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The Effect of Capital Structure Choice on Financial Performance: Evidence from Ethiopian Banking Industry

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Abstract
Capital structure is the most significant aspect of company's decision making process that has been debated for a long by scholars for its effects on the financial performance. The current study tried to provide empirical evidence on such debates using data from Ethiopian banking industry. Capital structure theories have been utilized to provide the theoretical basis for the work. The study applied a balanced panel data of eight Ethiopian commercial banks for six years (2006- 2011). The audited annual reports (Balance sheet and income statements) of Ethiopian commercial bank were obtained from National Bank of Ethiopia (NBE). Pooled Ordinary Least Square (OLS) techniques are used to estimate the regression models.The estimation results showed that Ethiopian banks capital structure which is measured by equity capital ratio had a significant negative effect on the financial performance i, e higher capital ratio is associated with lower financial performance. This finding of the study is consistent with the agency cost theory. Furthermore, except deposit fund and bank credit risk all the bank specific variable has no significant impacts on the financial performance of Ethiopian banking industry. The result of the study is of value to policy making, practice and further research.
Keywords: Capital Structure, Financial Performance, OLS regression, Ethiopian Commercial Bank, Ethiopia

1.1. Background of the Study

Financing of all firms is done by equity, debt or hybrid security. Firm's capital structure depends upon the size of the composition of debt or equity that is used by it to be operational. One of the main factors that could affect the firm's financial performance is capital structure (Tian, et. al. 2007).

The capital structure in the financial term means the way a firm finances their assets through the combination of equity, debt, or hybrid securities (Saad, 2010). The argument about the capital Structure started in the early of 1950 (Chakraborty, 2010). Modigliani and Miler (1958) suggested that in the perfect market, financing strategies do not affect the value of the firm, but later they argue that firm value can be increased by changing the capital structure because of tax advantage of debts (Modigliani and Miller, 1963).

There are many theories of capital structure that deals with the effect of capital structure decision on firm performance. This includes Modigliani and Miller (1958); Static Trade-off theory, Pecking order theory and agency cost theory. The origin of different capital structure theory is Modigliani and Miller (1958) which states that firm value in the absence of transaction and other fixed costs are insensitive to the capital structure of the firm. In other words, change in the capital structure has no apparent effect on the value of firm and therefore, it can be changed any time. Subsequently, various studies were conducted and led to the release of many capital structure theories. Static trade of theory Kraus and Litzenberger(1973) states that capital structure moves towards an optimum leverage which is determined by balancing the corporate tax savings advantage of debt and the costs of financial distress.

Pecking order theory states that there is a financing hierarchy, where firms prefer internal finance, and if external finance is required firms issue the safest security first because external financing is costly (Myers and Majluf ,1984)

The agency costs theory states that high leverage or a low equity/asset ratio reduces the agency costs of outside equity and increases firm value by encouraging managers to act more in the interests of shareholders (Baxter, 1967 and Altman, 2002).

Even if a number of theories have been advanced to explain the capital structure of firms, no theory can be the best given the diverse empirical review of literature (Harris and Raviv, 1991; 2000). Several studies were conducted in developed and developing countries. Such studies found contradictory results while the study by (Gleason, 2000); Narendar, et. al. 2007; Pratheepkanth, 2011; Shah, et. al. 2011; Onaolapo and Kajola, 2010; Shoaib, 2007) supported a negative effect of capital structure on financial performance of the firm; the study by (Roden and Lewellen ,1995) ;Tian, et. al. 2007; Tsangyaae, et. al. 2009; Saeedi and Mahmoodi, 2011; Abor, 2005; Oke and Afolabi, 2008) supported positive relationships. Thus, there is no universal theory about debt-equity choices and financing choice. However, there is lack of consensus among researchers of financial management as regard the optimal capital structure. The variations in the various studies being propounded to inform such all-important decision further make capital structure crucial. Thus, capital structure decision is very critical, particularly in relation to financial performance of a firm in terms of profitability and value of the equity. Majority of previous study have been widely studied in non-financial firms' literature (Barclay, Max, & Smith, 2003; Barnea et al., 1980; Harris and Raviv, 1988, 1990b, 1991). However, in financial firms the agency costs

might also be particularly large because financial institutions, and specially banks, are by their nature very impervious in terms of their information.

To the best of the researchers' knowledge, no single study has focused on the effects of capital structure on the financial performance of the banking industry in a developing country context such as Ethiopia. Hence, this study by trying to address such issue is expected to fill huge gap in the literature and will have relevance to policy making and practice

1.2. Objective of the study

The main objective of this study is to examine the effect of capital structure choice on the financial performance of Ethiopian commercial banks. Specifically the study will try to address the following objectives.

- ✓ To assess the capital structure choice and financial performance of Ethiopian banks
- ✓ To examine the effect of capital structure choice on the financial performance of Ethiopian banks
- ✓ To examine the effect of bank-specific control variables (such as size, loan capacity, deposit fund, interest expense, investment in security and bank credit risk) on the financial performance of Ethiopian banks

1.3. Hypothesis of the Study

The study attempted to test the following research hypotheses formulated based on theoretical and empirical review of literature.

H1: Capital structure (measured by capital ratio) has a positive significant effect on the financial performance of Ethiopian commercial banks

H2: Bank size has a positive significant effect on the financial performance of Ethiopian commercial bank.

H3: Loan capacity has a positive significant effect on the financial performance of Ethiopian commercial banks.

H4: Deposit fund has a negative significant effect on the financial performance of Ethiopian commercial banks.

H5: Interest expense has a negative significant effect on the financial performance of Ethiopian commercial banks.

H6: Investment in security has a positive significant effect on the financial performance of Ethiopian commercial banks.

H7: Bank credit risk has a positive significant effect on the financial performance of Ethiopian commercial banks.

1.4. Significance of the study

The current study addressing the effect of capital structure on the financial performance in Ethiopian banking sector is expected to be useful for policy makers, practitioner and researchers. Firstly, the output of this research will inform the policy makers like National Bank of Ethiopia (NBE) to revisit its existing capital requirement to do banking business; such revised capital requirement is expected to enhance the financial performance of the banking sectors. Secondly, practitioners like bank managers will take appropriate measures to adjust their existing capital structure towards the optimal points.

Finally, future researchers can take useful insight to do such kinds of study with rich data set and probably with advanced methodology that take in to account the endogenous nature of capital structure decision.

1.5. Organization of the report

The remaining part of the research report would be organized as follows:

First section would discussed the research design and research tools that would be employed, including data gathering methods, sampling, data preparation and analyses. Second section, the research results and discussions would be presented.

Finally section, was comprised of conclusions, recommendations and suggestion for further research.

1.6. RESEARCH METHODOLOGY

1.6.1. The Research Design

The major objective of this study is to examine the effect of capital structure on the financial performance after controlling for other bank specific factors that determine performance of Ethiopian commercial banks. Explanatory (cause and effect) research design is used as the study tries to analyze the effect of capital structure on the firm (bank) financial performance with a quantitative approach was employed to analyze the collected data. The research design used in this study is a pooled panel data analysis of cross-sectional and time series data. Pooled panel data analysis, also called the constant coefficient model is one where both intercept and slopes are constant, where the cross-section firm data and time series data are pooled together in a single column assuming that there is no significant cross section or temporal effect (Gujarati, 2003)

1.6.2. Type of Data, Data Collection and Source of Data

For accomplishing the stated objective of the study, secondary data would be used as it is easily accessible, relatively inexpensive, and quickly obtained (Malhotra, 1996). The data; audited annual report of the sampled banks, were collected from the National Bank of Ethiopia. In this regard, banks are responsible to submit audited annual report including Balance sheet and Income statement to the national bank of Ethiopia and the national bank has also started publishing banks macroeconomic data.

1.6.3. Target population and sampling technique

According to National bank of Ethiopia (2010/11) annual report Ethiopia has total of twenty commercial banks out of which 17 were privately owned bank. The target population of this study comprised of all commercial banks in Ethiopia operational by the year 2011. The sample banks are selected based on the criteria of data availability from 2006-2011. As results, out of the 20 commercial banks, 8 (40%) banks formed the sample of this study (see Appendix B). Such sampling plan is judged as the purposive sampling. These sampled banks may not represent the whole Ethiopian banking industry; it will be the best approximation of the relationship between capital structure and financial performance with the given data.

1.7. Empirical Model Specification

The study employs a panel data analysis that combines observations on cross- section of units over time. Panel data methodology provides an important benefit because the methodology assumes that individuals, firms, states or countries are heterogeneous. Time series and cross sectional data studies not controlling for this heterogeneity run risk of obtaining biased results. Furthermore, panel data gives more informative data, more variability, less collinearity among variables, more degree of freedom and more efficiency (Gujarati, 2004).

The model used in this study was similar to Kuznetsov and Muravyev (2001) and Berger and di Patti (2002) that relates capital structure and financial performance. The general form of the model can be stated as:

Yit = αi + β1Xit + eit.....(1)

eit = ui + λt +Vit Where: Yit is performance measure (ROE)

- **αi** = refers to time-invariant firm-specific effects
- Xit is the matrix of explanatory variables with coefficient β1.
- eit is a random disturbance, which includes u*i* represents unobserved cross-sectional

(individual) effects for N cross sections, λ*t* represents unobserved time-series effects for T time periods, and Vit represents random or idiosyncratic disturbances.

Based on the above general model the effect of capital structure on performance of sampled banks was evaluated using the models outlined below.

ROE*i,t*=αi+*β1*CAP*it*+*β2*SIZ*it*+*β3*LOAN*it*+*β4*SEC*it*+β5INEXPit+β6DEPit+β7CRit+*eit…(2)* Where: ROEit= return on equity of bank i at time t, CAPit=capital ratio of bank i at time t, SIZEit=size of bank i at time t,LOANit=loan capacity of bank i at time t, SECit=investment in security of bank i at time t, INTREXPit=interest expense of bank i at time t, DEPit= deposit fund of bank I at time t, CRit= standard deviation of return equity of bank i at time t, ***Єit*** *is* the stochastic error term,**αi***is* the constant term,***B1-β7*** *is the* coefficient of explanatory variables/ parameter estimated, **i**=bank, **t**= time

1.8. Estimation method of panel data

Estimation of panel data models using pooled Ordinary Least Squares (OLS) yields inconsistent estimators and heteroskedasticity errors. Furthermore, if the parameters to be estimated differ across firms and/or over time, then a pooled regression is not appropriate because the heterogeneity in the parameter estimates is not effectively dealt with (Chang and Lee, 1977). From a theoretical perspective, Hsiao (1986) demonstrates that "ignoring such parameter heterogeneity among cross-sectional or time-series units could lead to inconsistent or meaningless estimates of interesting parameters". To resolve this problem, it is therefore appropriate to use panel data models. In the case of this study, as panel data was adopted in this study, appropriate regression model is selected from fixed effect, random effect regression and pooled ordinary least squares. The general accepted way of choosing between fixed and random effects is running a Hausman test. Statistically, fixed effects are always a reasonable thing to do with panel data (they always give consistent results) but they may not be the most efficient model to run. Random effects will give better P-values as they are a more efficient estimator, so random effects regression should be adopted if it is statistically justifiable to do so.

1.9. RESULTS AND DISCUSSIONS

1.9.1. Descriptive statistics

The analysis starts with the broad statistical description of capital ratio, return on equity, bank size, loan capacity, deposit fund, interest expense and investment in security and it provides descriptive about statistical mean, maximum value, minimum value and standard deviation of each variables. Table 1 below shows the descriptive statistics of the variables used in the study.

Variables	Obs	Mean	Std. Dev	Min	Max
Return on equity	48	0.29	0.08	0.035	0.55
Capital ratio(leverage)	48	0.11	0.03	0.04	0.18
Bank size	48	22.49	1.04	20.25	25.25
Loan capacity	48	0.53	0.12	0.22	0.73
Interest expense	48	0.16	0.09	0.01	0.72
Deposit fund	48	0.75	0.06	0.54	0.86
Bank credit risk	48	0.54	0.09	0.18	0.84
Investemnt in secirity	48	0.07	0.15	0.01	0.51

Source:Author's own computations 2012 based on annual report data.

As stated in the above table, table 1, from the total of 48 observations, the highest return on equity is 55% and the lowest return on equity is 3%, the financial performance measured by returns on equity averaged 29%. The variations within and between the banks is a great deviation as can be seen from the minimum and maximum values shown above. These pictures suggest a good performance in the banking sector of Ethiopia during the period under investigation.

The banking industry in Ethiopia is on average high leverage. For instance the average capital ratio is 11.8%, or in other words, the leverage ratio is about 88.2% of total assets. This result is similar with the bank's mean leverage for EU banks of 92.6% (GroppandHeider, 2009) and US bank of 88.9 %(Hoffman, 2007)

The mean value of the bank size which is measured by natural Logarism of total asset is 22.49 but the minimum and the maximum values are 20.25 and 25.25, respectively. Total loans and leases represent the 53% of total assets, the total deposits achieve an average 75 % of the total bank's assets, and interest expense represents 16% of total equity, bank credit risk 54% of total loan and advance of Ethiopian commercial bank and investment in security represent 7% of total asset. The standard deviation of return on equity, capital ratio, loan capacity, interest expense, deposit, bank credit risk and investment in security are 0.084,0.031 0.12,0.09 0.066, 0.099 and 0.15 respectively, which shows great discrepancy among the sampled banks because these standard deviations equal and above the mean values of each variables. One of the reasons for great variation may be the great variation of market share between Ethiopian banking industries. Variable of bank size in the study reveals large standard deviation of 1.043 from the mean as compared to other variables. This shows that the bank size of Ethiopian banking industry have more significant variance than other variables.

1.9.2. Correlation analysis

In addition to descriptive statistics, a correlation analysis for the study variables was also conducted to address the direction of the relationship between the study variables. The study employed Pearson correlation matrix to measure the correlation between the financial performance, capital structure and control variables. Table 2: Results of the correlation test between the ROE of the Ethiopian banking industry and each of its hypothesized variables.

Variables	Return equity	Capital ratio	Bank size	Loan capacity	deposit	Interest expense	Bank credit risk	Investment in security
Return on equity	1							
Capital ratio	-0.52**	1						
Bank size	0.29	-0.37***	1					
Loan capacity	-0.15	0.21	-0.75**	1				
Interest expense	-0.03	0.08	0.043	-0.14	1			
Deposit fund	-0.15	-0.23	0.19	-0.13	-0.02	1		
Bank credit risk	0.78**	-0.49*	0.40***	-0.2	-0.08	-0.02	1	
Investment in security	0.34**	-0.46**	0.48***	-0.69***	0.1	-0.019	0.42***	1

Source: Author's own computations 2012 based on annual report data.

Correlation was significant at 1%, **correlation is significant at 5% and*correlation is significant at 10% level of significance.*

The matrix of correlation coefficients indicated in table 2 exhibits a negative and significant correlation between the capital ratio, deposit fund and return on equity at 5 percent significant level. However, the relation is positive with the bank size, with the bank credit risk; investment in security of Ethiopian banking industry.

According to Guajarati (2004), as the rule of thumb, if the pair- wise correlation coefficient between the two regressors is high i, e excess of 0.8, the multicollinaerity is the serious problem. Using this threshold the as indicators of collineartity none of the variables are collinear because as indicated in the table 4.2 the highest correlation is 0.78 which is the correlation of return on equity and bank credit risk. The rest of the variables correlation coefficient is below 0.5. As the matter of fact the researcher used variance inflated factors (VIF) to assess more directly the problem of multicoleanarity. For each explanatory variables included in the study the VIF is computed and the result of is attached at appendix A. which indicates that the VIF is relatively small for all the variables. This show that multicollinearity is not a serious concern in this model

1.9.3. Regression analysis

A better way for investigating the effect of capital structure on the financial performance is through the use of regression analysis rather than descriptive statistics and correlation analysis as the regression analysis help to control o eliminate the effect of other variables.

Hausman test is performed to choose between fixed effect and random effect model. The result presented in the appendix four shows that random effect is an appropriate model which indicates that the bank specific time-invariant unobserved variables are not correlated with the model explanatory variables. Further Breush and Pagan Lagrangian Multiplier test is used to choose between random effect and pooled OLS model. The result presented in appendix five shows that pooled OLS is appropriate model as the p-value of 18.7% is greater than 5%. Hence, pooled OLS model is estimated as a final model. Such model shows that there are no bank specific time invariant variables that are omitted from the model. But, this does not imply that there are no omitted variables in the model. As the Ramsey test shows that there are omitted variables and this may be macro-economic variables rather than bank specific variables which is included in the error term.

1.9.4. Testing OLS assumptions

- **Multicollinearity**

The multicollinearity problem among variables is measured using Variance Inflation Factor (VIF). According to the usual threshold of the VIF, if the variance inflation factor on each variable is less than ten (10) and; 1/VIF exceeds 0.1, multicollinerity is not a serious problem (Gujaraty, 2004). As indicated in appendix A (1), the variance inflation factor is less than 5 and the 1/VIF; is possibly exceeds 0.1. As a result, the researcher concluded there is no multicollinerity problem between variables in the model.

- **Hetroscedastisity**

The existence of heteroskedasticity was tested by Breusch- pagan/cook-wiesberg test for heteroskedasticity. It tests the constant variance or existence of homoskedasticity as null hypothesis. According to Cameron and Trivedi (2009) if p- value shows insignificant ($p > 0.05$), the researcher will fail to reject null hypothesis and the variances are homogenous. In contrast, if the p-value is significant ($p < 0.05$), the null hypothesis would be rejected and it implies a heteroskedasticity concern. Thus the result of the Breusch- pagan/cook-wiesberg test for hetroscedasticity reveals the p-value is 0.1732 which exceeds 0.05 (see appendix (2)). This p-value indicates that the null hypothesis of constant variance should not be rejected. In other words, it indicates there is no heteroskedasticity problem or there is constant variance.

- **Misspecificationtest**

To test whether there is an omission of important variables in the model the researcher has used a common test for misspecification Ramsey RESET test (1969). Since the p-values (0.0033) are small, it indicates the omission of some relevant variables that affect the financial performance of banks. This may include bank specific variables (such as corporate governance) or other macroeconomic variables like GDP, inflation, FDI, current account balance etc. Further research shall include such omitted variables to increase the explanatory power of the model

- **Autocorrelation**

Autocorrelation usually exists when the order of the observations has some particular meaning. Since the panel data set is short, it is infeasible to estimate the models with an auto correlated error structure (Shiu, 2004 and Baltagi, 2005). Therefore, the models do not include an autocorrelated error structure.

- **Normality**

The normality assumption of residuals is tested using the Shapiro-Wilk test for normality. It tests the null hypothesis that the distribution of the residual is normal. Shapiro wilk test for normal distribution is appropriate for small samples from $4 \leq n \leq 2000$(Cameron and Trivedi, 2009,).In this study Shapiro wilk test was statistically insignificant ($W=0.9005$ $Prob>z = 0.065$). Accordingly the residuals were normally distributed and the test was attached in the appendix part.

1.9.5. Regression results

The model as the whole is significant at as the p-value of Wald chi2 test is 0.0000. This indicates all the explanatory variables included on the model (i.e. capital structure and control variables) jointly are significant determinants of the financial performance. Besides, the (R-sq) value is high of 82% indicating 82% of the variations in financial performance are explained by the variables and the rest 18% is by omitted variables. This

further indicates that capital structure and the control variables included explained a larger portion of financial performance which enhanced the reliability and validity of the model and there are few omitted bank specific and macroeconomic variables. Such high R2 also shows that banks shall work hard to improve their own internal operations to improve financial performance. Such result is consistent with the strategic management literature which says that much of the variation in firm performance is explained by internal factors rather than external factors or luck. Table 3 Parameter Estimates of Pooled ordinary least squares (OLs) using return on equity (ROE) dependent variable.

Variables	Coefficient	Standard Error	t –value	P-value
CONSTANT	0.32	0.27	1.2	0.004
Capital ratio	-0.71***	0.23	-3.09	0.000
Bank size	-0.01*	0.01	-0.58	0.56
Loan capacity	0.04	00.07	-0.58	0.51
deposit	-0.18**	0.09	-1.89	0.000
Interest expense	-0.001	0.06	-0.01	0.1
Credit risk	0.65 ***	0.07	9.18	0.53
Investment in security	-0.03*	0.07	-0.47	0.03

Number of observations 48
F (7, 40) 25.87 (Prob > F = 0.0000)
R-squared = 0.82
Adjusted R-squared = 0.78
Root MSE = 0 .03

Source: Author' own computation 2012 based on annual data of bank
**Significant at 1 percent level, **Significant at 5 percent level, ***Significant at 10 percent level respectively.*

1.9.6. Discussion of the regression results

Among the variables included on the study capital ratio (CAP), deposit fund (DEP), and bank credit risk shows significant effects on Ethiopian commercial banks financial performance while bank size, loan capacity, interest expense and investment in security are statically insignificant effect on the financial performance of Ethiopian banks. The above significant variable on the financial performance are individually discussed in the next paragraphs referring regression result of table 4.3

Capital ratio (leverage):- The first variable of the study is equity capital ratio that affects the financial performance of Ethiopian banks. As show in the table 4.3 capital ratio of Ethiopian commercial banks negatively and significantly related with return on equity (with β=-0.71, p-value 0.004). The negative sign of variable CAP indicates that the higher of capital of one bank, the lower of its financial performance. The negative relationship between capital ratio and return on equity means there is positive relationship between leverage and return on equity. This result consistent with the signaling theory and agency cost theory.

Signaling theory which said managers want to communicate their good performance to outside investors by issuing debt. So there is positive relationship between the use of debt financing and financial performance which means there is negative relationship between equity financing and financial performance.

Agency cost theory state that high leverage or a low equity/asset ratio reduces the agency costs of outside equity and increases firm value by constraining or encouraging managers to act more in the interests of shareholders.

Most of studies found that a negative relationship between capital structure and financial performance. Titman and Wessels (1988) Cassa and Holmes (2003), and Hall et al. (2004 found negative relationship between return on equity and both long-term debt and short-term debt ratios. Furthermore, Kester (1986), Rajan and Zingales(1995 finds a significantly negative relation between return on equity and debt/asset ratios.) However this result consistent with the static trade-off theory and the empirical results of Champion (1999), and Leibestein (1966), Petersen and Rajan (1994) reveals that companies can use more debt to enhance their financial performance because of debts' capability to cause managers to improve productivity to avoid bankruptcy. According to static trade-off theory, because of banking industry is profitable due to the shield of income from corporate tax as they use more debt to finance their investment and operating activities.

Deposit fund:-The deposit fund is one of the major control variables that significantly influence the financial performance of the firms. The empirical result of the study shows that there was a statistically significant negative relationship (β=-0.17, p- value is less than 0.01) between deposit fund to total asset ratio and return on equity for Ethiopian commercial banks. The result is consistent with Hester and Zoellner (1966) and Heggested (1977) found that time and savings deposits had a significant negative relationship. It has been realized that banks' access to government deposit insurance and other safety net protections may increase incentives for risk shifting or lax risk management, which potentially might increase the agency costs of outside debt. Beside *ex-post* asset substitution problems originated by the deposit increases the agency cost of external sources of funds.

Those higher agency costs are channeled into a lower profitability (Berger, 1995b and Barger 2002). There is lack of enough evidence in this study to accept the positive relationship between deposit fund to total asset ratio and returns on equity in financial firm.

Bank credit risk:- The last significant bank specific control factor of Ethiopian commercial banks financial performance is credit risk (CR) which is measured by the ratio of loan loss provisions to total loans and advances. Like the expectation, bank credit risk predictor has positive ($\beta = 0.65$, p-value 0.000) and statistically significant (at 5% level of significance) relationship with return on equity of commercial bank of Ethiopia. Positive sign shows positive relationship between bank credit risk and financial performance (i, e as credit risk increase the profitability increase and vice versa). This again means that the risky banks generate higher rates of return. The result is consistent with Berger (2002) and Keelay and Furlong (1990) riskier banks have more profit efficiency as the return on equity is adjusted to the risk associated with the bank performance.

Bank size:-Regarding to bank size empirical studies suggest that larger banks tend to exhibit lower margins and is consistent with models that emphasize the negative role of size from scale inefficiencies, but the regression result is insignificant.

Finally, the study also shows a negative relationship between loan capacity, interest expense, and investment in security and banks financial performance but the result is insignificant.

Finally, as given in the introduction part of the study, there were seven hypothesis developed from banking area theories and empirical studies.

The first hypothesis said that capital structure which is measured by capital ratio has significant positive effect on the financial performance of Ethiopian banks. This hypothesis is rejected by the study because the choice of capital ratio is the significant negative effect on the Ethiopian banks financial performance.

The second hypothesis said that the bank size has significant positive effect on Ethiopian commercial banks financial performance this hypothesis is rejected by the study because as results revealed that bank size enters the regression equation as negative with returns on equity and is statistically insignificant at 5% level of significance. This means that in the banking sector of Ethiopia, size is not important in determining bank financial performance.

The 3rd, 5th and 6th hypothesis expected that loan capacity; investment in security and bank credit risk has positive significant effect on the financial performance of the Ethiopian banking industry.

Hypothesis as to the positive relationship between bank credit risk and financial performance is accepted by the study because bank credit risk variables have positive effect on Ethiopian commercial banks financial performance. However, hypothesis that expects a positive relationship between investment in security and commercial banks financial performance is rejected because, in Ethiopia banking sector, investment in security have negative insignificant effect on the financial performance. (See previous regression table).

Finally the fourth hypothesis expected that deposit fund has a negative significant effects on the financial performance of Ethiopian banking sector. It is also accepted by the study since the regression result which is reported in the previous regression tables justified their negative significance.

1.10. CONCLUSION, RECOMMENDATION AND SUGGESTION FOR FURTHER RESEARCH

The following sections discussed about the final concluding remarks of the study, possible recommendations and suggestion for further research.

1.10.1. Conclusion

Banks and financial institutions can be considered as main stakeholders in implementing monetary policy of a free market economy. Price stability and high economic growth are amongst the objectives of the monetary policy for which coordination between monetary and real sectors of the economy is imperative. Capital structure of the financial institutions and banks are discussed on both theoretical and empirical literatures to have an effect on the financial performance of the institution. Thus, the study investigated the effect of capital structure on the financial performance eight commercial bank of Ethiopia over the period 2006-2011 using panel data methodology; as a result it has a total of 48 observations.

- As indicated in table 4.3 pooled OLS regression results, capital structure and bank specific variables are able to explain the substantial part of banks financial performance in Ethiopia(R-square of 82%)
- Regarding to capital ratio, the coefficient of capital ratio is negative and significant at 5% significant level. Thus, the higher capital ratio (lower leverage) leads to lower financial performance in the Ethiopian banking industry. Such result may indicate Ethiopian banks that decrease their equity capital and increase leverage that leads to higher their financial performance. The result is consistent with the signaling theory, agency cost theory and static trade of theory. The result is also consistent with empirical study of Champion (1999) and Leibestein (1966), Petersen and Rajan (1994) reveals that company can use more leverage and less capital to enhance financial performance.
- The result of the study also shows there is significant negative relationship between deposit fund and financial performance of Ethiopian banks which indicates that banks have access to government deposit

that leads to agency problems. The result is consistent with Hester and Zoellner (1966) and Heggested (1977) on the study of the effect of deposit fund on the financial performance of banks.

- The finding of the study also reveals that there is statistically significant positive relationship between bank credit risk and financial performance of Ethiopian banking industry which indicates the more the risky bank the more profitable. The study is consistent with Berger (2002) and Keelay and Furlong (1990)
- Finally, the result of the study shows, there is insignificant negative relationship between loan capacity, investment in security and financial performance of Ethiopian banking industry while there is positive relationship between interest expense and financial performance during the study period.

1.10.2. Recommendation

Accordingly, the following recommendation is forwarded to some significant variables based on the finding of the study.

- As a higher capital ratio is found to be performance retarding maximum capital should be established to do banking business by the National Bank of Ethiopia. Effective Monday, September 19, 2011, the minimum capital to do banking business is raised from 75 million to 500 million by the National Bank of Ethiopia. Such directive has a performance retarding effect as the finding of such study shows. Thus national bank of Ethiopia has to reconsider this directive again and even think of capping the equity capital required from owners of banks.
- Since, increase in risk taking behavior is found to be financial performance enhancing, bank should take calculated risk by diversifying their portfolio. Such decision-making could improve financial performance by helping managers to increase cash flows through risk taking.
- Since deposit funds creates moral hazard problem due to deposit insurance, the way bank mangers channel the deposit into loans has to be tracked seriously by board of directors and the National Bank of Ethiopia. Otherwise financial performance will deteriorate much.

1.10.3. Suggestion for Further Research

- The study does not include other factors other than capital structure and included control variables that affect the financial performance of banks. This other factors could include macro-economic factors like inflation, GDP, growth, exchange rate...etc; corporate government factors, decision related to information system items, revenue cost…etc
- The researcher suggest to conduct such types of study on other financial sectors like micro finance institution, insurance companies to get more insight on capital structure and financial performance nexus in the financial sector.
- The result of such study can be extended with qualitative factors that are expected to affect financial performance.
- Besides, the current econometric model can be extended by incorporating non-linear (possibly quadratic form for capital structure) to decide optimum capital structure in line with statistic tradeoff theory and agency cost hypothesis to take in to account the endogenous nature of capital structure decisions using dynamic panel data or other panel instrumental variables regression models.

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AppendixA: OLS assumptions tests

1. **Multicollinearity Test**

Using the variance inflation factor

Table 3: Variance inflation factor

Variables	VIF	1/VIF
Size	4.58	0.23
Sec	4.13	0.24
Loan	2.61	0.38
Cap	1.67	0.59
Sdroe	1.59	0.63
Dep	1.20	0.83
Intexp	1.06	0.94
Mean	2.40	

Note: A VIF > 10 or a 1/VIF< 0.10 indicates trouble

2. **Hetroscedasticity test**

Breusch- pagan/cook-wiesberg test for hetroskedasticity

Ho: constant variance
Variable: residual
Chi (1) =1.85
Prob>chi (2) =0.1732

It shows the error variances are not hetroskedastic.

3. **Ramsay Test for Model Specification**

. estatovtest
Ramsey RESET test using powers of the fitted values of roe
Ho: model has omitted variables
F(3, 38) = 5.44
Prob> F = 0.0033

4. **Normality Test**

Normal distribution of the residual using Shapiro wilk test
H0: Variables are normally distributed
Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
Residual	48	0.9005	4.5	3.214	0.062

The critical W value for this study was 90.05 at 5 percent level of significance.

5. **Hausman Test for Random Vs Fixed Effect.**

Test: Ho: difference in coefficients not systematic
chi2 (7) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 5.92
Prob>chi2 = 0.5494

The Hausman test was statistically significant at 5 percent so the random effect estimators were chosen.

6. **Breusch and Pagan Lagrangian Multiplier Test for Random Effect**

This test was conducted for the model to choose the final model to the study

Return on equity [bank,t] = Xb + u[bank] + e[bank,t]

Estimated results:	Var	sd = sqrt(Var)
Return on equity	0.007114	0.0843
Residuals	0.001534	0.03919
Error variance	0	0

Test: Var(u) = 0 chi2(1) = 1.72
Prob > chi2 = 0.1896