conclusion of the study made by Shibru (2012) is that profitability, liquidity, tangibility and bank size are the major factor to determine capital structure of commercial banks in Ethiopia and the predominant capital structure theory applied in Ethiopian banking industry is pecking order theory.

Stulz (1990) noted that debt can have both a positive and negative effect on the value of the firm (even in the absence of corporate taxes and bankruptcy cost). He built a model in which over investment and under investment can be alleviated by debt financing. His model assumes that managers have no equity ownership in the firm and receive utility by managing a larger firm. The power of manager may motivate the self-interested managers to undertake negative present value project. In order to solve this problem, shareholders force firms to issue debt.

Ebaid (2009) aimed to investigate the impact of capital structure on performance of companies listed at Egyptian stock exchange. In order to meet its objectives the researcher considered short term debt (STD), long term debt (LTD) and total debt (TD) data over the period of 1999 to 2005 and analyzed them by using least square regression model. The expected impact of the independent variables were return on asset (ROA), return on equity (ROE) and gross profit margin (GPM). The study by Ebaid (2009) revealed that short term debt and total debt are significantly negative influence or impact on the financial performance measured by return on asset but no significant relationship found between long term debt and return on asset. He also proposed that there is not significant impact of the debt (STD, LTD and TD) on financial performance measured by both gross profit margin (GPM) and return on equity (ROE). He also indicated that the firm size has no significant effect on financial performance.

Ibrahim (2009) examined the impact of capital structure choice on firm performance in Egypt, using a multiple regression analysis in estimating the relationship between leverage level and firm's performance, the study cover between 1997 and 2005. Three accounting based measures of financial performance (return on Equity, return on Assets and gross profit margin) were used. The result revealed that capital structure choice decision in general, has a weak-to-no impact on firm's performance.

B. Nimalathasan & Valeriu Brabete (2010) pointed out capital structure and its impact on profitability: a study of listed manufacturing companies in Sri Lanka. The analysis of listed manufacturing companies shows that Debt equity ratio is positively and strongly associated to all profitability ratios (Gross Profit, Operating Profit & Net Profit Ratios).

Chowdhury and Chowdhury (2010), empirically support the argument of Modigliani and Miller (MM).

Their work test the influence of debt-equity structure on the value of shares given different sizes, industries and growth opportunities with the companies incorporated in the Dhaka Stock exchange (DSE) and Chittagong Stock Exchange (CSE) of Bangladesh. Prashat Gupta, Aman Srivastava and Dinesh Sharma (2011) investigated the impact of financing decisions on capital structure and financial performance of 100 companies listed on stock exchange (NSE) of India for the time period of 5 year from 2006 to 2010 and they concluded that the capital structure influences financial performance significantly which is measured by adjusted value, market value and book value.

Pratheepkanth (2011) conducted a study his finding regarding the capital structure (CS) and its impact on financial performance during 2005 to 2009 of business organizations in Sri Lanka. The result of research validated a negative relationship between capital structure measured by debt to equity ratio and financial performances measured by gross profit, net profit, ROA and ROE of the Sri Lankan companies.

San and Heng (2011) they examined that the relationship of capital structure and corporate performance of firms before and during 2007 crisis, all 49 construction companies are taken from Malaysia which were listed in Main board of Bursa Malaysia from 2005 to 2008, these forty nine companies are divided in three units like small, medium and large or big size. Always financial crisis are occurred by the poor corporate performance, in the Malaysia construction industries and construction activates are the major source of growth and development in Malaysia, in this research (capital structure) independent variables are used Long term debt to capital (LDC), debt to capital (DC), debt to asset (DA), debt to equity market value (DEMV), debt to common equity (DCE), long term debt to common equity (LDCE) and (Corporate performance) dependent variables are return on capital (ROC), return on equity (ROE), return on asset (ROA), earnings per share (EPS), operating margin (OM) and net margin (NM). The pooling regression model is employed to test the influence of capital structure on the company's performance method of ordinary least square (OLS) is used to estimate the regression line (OLS) is used to minimize the error in estimated and actual points. The result shows that, there is relationship between capital structure and corporate performance; in the interim the results also indicate that there are no relationships between the various variables that are examined in this study. For the big construction companies only return on capital (ROC) and Earnings per share (EPS) for large construction companies have significant relationship with capital structure, mean while Return on capital (ROC) and Debt equity to market value (DEMV) are the most correlated and showing the strongest relationship among all the variables examined. Basically, debt equity to market

value (DEMV), long term debt to capital (LDC) and debt to capital (DC) have direct influence on corporate performance of the large companies and other independent variables don't affect the dependant variables. Debt to capital (DC) has direct impact on corporate performance of small companies and yet other independent variables don't affect the dependent variables.

Ahmad and Abdullah and Roslan (2012) investigated the impact of capital structure on firm performance by analyzing the relationship between operating performance of Malaysian firms. Modigliani and Miller (1958) have theoretically argued and proved that capital structure is irrelevant in a perfect market condition, characterized by the capital market with no taxes, no transaction costs and homogenous expectations; other works that assume several market imperfections on the contrary suggested that capital structure decisions are relevant since it can affect shareholders wealth. Modigliani and Miller (1963) in existence of corporate taxes suggested that firms should use as much debt capital as possible in order to maximize their value by maximizing the interest tax shield. The dependent variables used in this research are ROA( Return on asset), ROE (return on equity) and control variable are firm size (SIZE), sales growth (SG), growth (AG), firm efficiency and independent variables are long-term debt (LTD), short-term debt (STD) and total debt (TD). All the companies are public listed organizations in the Malaysia, specifically the Modigliani-Miller theorem; trade-off theory and pecking order theory were reviewed to provide sufficient understanding of how much capital structure could affect firm's performance. This study covers tow major sectors consumers and industrials sectors 58 firm's sample starting from 2005 to 2010 with total of 358 observations and two general pooled regression models are used. Findings of the study validated that STD and TD have significant relationship with return on asset (ROA) while Return on equity (ROE) and all capital structure indicators have significant relationship.

Khan (2012); and Saaedi and Mahmoodi (2011) use panel data techniques to investigate the relationship between firm's capital structure and its performance. Khan (2012) applies a pooled ordinary least square regression on 36 engineering sector firms in Pakistan. Results indicate a significantly negative relationship between the firm's performance measured by the return on assets, gross profit margin and Tobin's Q, while a negative but not statistical significant relationship between financial leverage and firm performance measured by the return on equity. Saaedi and Mahmoodi (2011) use pooling panel model to test how different capital structure indicators affect the firm's performance indicators finding a positive relationship between the capital structure and

performance measured by earnings per share and Tobin's Q.

An empirical study made by Khalaf Al-Taani (2013), on the relationships between capital structure and firm performance in the Jordan with the aim of investigating the relationships between capital structure and firm performance across different industries using a sample of Jordanian manufacturing firms in Jordan. He was employed a multiple regression method of data analysis and analyze performance indicators such as return on asset (ROA), profit margin (PM) as well as short term debt to total asset (STDTA), long term debt to total asset (LTDTA) and total debt to equity (TDE) as a capital structure variables over the period of five (5) from 2005-2009. The study found that there is a negative and insignificant relationship between short term debts to total asset (STDTA) and long term debts to total asset (LTDTA) and return on asset (ROA) and profit margin (PM), while total debt to total equity (TDE) is positively related with return to asset and negatively related with profit margin. Short term debt to total asset is significant using return on equity (ROE) while long term debt to total asset is significant using profit margin. Generally the result concludes that statistically, capital structure is not a major determinant of firm performance.

An empirical analysis of capital structure on firm performance in Nigeria for the time horizon of 5 year with panel least square regression was analyzed by Taiwo Adewale Muritala (2013). The study was aimed to analyze the firms operational performance affected by capital structure decision and he concludes that the results from panel least square confirm that asset turn over, sizes, firms age and firms asset tangibility are positively related to firms performance and he also found there is negatively significant relationship between asset tangibility and return on asset (ROA) and he recommends that asset tangibility should be a driven factor to capital structure because firms with more tangible assets are less likely to be financially constrained.

A study by Saeed, M, Gull, A, Rasheed, M (2013) which assessed the impact of capital structure on the performance of banks in Pakistani for the period (2007-2011) found a positive relationship between determinants of capital structure and performance of banking industry. The Performance was measured by return on assets (ROA), return on equity (ROE) and earnings per share (EPS). Determinants of capital structure included long term debt to capital ratio, short term debt to capital ratio and total debt to capital ratio.

An empirical analysis of capital structure on financial performance in Nigerian bank for the time horizon of 8 year with Ordinary least square regression analysis was analyzed by Julius B. Adesina and Nwiodobie (2015). This study aims to determine the impact of post consolidation capital structure on the

financial performance of Nigeria quoted banks. The study used profit before tax as a dependent variable and two capital structure variables (equity and debt) as independent variables. The findings of this study shows that capital structure has a significant positive relationship with the financial performance of Nigeria quoted banks.

Cheruyot Ronoh (2015) carried a study on effect of capital structure on financial performance of listed commercial banks in Kenya and found that capital structure of listed commercial banks in Kenya is significant and affects financial performance of commercial banks negatively.

c) *Research Gaps*

Since Modigliani and Miller (M & M) (1958 and 1963), wrote a paper on irrelevance theory of capital structure, many research have been carried out to determine the impact of capital structure on firm's financial performance. For instance Cheruyot Ronoh (2015), Titman and Wessels (1988), Kester(1986), Pratheepkanth (2011), Khan(2012) and Rajan and Zingalas (1995) found a significantly negative relationship between financial performance and capital structure.

Despite the above empirical works some authors have absorbed a different opinion on the relationship between financial performance and capital structure. For example Abor (2005), Taub (1975), B. Nimalathason and Valeriu Brabete(2010), Julius B. Adesina and Nwidobie (2015), San and Heng (2011) and Saaedi and Mahmoodi (2011) found profitability or financial performance and capital structure have a positively significant relationship. Apart from the above empirical works, some of authors found that there is a weak or no impact of capital structure on firm's financial performance. For instance Ibrahim (2009) and Khalaf Al- Taani (2013) confirm this assumption. From the above discussions based on the results of empirical literature, it is clear that investigation in the relationship between capital structure and financial performance are inconclusive and requires more empirical works.

IV. DATA, MODEL SPECIFICATION, AND METHODOLOGY

The researcher intention or objective is to obtain data needed to generalize about the impact of capital

$$Model\ 1\ ROA_{i,t} = \alpha + \beta_1(DR) + \beta_2(DER) + \beta_3(LD) + \beta_4(SIZE) + \beta_5(TANG) + \mu_{it}$$

$$Model\ 2\ ROE_{i,t} = \alpha + \beta_1(DR) + \beta_2(DER) + \beta_3(LD) + \beta_4(SIZE) + \beta_5(TANG) + \mu_{it}$$

Where:

- $\alpha$ .....constant
- $\beta_1$ ..... $\beta_5$  .....coefficient of independent variable
- $ROA_{i,t}$  .....return on asset of  $i^{th}$  on the year t
- $ROE_{i,t}$  .....return on equity of  $i^{th}$  on the year t

structure on financial performance of selected commercial banks in Ethiopia. To achieve this objective the researcher used quantitative research approach because it is the best approach to use to test a theory or explanation (Creswell, 2003). Specifically, this study employed a survey design that was administered through structured review of documents from selected commercial bank's financial statements for five years, because surveys are relatively inexpensive (especially self-administered surveys), it enables to gather enough information which may not available from other sources and it's high-speed in data collection.

The study relied on of Secondary sources to collect the required data from selected commercial banks. The sample banks were selected from commercial banks registered by national bank by using purposive sampling technique because the researcher only selects the banks that have five year experience of preparing annual financial report. Data collected for the study was compiled, sorted, edited, classified, coded and analyzed using a computerized data analysis package known as stata12

The study employs return on Assets (ROA) and Return on Equity (ROE) as dependent variables, and measures of firm's financial performance. Although there is no unique measurement of firm performance in the literature, ROA and ROE were chosen because they are important accounting based and widely accepted measures of financial performance.

The independent (explanatory) variables in this study are the Debt ratio (DR), debt/ equity ratio, loan to deposit, size and tangibility.

Thus, the general model for this study as is mostly found in the literature is represented by,

$$y_{it} = \alpha + \beta x_{it} + u_{it}$$

With subscript  $i$  denote the cross-section and  $t$  representing the time-series dimension.

The left-hand variable  $y_{it}$  is the dependent variable,  $\alpha$  is the intercept term,  $\beta$  is a  $k \times 1$  vector of parameters to be estimated on the explanatory variables, and  $x_{it}$  is a  $1 \times k$  vector of observations on the explanatory variables,  $t = 1, \dots, T$ ;  $i = 1, \dots, N$ , and  $\mu_{it}$  represents the error vector. Therefore the general models which incorporate all of the variables to test the hypotheses of the study were:

- DR.....debt ratio
- DER.....debt to equity ratio
- LD.....loan to deposit ratio
- SIZE.....firm's size
- TANG.....tangibility of asset
- $\mu$ it.....Error tem which is assumed to have a normal distribution.

## V. ANALYSIS AND FINDINGS

### a) Descriptive Statistics

The Table 1 below shows the descriptive statistics. The results indicate that the mean return on equity (ROE) of the sampled firms is about 21.3%, while that of the ROA is about 27.5%.The results indicate that on the average, for every one birr worth of total assets of the firms, mere 27.5% was earned as profit after tax, while 21.3% was earned as after tax profit on every one birr total equity. The minimum ROE and ROA are -0.024 and -0.008 respectively, while the highest ROE and ROA are 0.391 and 0.052 respectively. The maximum and minimum values for each performance measures indicate that the performance varies substantially among banks. The mean for the total debt to total assets (DR) is

0.856, indicating that more than 85% of the total assets are financed with debt, which indicates that most of the firms are highly levered and the maximum and minimum are 0.938 and 0.655 respectively. Debt to equity ratio (DER) on the other hand had a minimum and maximum value of 1.899 and 15.027 respectively with a mean of 6.696. Loan to deposits (LD) had a mean of 0.563 with a minimum and maximum value of 0.43 and 0.705 respectively. The mean value of bank size (SIZE) is equal to 22.74 with maximum of 23.95 and minimum value of 19.94 indicates that most of the sample firms are close in term of size. Tangibility of assets (TANG) on the other hand had a minimum and a maximum value of 0.008 and 0.063 respectively with a mean value of 0.023.

Table 1: Descriptive Statistics

	ROA	ROE	DR	DER	LD	SIZE	TANG
Mean	0.275	0.213	0.856	6.696	0.563	22.736	0.023
Maximum	0.052	0.391	0.938	15.027	0.705	23.95	0.063
Minimum	-0.008	-0.024	0.655	1.899	0.429	19.94	0.008
Std. Dev.	0.009	0.817	0.049	2.614	0.062	0.935	0.112
Observations	40	40	40	40	40	40	40

Source: Financial statements of sample commercial banks and own computation

### b) Correlation analysis

Correlation is a way to index the degree to which two or more variables are associated with or related to each other. Table 2 below shows that the bank's financial performance measured by both ROA and ROE is positively correlated with DER, DR and SIZE. To study the mutual disparities of these relationships,

multiple correlations analysis have been taking up. If there is high degree of correlation (i.e. greater than 80% correlation coefficient) between variables, there will be a multicollinearity problem in the model (Guajarati, 2004). As table 2 below reveals that there is multicollinearity problem which affect the model power and its ability in explaining the results.

Table 2: Partial correlation results

	ROA	ROE	DER	DR	LD	SIZE	TANG
ROA	1						
ROE	0.6304	1					
DER	0.0292	0.7573	1				
DR	0.3205	0.7928	0.8715	1			
LD	-0.0865	-0.1873	-0.1638	-0.2024	1		
SIZE	0.3183	0.5138	0.4965	0.6268	0.2309	1	
TANG	-0.3237	-0.2478	0.0463	-0.0018	0.1493	0.2853	1

Source: Financial statements of sample commercial banks and own computation

### c) Multicollinearity test

Multicollinearity refers to a situation with a high correlation among the explanatory variables within a multiple regression model or is the lack of independence among the explanatory variables in a data set. The researcher used Variance Inflation Factor

(VIF) to test multicollinearity which refers to actual disparity percentage to total disparity. The result in table 3 shows that VIF test is below 10 which means that the value were above the minimum tolerance value (1/VIF) of 0.1 below which multicollinearity is considered to be a problem.

Table 3: Multicollinearity test

Variable	VIF	1/VIF
DR	6.42	0.156
DER	4.39	0.228
SIZE	2.49	0.401
LD	1.35	0.740
TANG	1.17	0.842

Source: Financial statements of sample commercial banks and own computation

d) Heteroskedasticity test

The classical assumption required for the OLS estimator to be efficient states that the variance of the error term has to be constant and the same for all observations or the error terms are uncorrelated with mean zero and constant variance  $\sigma^2$ . This is referred to as a homoskedastic error term. When that assumption is violated and the variance is different for different observations we refer to this as heteroskedasticity (Thomas Andren, 2007). The table 4 below shows that there is no heteroskedasticity because the p-values for both ROA and ROE were above 0.05.

Table 4: Heteroskedasticity test

Breusch-Pagan Cook Weisberg test for heteroskedasticity		
	ROA	ROE
Chi <sup>2</sup>	1.46	0.61
Prob.chi <sup>2</sup>	0.2264	0.4363

Source: Financial statements of sample commercial banks and own computation

e) Selection of Random effect (RE) versus Fixed effect (FE) versus pooled OLS

There are two major classes of panel estimator approaches that can be employed. Namely, the fixed

Table 6: Fixed Effect Panel Regression Results: Summary

Variable	Coefficient		Std. Error		t-Statistic		Prob.	
	ROA	ROE	ROA	ROE	ROA	ROE	ROA	ROE
C	-0.028	0.355	0.042	0.253	-0.68	1.40	0.302	0.172
DR	0.281	1.135	0.034	0.325	3.24	3.49	0.000*	0.002*
DER	-0.003	0.014	0.001	0.008	-2.32	1.78	0.018*	0.087***
LD	0.022	0.176	0.020	0.120	1.12	1.47	0.274	0.153
SIZE	-0.007	-0.056	0.003	0.017	-2.68	-3.29	0.012*	0.003*
TANG	-0.197	-1.411	0.114	0.690	-1.73	-2.04	0.093***	0.051**
R <sup>2</sup>	62%	78%						

\* Significant at 1%, \*\* significant at 5% and \*\*\* significant at 10%

Source: computed from the financial statement of commercial banks using stata 12

The regression result in the above table shows that DR, DER, SIZE and TANG were the statistically significant factors affecting financial performance measured by ROA; while LD has an insignificant relationship with the performance of the bank measured by ROA. The regression results also indicate that there is a significant effect of DR, DER, SIZE and TANG on financial performance measured by ROE; while LD has an insignificant effect on ROE.

effects model and random effects model. In order to select the appropriate model which provide consistent estimates for this study, Breusch-Pagan lagrangian multiplier test was employed. Table below suggests the fixed effects model was better than random effects model as the p-value for both ROA and ROE are less than 0.05 for dependent variables which imply that the random effects model should be rejected and thus, the analysis is based on the fixed effects estimates.

Table 5: Breusch-Pagan lagrangian multiplier test for random effects

Breusch-Pagan lagrangian multiplier test for random effects		
	ROA	ROE
Chi <sup>2</sup>	7.75	4.83
Prob.chi <sup>2</sup>	0.0027	0.0139

Source: Financial statements of sample commercial banks and own computation

f) Regression Analysis

Regression analysis is used to investigate the relationship between capital structure and financial performance measured by ROA and ROE. The regression result on table shows that R-square statistics of the model was 62 % and 78% respectively. The result indicates that about 62% and 78% of the variability in the dependent variable are explained by the independent variables used in the model (debt ratio, debt to equity ratio, loan to deposit ratio, size of firm and tangibility).

on asset (ROA) and is statistically positive association with return on equity (ROE) with P-value of 0.018 and 0.087. This result implies that as a bank's debt level increases its return on asset is expected to decline because the excessive use of the leverage might impose high interest costs. The positive relationship between DER and ROE reveals that as debt equity ratio increases it will result in increasing return on equity

The bank size which measures log of total asset has negative and significantly affects the financial performance of banks at 1% significant level for both ROA and ROE which indicates that large commercial banks performs lower than small commercial banks because of the loss of control by top managers over strategic and operational activities within the bank. This shows that small banks utilize their resources efficiently. The composition of the asset structure (TANG) has a negative and significant impact on the accounting measure of performance (ROA) at 10% significant level and ROE at 5% significant level. This result indicates that banks with a high ratio of TANG have a lower performance ratio, which implies that banks invest too much in fixed assets in a way that does not improve their performance, or that they do not use their fixed assets efficiently, so it has a negative impact on their performance.

## VI. CONCLUSION AND RECOMMENDATIONS

The objective of this study was to assess the impact of capital structure on financial performance of selected commercial banks in Ethiopia. The study used panel data for the period of 5 years and 8 banks operating in the country. The study used fixed effect regression model to estimate the relationship between the capital structure and firm performance measured by ROA and ROE.

The findings of the study shows that DR, DER, SIZE and TANG have statistically significant factors affecting financial performance measured by return on assets and return on equity at 1%,5% and 10% significant level and LD is statically insignificant with its respective nature of impact. Based on the findings obtained from the results, the study suggests recommendations that the commercial banks of Ethiopia should focus on the proportion of debt used by the bank, the manner of utilizing the resources while expanding the banks and the amount of investment on fixed asset.

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