

# **Capital Structure and Financial Performance: Evidence from Ethiopian cement Companies**

**By**

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## Statement of declaration

I, Asrat Kifle, have carried out independently a research work on “capital structure and financial performance: evidence from cement companies in Ethiopia” in partial fulfilment of the requirement of the MSc program in Accounting and Finance with the guidance and support of the research advisor.

This study is my own work that has not been submitted for any degree or diploma program in this or any other institution, and that all references materials contained therein have been duly acknowledged.

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This is to certify that the thesis prepared by Asrat Kifle, entitled: *Capital structure and financial performance: evidence from cement companies in Ethiopia* and submitted in partial fulfilment of the requirements for the degree of Master of Science in Accounting and Finance complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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## Abstract

### Capital structure and financial performance: evidence from cement companies in Ethiopia

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*This study sought to investigate the relationship between capital structure and financial performance of cement companies in Ethiopia. The study applied explanatory research design. In order to answer the research question, secondary data was collected from the sample of 8 cement companies in Ethiopia during the period 2010-2014. To examine the relationship between capital structures which is measured by long term debt to equity ratio and financial performance measured by the accounting measures of return on asset (ROA) and return on equity (ROE), a random effect multiple regression model was employed. A computer package EVIEWS version 8 was used to solve the multiple regression equation used in this study. From the regression model, the study found out that capital structure measured by long term debt to equity ratio (LTDTE) has significant positive relationship with return on asset (ROA) and control variables such as tangibility(TAN) and size has significant positive relationship with return on asset (ROA) and capital adequacy(CA) and growth opportunity (GRO) has insignificant positive relationship with return on asset (ROA), Beside this, capital structure measured by logarithm of long term debt to equity ratio (LOGLTDTE) has significant negative relationship with return on equity (ROE) and control variables such as tangibility (TAN), capital adequacy(CA) and logarithm of liquidity(LOGLQ) has significant positive relationship with return on equity (ROE), while size and change in gross domestic product(DGDP) has insignificant positive relationship with return on equity (ROE). Whereas business risk (BR) has significant negative relationship with return on asset (ROA) and return on equity (ROE). Therefore, an appropriate mix of capital structure should be adopted in order to increase the financial performance of cement companies in Ethiopia.*

Key words: Capital structure and financial performance

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## List of Acronyms

CS	Capital structure
FP	Financial performance
STD	Short term debt
TD	Total debt
LTDTE	Long term debt to equity ratio
ROA	Return on asset
ROE	Return on equity
WACC	Weighted average cost of capital
ROIC	Return on invested capital
EPS	Earning per share
EBIT	Earnings before interest and tax
BR	Business risk
LOGLQ	Logarithm of liquidity
CA	Capital adequacy
GRO	Growth opportunity
TAN	Tangibility
DGDP	Change in gross domestic product
MoI	Ministry of industry

# **Chapter one**

## **Introduction**

### **1.1. Background of the study**

Despite the substantial theoretical developments over past several decades, the gap between capital structure theories and practices still exist. Various theories have been advanced by the finance scholars to explain the financing patterns of firm. These theories are always been subject of considerable debate due to inherent controversies. The extensive debate from diverse perspectives has made this issue more complex. Basing the above stated issues an empirical investigation of relationship between capital structure and financial performance of the firms is quite reasonable and relevant to study. The relationship between capital structure and financial performance of a firm has been argued by many researchers in many developing countries based on the important study of (Modigliani, F.,and Miller, M., 1958) which stated that the debt is irrelevant to firms' value. Since then, many scholars have tried to test the hypothesis in different time horizon and sphere to estimate clearly the relationship between capital structure and firm's financial performance based on the theoretical perceptions.

After the introduction of the Modigliani and Miller (M&M) theory, other theories have emerged in this field such as the static trade-off theory, the pecking order theory and agency cost theory. (Kraus, A. and Litzenberger, R. H., 1973), published a study which introduced the static trade-off theory. They suggested that there is a trade-off between the benefits and costs of debt financing and equity financing and firms should consider market distortions and imperfections such as taxation, agency costs and bankruptcy costs in the process of determining an optimal capital structure.

On the other hand, in 1984, pecking order theory (Myers S. C., 1984) suggested that firms behave in accordance with a financing hierarchy because of the existence of information asymmetry. In other words, the essence of this theory is that firms prefer firstly internal sources of funding rather than external ones. Therefore, profitable firms are less likely to use debt financing compared to others. Similarly, (Karadeniz, E., Kandir, S. Y., and Balçilar, M., 2009)

state that the bottom line of the pecking order theory suggests that firms prefer equity rather than debt.

Last but not the least, the agency cost theory (Jensen, M. and Meckling, W. ., 1976) suggested that there is a conflict between the interest of firm's managers and shareholders (agency problem), decisions about the capital structure are dependent on these agency-principal conflicts.

In this respect, a financial manager should always be ready to make decisions to determine the capital structure of a firm, even on a daily basis. In addition, determining the optimal capital structure is another complexity which financial managers face in their job. The role of capital structure is so important because it does not only affect the profit maximization of shareholders, but it also helps the firm to survive from various economic conditions and business cycles. Therefore, the subject of finding the link between capital structure and financial performance of a firm has been a topic of long debate globally over the years.

To understand how firms in developing countries it is crucial to investigate the perspective of how firms finance their operations, it is necessary to examine the return of their financing or capital structure decisions. Company financing decision involves a wide range of policy issue. At the macro level, they have implications for capital market development, interest rate and security price determination, and regulation. At the micro level, such decisions affect capital structure, corporate governance and company development (Green, C. J., P. Kimuyu, R. Manos and V. Murinde, 2002). Knowledge about capital structure has mostly derived from data of the developed economics that have many institutional similarities (Booth, L. , Aivazian, V. , Demirguc, A., Kunt and Maksimovic, v., 2001). It is important to note that different countries have different institutional arrangement, mainly with respect to their tax and bankruptcy codes, the existing market for corporate control, and the role of bank and securities markets play.

The few studies on developing countries have not even agreed on the basic facts. (Singh, A. and Hamid, J., 1992), used data on the largest companies in selected developing countries. They found that firms in developing countries made significantly more use of external finance to finance their growth than is typically the case in the industrialized countries. They also found that firms in developing countries rely more on equity finance than debt finance. Theses finding seem surprising given that stock markets in developing countries are consistently less well

developed than those the industrial countries, especially for equities. However, (Cobhan, D. and Subramaniam, R., 1998) used a sample of larger firms and found that Indian firms use substantially lower external and equity financing. In a study of large companies in ten developing countries, (Booth, L. , Aivazian, V. , Demirguc, A., Kunt and Maksimovic, v., 2001) also found that debt ratios varied substantially across developing countries, but overall were not out of line with comparable data for industrial countries.

This current study attempts to contribute to the few empirical studies and to the debate on capital structure and financial performance from a developing country perspective and It seek to contribute to ongoing capital structure debate by analyzing capital structure of companies in the cement industry of Ethiopia as well as studying the kind of relationship that exists between their leverage levels and financial performance.

## 1.2. Statement of the problem

There are different theories conducted in explaining the capital structure of the firms. Despite the theoretical appeal of capital structure, researchers in capital structure have not found the optimal capital structure of firms and various studies were made in different countries to examine the relationship between capital structure and firm's financial performance. However the result documented were contradictory and mixed. (Dessi R. and Donald R., 2003) , found that financial leverage affect positively the financial performance of UK firms, where they explained this result that, low growth firms utilize their money on profitable projects and hence their profit increases. (Margaritis, D. and Psillaki, M., 2010), proved also that total debt ratio correlated positively and significantly with financial performance of Indian firms. Even though, they identified that total debt ratio have a positive impact on firms financial performance, they could not split the total debt ratio into short term debt and long term debt, to identify the effect of long term debt on firms financial performance. This research tried to fill this gap on firm's financial performance, specifically the effect of long term debt.

(Abor, 2005), Reports a positive relation between capital structure, (measured by STD and TD) and financial performance over the period 1998-2002 on the Ghanaian firms. Furthermore studies, (Taub, 1975); (Roden, D. J and Lewellen, W., 1995); (Champion, 1999), (Ghosh, C., Nag, R., Sirmans, C., 2000); (Hadlock, C., James,, 2002) showed positive relationship between

capital structure and firms financial performance. In contrast to the above result, most studies had proved that capital structure is related negatively with firm financial performance. (Majumdar, S.K., Chhibber, P., 1999) , (Ghosh, 2007) reached that debt (capital structure) associated inversely with firms financial performance. The results refer to the creditors who are using loans as disciplinary tool on the firm. This tool bases on the restrictions that imposed by creditors on the firm as prevention on the firm from distributing the earnings to the shareholders or impose restrictive conditions on the loans by increasing the interest rates or impose sufficient collaterals on loans, thus, these restrictions will lead firm to focus on how to pay the debt burden without concerning in achieving earnings and reflect adversely on firm performance. (Abor, 2005), noted that capital structure measured by short term debt, long term debt and total debt associated negatively and significantly with firms financial performance and he conclude that firms rely on borrowing extremely will not achieve tax shields and then it will lead to an increased borrowing cost of which the firm exposes to the bankruptcy risks and reduce the return. Furthermore studies, (Arimi, 2010), (Gleason, K. C.; Mathur, L. , 2000), (Krishnan, V. and Moyer, R., 1997), (Rao, N. , V. , Al-Yahye, K. and Syed, L., 2007) showed negative relationship.

In addition to the above two contradictory results, literature on the relationship between firms financial performance and capital structure has produced mixed results. (Arbian and Safari, 2009), investigate the effects of capital structure on profitability using 100 Iranian listed firms from 2001 to 2007. They found short-term and total debts are positively related to profitability (ROE) which indicate a negative relation between long-term debts and ROE. (Huang, G. and Song, F. M., 2006), found a negative correlation between leverage and performance (earnings before interest and tax to total assets on firms of China). (Chakraborty, 2010), employed two performance measures, including ratio of profit before interest, tax and depreciation to total assets and ratio of cash flows to total assets and two leverage measures, including ratio of total borrowing to assets and ratio of liability and equity, and reported a negative relationship between them. While examining the relationship between capital structure and financial performance of firms in Jordan, (Zeitun, R., Tian, G., 2007) found that debt level is negatively related with performance. In a similar study on microfinance institutions in sub-Saharan Africa, (Kyereboah-Coleman, 2007) found that high leverage is positively related with performance (i.e. ROA and ROE). Based on the indication of the above literatures reviewed, still there are contradictory

results of capital structure and firm's financial performance relationship. Therefore, one of the aim of this research is to identify the relationship between capital structure measured by Long term debt to total equity ratio (LDTE) and financial performance measured by return on asset (ROA) and return on equity (ROE) of Ethiopian cement companies over the period 2010-2014 years.

In Ethiopia, as far as the knowledge of the researcher is concerned, there are a few researches conducted about capital structure but those researches were entirely emphasized on investigating determinants of capital structure. (Kebede, 2011) investigated the determinants of capital structure in Ethiopian small scale manufacturing co-operatives, (Bayeh, 2011) investigate empirically capital structure determinants in the case of insurance industry in Ethiopia, (Amanuel, 2011), the determinants of capital structure evidence from manufacturing share companies of Addis Ababa city, (Shibru, 2012), examined determinants of capital structure of commercial banks in Ethiopia, (Yuvaraj.S and Abate.G, 2013) the study examine the performance of insurance companies in Ethiopia and (Mohammed, 2014) investigated the determinants of capital structure and its impact on the performance of Ethiopian insurance industry.

In the light of above studies, there is lack of empirical studies in Ethiopia concerning the relationship between capital structure and financial performance in the context of the Ethiopian cement companies, which motivated the researcher to put his own contribution on the effect of capital structure on financial performance of Ethiopian cement companies.

### Research Question

Based on the above statement of the problems the researcher develops the following research question.

- What is the effect of capital structure on financial performance of Ethiopian cement companies?

### 1.3. Objectives of the Study

The general objective of this study is to examine the effect of capital structure on financial performance of Ethiopian cement companies. Specifically;

- To examine the effect of capital structure on return on assets of Ethiopian cement companies
- To examine the effect of capital structure on return on equities of Ethiopian cement companies

### 1.4. Hypothesis formulation

Based on the above contradictory empirical result mentioned on statement of the problem, the researcher formulate the following hypothesis

*H<sub>0</sub>: Capital structure has no positive and significant effect on return on asset.*

*H<sub>1</sub>: capital structure has positive and significant effect on return on asset.*

*H<sub>0</sub>: Capital structure has no negative and significant effect on return on equity.*

*H<sub>1</sub>: capital structure has negative and significant effect on return on equity.*

## 1.5. Significance of the Study

The findings of the study will be a guide to finance managers in cement companies as well as other sectors to make investment decisions that will satisfy stakeholder's interests with regard to capital structure and financial performance.

The findings of this study also is beneficial to the students of finance in terms of empirical review as well as to those who wish to carry out further research on the relationship between capital structure and financial performance firms in Ethiopia.

## 1.6. Scope of the Study

This study focused on the relationship between capital structure and financial performance in the context of Ethiopian cement companies during the period 2010-2014. Further the study only analyzed five years data of selected cement companies.

## 1.7. Limitation of the study

The main limitation of the study is the reliance on information supplied by cement company's business operators who normally do not want to make a full disclosure of their businesses to an unknown person for fear of being subjected to tax payment. Furthermore, this study was done only by secondary data collected from annual audited financial statement of cement companies during the period 2010 – 2014 and primary data were not included in this research. Therefore, the quality of the study depends purely upon the accuracy, reliability and quality of the secondary data source. Approximation and relative measure with respect to the data source might have an impact on the results as well as qualitative issues that are raised would not be entertained in this study. Finally, this thesis only focused on the issues raised in the research question and there may be other variables related to capital structure that are not included in this study.

## 1.8. Structure of the Paper

This thesis is organized into five chapters. Chapter one is the introductory part of the thesis. Chapter two presents various theories and a comprehensive empirical literature on capital structure and firms financial performance. Chapter three focused on the methodology and the

aggregated framework for relationship evaluation of capital structure and financial performance. Chapter four contains the empirical results of the study. Finally, chapter five focused on the major empirical findings of the study, policy implications or recommendations and suggests issues for future research.

## **Chapter Two**

### **Literature Review**

This chapter presents the theoretical and empirical literature review regarding capital structure and financial performance relationship. In section 2.1, reviews the theoretical background behind capital structure. In section 2.2, types of financing are discussed. In section 2.3, reviews scientific studies, which examined the impact of capital structure on firm's financial performance. Conclusions on the literature review and identification of the knowledge gap are presented in section 2.4. An overview of Ethiopian cement companies is presented in section 2.5. Finally, to explain the expected sign and relationship in this research models, conceptual framework are presented in section 2.6.

#### **2.1. Theoretical Literature Review**

##### **2.1.1. Modigliani and Miller Theory**

After the research process around the title of article, there are little studies take this subject, whereas the most studies focus on the determinants of capital structure. According to (Baker, H. K., & Martin, G. S., 2011) a capital structure can be defined as the financing sources of a firm, used to finance assets, operations and future growth. The financing funds of the capital structure are debt and equity. Equity is the amount of money which is invested in the firm by the owners, also called the shareholders, the amount of retained earnings from the company. The debt of a company can be defined as the amount of money that is borrowed under certain conditions by a venture. Debt must be repaid before a certain date to the lenders. It is custom that lenders require an interest on the loan. There are many different types of debt, for instance short or long term debt, bonds and obligations.

Firms try to find a capital structure that gives the highest value for a firm. The highest value can be achieved when the capital structure maximizes the value of the shareholders. In a perfect market it does not matter which sources are used to finance a company. In proposition I, the

theory of Modigliani & Miller states that in a perfect world without imperfections, differences between using debt and equity do not exist. To maximize the value of the company it makes no differences if a company capital structure consists of debt or equity (Modigliani, F., and Miller, M., 1958). In a world with only tax as an imperfection this proposition changes. A company needs to borrow as much debt as possible. With more debt the tax payments become lower, because the interest can be subtracted. Therefore, more cash flow remains whereby the value of the company increases. Proposition II with taxes explains that companies with more debt have a higher value due to interest that lowers the tax payments.

Proposition II (Modigliani, F., and Miller, M., 1958) explain that companies with more debt have a higher cost of equity. In times of crash less profit is available, because of the interest which must be paid. On the other hand, in more lucrative times the profit must be distributed among fewer shares because the capital structure not only consists of equity but also debt, since a part of the equity is replaced by debt. This leads to more earnings per shareholder. From this can be concluded that the risk is higher for shareholders, since the larger range between profits due to the debt and interest. Proposition II of Modigliani and Miller with tax clarifies that leverage add more risk to companies, but the tax “shield” reduces something of that risk. Therefore, the cost of equity is growing slower. Tax changes the slope of the Weighted Average Cost of Capital (WACC). At the point that the WACC is the lowest, the company has the highest value due to the fact that a part of the interest can be subtracted from the tax payments (Hillier, D. J., Clacher, I., Ross, S., Westerfield, R., Jaffè, J., & Jordan, B., 2011).

In reality, markets are inefficient, due to taxes, information asymmetry, transaction costs, bankruptcy costs, agency conflicts and any other imperfect elements. When taking these elements into consideration, the M&M theorem tends to lose the majority of its explaining power. Even though M&M theory was heavily criticized of some weaknesses and its irrelevant assumptions of the real world, this theory still provides the foundation for many other theories suggested by other researches.

### 2.1.2 Trade-off theory

The trade-off theory suggests that there is an optimum capital structure in which the benefits of debt are offset by the cost of debt. This optimal capital structure is achieved when the marginal

benefit of an additional unit of debt is exactly offset the marginal cost of an additional unit of debt (Fama & French, 2005).

Figure 1 of the article of (Myers S. C., 1984) can help to explain the theory in more detail. The figure shows that the market value of a company with more debt increases to a certain point. More debt above this point decreases the value of the company due to the cost of financial distress. It can be concluded that companies need to search for a balance between the tax advantages and financial distress cost which gives the highest firm value.

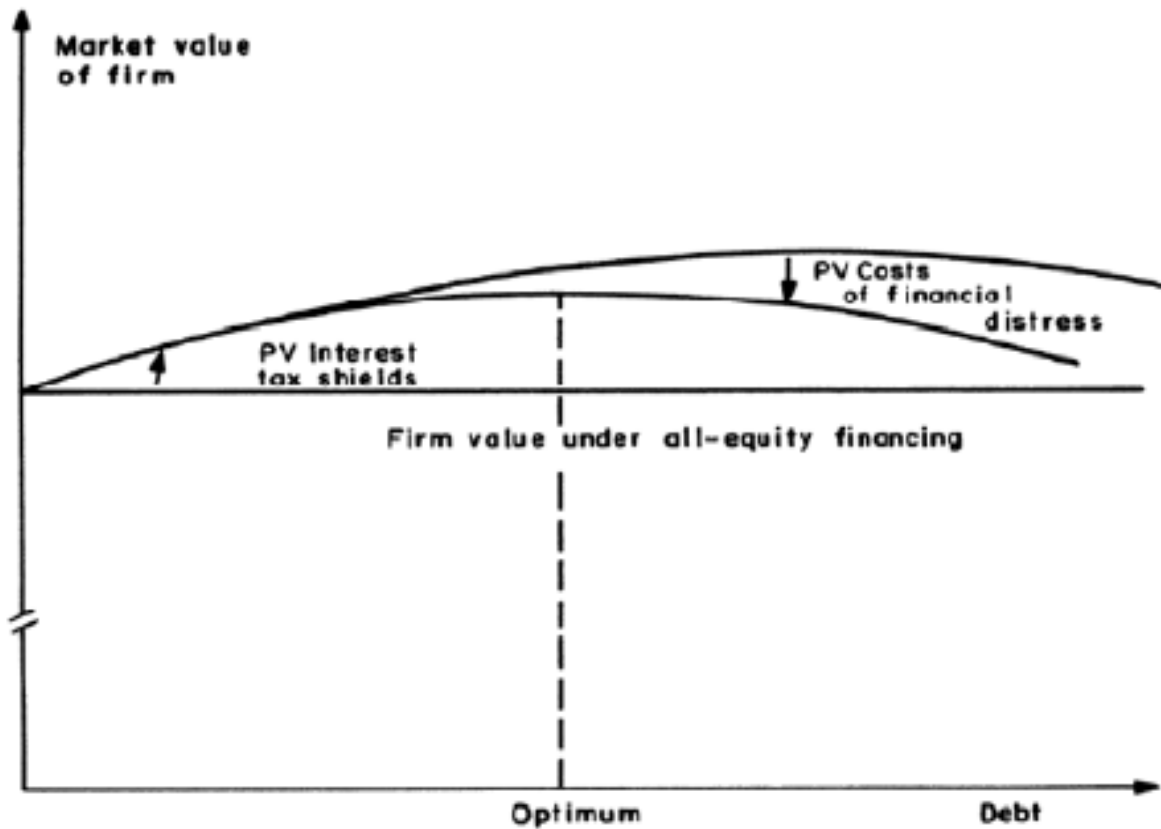


Figure1: The Static Trade-off Theory of Capital Structure (Myers S. C., 1984)

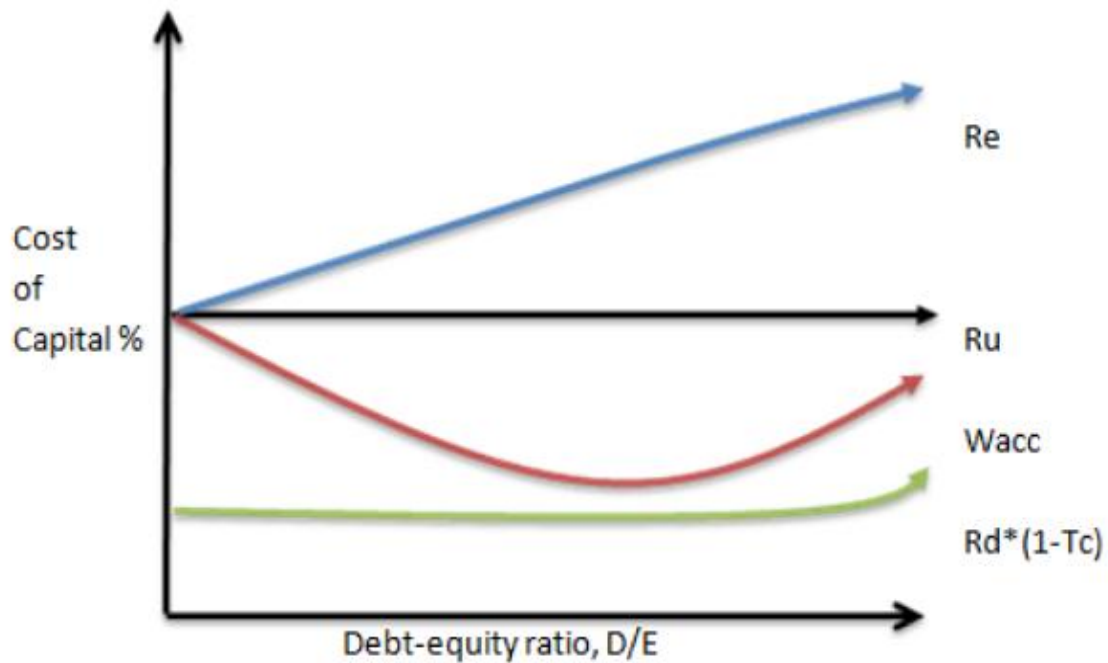


Figure 2: The Optimal Cost of Capital (Hillier, D. J., Clacher, I., Ross, S., Westerfield, R., Jaffe, J., & Jordan, B., 2011)

In Figure 2 another example is given for the trade-off theory. The WACC declines, because of the tax advantages up to a certain amount of debt. After that point the WACC begins to rise due to the distress cost of too much debt. Therefore, companies need to find an optimal amount of debt where the cost of capital is at its lowest point. At this point the company has the highest value and the lowest WACC.

### 2.1.2.1 Empirical results of trade-off theory

In the past, the trade-off theory is tested by different researchers. For instance, in article of (Semiu, B. A. and Collins, S. O., 2011), were using a sample size of 150 respondents and 90 firms were selected for both primary data and secondary data respectively for a period of five years (2005-2009) from the relevance of the trade-off theory point of view. They employed the descriptive statistics and Chi square analysis and suggested that a positively significant relationship exists between a firm's choice of capital structure and its market value in Nigeria.

(Rub, 2012) *Journal of Money, Investment and Banking*, investigated the impact of capital structure on non-financial firms' performance. The study used panel data procedure for a sample of 28 listed companies on the Palestinian Securities Exchange (PSE) over the period of 2006-2010. The results showed that firm's capital structure had a positive impact on the firm's performance measures, in both the accounting and market's measures.

According to (Abor, 2005) carried out regression analyses to analyze the impact of leverage ratio on firm performance between Ghanaian listed firms over the period 1998 to 2002. Throughout his analysis, he compared the capital structures of publicly quoted firms, large unquoted firms and small and medium enterprises. He based his models on three measures of leverage, namely, short-term debt over total assets, long-term debt over total assets and total debt over total assets, on performance, measured by the Return on Equity. His results indicate that there exists a significantly positive relationship between the short-term and total debt and Return on Equity.

The study made by (Arbian and Safari, 2009) also documented similar results, after analyzing the impact of leverage ratios of 100 Iranian publicly listed firms on their performance over the period 2001 to 2007. They found that short term and total debts are positively related to profitability measured by ROE, but found a negative relationship between long-term debts and ROE.

### 2.1.3 Pecking Order Theory

The pecking order theory of capital structure as introduced by (Donaldson, 1961) is among the most influential theories of corporate leverage. It goes contrary to the idea of firms having a unique combination of debt and equity finance, which minimize their cost of capital. The theory suggests that when a firm is looking for ways to finance its long-term investments, it has a well-defined order of preference with respect to the sources of finance it uses. It states that a firm's first preference should be the utilization of internal funds (i.e. retain earnings), followed by debt and then external equity. He argues that the more profitable the firms become, the lesser they borrow because they would have sufficient internal finance to undertake their investment projects. He further argues that it is when the internal finance is inadequate that a firm should source for external finance and most preferably bank borrowings or corporate bonds. And after

exhausting both internal and bank borrowing and corporate bonds, the final and least preferred source of finance is to issue new equity capital.

Pecking Order theory tries to capture the costs of asymmetric information which states that companies prioritize their sources of financing (from internal financing to equity) according to the principle of least effort, or of least resistance, preferring to raise equity as a financing means of last resort. Hence, internal funds are used first, and when that is exhausted, debt is issued, and when it is not sensible to issue any more debt, equity is issued. On the other hand, Pecking Order Theory (Myers S. C., 1984), captures the effect of asymmetric information upon the mispricing of new securities, which says that there is no well-defined target debt ratio. They opined that investors generally perceive that managers are better informed of the price sensitive information of the firms. Investors' perception is such that managers issue risky securities when they are overpriced. This perception of investors leads to the underpricing of new equity issues. Sometimes this underpricing becomes so severe that it causes substantial loss to the existing shareholders. To avoid the problem arising from information asymmetry firms usually fulfill their financing needs by preferring retained earnings as their main source of financing, followed by debt and finally external equity financing as the last resort.

Therefore, the pecking order theory claims a negative relationship between financial structure and firm performance.

### 2.1.3.1 Empirical results of pecking order theory

According to the studies of (Fama, E., and French, K., 2002) tested the pecking order and the trade-off theories on more than 3000 firms in their publication of 2002. Their study covered the period 1965 to 1999. Their models were based on both cross-section and time series methods in order to check for robustness of their results. They support the pecking order theory by documenting a negative relationship between a firm's leverage and its performance. (Pratheepkanth, 2011), conducted a study his finding regarding the capital structure 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 and financial performances of the Sri Lankan companies. (Majumdar, S.K., Chhibber, P., 1999), found in their Indian study that

leverage has a negative effect on performance, while (Gleason, K. C.; Mathur, L. , 2000), support a negative impact of leverage on the profitability of the firm.

#### 2.1.4 Agency Cost Theory

Another theory which has been discussed is the agency theory. In this study the theory is split up in two parts. One part focuses on the conflicts between the equity and debt holders and the other part on the conflicts between the managers of the company and the shareholders. This last part of the theory has to deal with the conflicts between the managers and shareholders due to their differences in interests and motivations on how the money must be spend. As can be cited from (Jensen, 1986, p.2) ‘‘the problem is how to motivate managers to disgorge the cash rather than investing it at below the cost of capital or wasting it on organization inefficiencies’’. This will be the case when the firm has plenty of free cash flow. That is why this theory is also called the free cash flow theory. One of the ways to prevent against this problem is, according to (Jensen, 1986), to increase debt. With debt, the free cash flow of a firm declines, because of the interest that must be paid. Free cash flow can be described as the excess amount of cash from a company that remains after the investments in all positive net present value projects.

The conflict that arises between the managers and the shareholders is the following; shareholders assume that managers do not spend the cash in the right way; this is due to the different interests. The goal of the managers is to find investments that will lead to growth of the company. More growth means more power for them, because of the increasing resources. A developing company usually means a higher compensation for managers as well. Another reward for managers when they deliver good work can be promotion. Therefore, managers first investigate how they can increase their own wealth before thinking about the shareholders’ interests. The shareholders of the company want the manager to spend money in such a way that they will get the highest value or dividend for their investment in the shares of the company. To let the company grow, investments must be made. Hence, managers use some of the money that can be paid as dividends for their own interest to expand the company’s value (Jensen, 1986).

One way to decline the free cash flow is by distributing it to the shareholders. The managers can pay a certain amount of the free cash flow as a dividend to the shareholders. This is according to (Jensen, 1986) a weak solution, because managers can lower the dividends in the future and

therefore, more free cash flow remains. Another way to decline the free cash flow, as mentioned before, is to use debt and pay interest (Ramu, 1999). The interest must be paid on the loan and declines the cash flow which is available for the managers. In this way the agency cost can be reduced. Borrowing too much debt has also a disadvantage, namely, the company may have an insufficient amount of cash flow to pay the interest. This may lead to distress cost. The company needs to find the right amount of debt where the agency cost and distress cost are both low (as low as possible) (Jensen, 1986).

From previous researches the expectation is that free cash flow has a positive influence on leverage. Taking this into account, the intention is that companies with more free cash flow have more leverage to decrease the agency costs. According to the literature, free cash flow is not really positively related to leverage (De Jong, A., & Van Dijk, R., 2007). This result was also found in the article of (De Miguel, A., & Pindado, J., 2001), they stated that the non-positive relation between free cash flow and leverage is related to the information asymmetry which has been explained in the pecking order theory. Nevertheless, the expectation is, based on the previous literature that there is a positive relationship between free cash flow and leverage.

According to (Myers S. , 2001) the free cash flow theory is developed due to sensitivity of companies to overinvest. This is the case when firms have a large amount of cash flow but there is not enough profitable investment. As mentioned before managers act in their own interests. Therefore, if there were no profitable investments left, managers would like to invest in unprofitable projects to do everything in their power to let the company grow. By borrowing money companies can prevent against this threat, due to the lower amount of free cash flow that is available. Only this is not intended for companies with potential high profitable investments. It is not the intention that managers have no free cash flow to spend on profitable projects (Jensen, 1986).

To see if the managers are not investing in non-profitable projects, agency costs must be made. To lower the agency costs, debt can be used. Agency costs can be described as the costs that are needed to monitor and control the managers of the company (Myers S. , 2001). The management act like an agent for the shareholders to invest their money in the right way. To control that the money is invested in the right way, costs must be made, because of the different perceptions and

interest of the managers (Jensen, 1986). Another threat that leads to agency costs is underinvestment; this is the case when companies need to invest in low risk assets by means of the debt covenants. The problem is that even if the asset has a positive NPV, only the debt providers will get their money due to the low profit which has been provided with the asset. This leads to a conflict between the shareholders and debt providers. To control the managers for not investing into risky projects agency cost must be made (Myers S. C., 1984).

(Myers S. , 2001), state that companies with higher growth opportunities will have a smaller amount of debt comparable to companies with low growth opportunities. Companies find it too costly to finance projects by using debt (Chen, L. H., & Jiang, G. J. , 2001). Higher growth opportunities increase the likelihood of investing in risky projects or suboptimal. This makes it more difficult to obtain debt, since it is less likely for debt providers to get their money back. Therefore, debt suppliers are not willing to borrow money to companies that make overinvestment (Deesomsak, R., Paudyal, K., & Pescetto, G., 2004). When there is underinvestment, the opposite happens. From the overinvestment perspective it is expected that growth opportunities have a negative influence on leverage. This is in line with the findings in the article (Gaud, P., Hoesli, M., & Bender, A., 2007), who found out that growth opportunity, have a negative influence on the leverage of European companies. The results of (Chen, L. H., & Jiang, G. J. , 2001) indicate that for Dutch companies, growth opportunities are positively influences with leverage.

## 2.2 Components of Capital Structure

### 2.2.1 Equity Financing

If a firm doesn't use debt financing, it's referred to as an unlevered firm. This brings about what is referred to as business risk which is defined as riskiness inherent in the firm's operations if it doesn't use debt. If a firm doesn't use debt then its return on invested capital shall be measured by return on equity which is denoted by net income to common stock holders divided by common equity. This simply means that the business risk of a leverage free firm will be measured by the standard deviation of its Return on equity (Brigham, E. F., & Houston, J. F. , 2004).

## 2.2.2 Debt Financing

When a firm decides to use debt financing for its operations it's faced with a financial risk and it's referred to as a levered firm. Financial risk is an additional risk placed on common stock holders as a result of the decision to finance using debt. Financing risk is the probability that the earnings of the firm will not be as projected because of the method of financing. And also, financing risk arises because debt has a fixed financing obligation usually in the form of interest which must be met when the obligation falls due before the shareholders can share in the retained earnings (Brigham, E. F., & Houston, J. F. , 2007).

## 2.2.3 Cost of Capital

Companies influence their cost of capital through a number of ways because the choice of financial structure affects the cost of capital (Wald, 1999). (Wald, 1999), further noted that investors providing equity capital were in a more risky position as opposed to those providing debt since owners are the residual claimants of a company's net cash flows. Owners of a business receive returns through dividend and increase in the value if the firms' as sets often reflected in stock price appreciation. Debt holders on the other hand obtain interest payment before dividends are paid out.

Cost of capital therefore in general summarizes the different costs attached to the different sources of financing obtained by an organization (Michaelas, N., Chittenden, F., & Poutziouris, P., 1999). (Michaelas, N., Chittenden, F., & Poutziouris, P., 1999), noted that for the case of equity financing, the shareholders will not often make explicit the return they will require for their capital contribution unlike the capital raised by way of borrowing which normally has an interest rate attached to it which then forms the basis of an organization's cost of capital. It is therefore imperative to note that a highly levered business depends more on debt for its overall financial capitalization which thereby increasing the risk hath to the debt and shareholders.

Another important aspect (Wald, 1999) raised in his work was that in both debt and equity financing, both instances required higher returns to bear the risk though the weighted average cost of capital could possibly be reduced up to a point as leverage increased from zero since the

cost of debt was less than the cost of equity. Thus the business's choice of degree of financial gearing was likely to have a bearing on its weighted average cost of capital.

#### 2.2.4 Financial Performance

Strength of financial position of an organization is called financial performance. Financial analysis is the process of identifying the financial strengths and weaknesses of the firm by properly establishing relationship between the items of the balance sheet and the profit and loss account. In financial analysis a ratio is used as a benchmark for evaluating the financial position and performance of a firm. Ratio is defined as "The indicated quotient of two mathematical expression" and as "The relationship between two or more things". Ratios help to summarize large quantities of financial data and to make judgment about the firm's financial performance (Leon, 2013).

#### 2.3 Capital structure and financial performance

According to (Holz, 2002) there are different ways to measure financial performance such as: ROA, return on equity (ROE) and return on invested capital (ROIC). ROA is an indicator of how profitable a company is relative to its total assets. It gives us an idea as to how efficient management is in using its assets to generate earnings whereas ROE measures a company's profitability which reveals how much profit a company generates with the money shareholders have invested. ROIC is a measure used to assess a company's efficiency in allocating the capital under its control in profitable investments. This measure gives a sense of how well a company is in using its money to generate returns. However, many researchers in the field of cement industries and their financial performance stated that the key indicator of firms financial performance is ROA defined as earnings before tax interest divided by total assets. (Philip Harwick and Mike Adams, 1999), (Malik, 2011), also suggest that return on asset (ROA) is a better financial performance indicator for cement companies.

The issue concerning the relationship between capital structure and corporate financial performance is an issue that has been considered as very important to both academics and

experts in the business world (San, O. T. , and Heng, T. B., 2011). While there is a scarcity of statically evidence about the impact of capital structure on corporate financial performance in advanced and developing economics, majority of the past research on capital structure have always been from the determinants on corporate leverage.

This section discusses some scientific studies, which examined the impact of capital structure on firm's financial performance. This section was divided into three parts: first part presents some studies that indicate a positive relationship between capital structure and firm's financial performance. Second part shows a negative between capital structure and firm's financial performance. Last part displays mixed results.

### 2.3.1 Positive relationship between capital structure and firm financial performance

(Wipperfurth, 1966), investigated the relationship between financial leverage and firm value on some industries which marked on high degree in difference characteristics from where growth cost and demand. The study used debt to equity ratio as financial leverage indicator and earnings to market value of common stock as performance indicator. Results revealed that leverage effect positively on firm value and this traditional evidence which said that shareholders wealth can enhance by using outside financing. In this manner, (Holz, 2002) found that capital structure (debt ratio) related positively with the firm performance, the result ascribes to the willing of firms managers to finance their projects by borrowing and then use theses money optimally to maximize the performance. Accordingly to this result, if the banks want to lend money, it shall study the feasibility of projects that want to finance its accurately before offer loans until that the firms can achieve required returns to meet their obligations.

On the same manner , (Dessi R.and Donald R., 2003) found that financial leverage affect positively on the expected performance, where they explained this result to that low growth firms attempt to depend on the borrowing for utilizing the expected growth opportunities and investing borrowing money at the profitable projects , therefore it will increase the firm performance . (Margaritis, D. and Psillaki, M., 2010), proved also that financial leverage (debt ratio) correlated positively and significantly with firm performance (added value, labor and capital).

Other study by (Akinyomi, 2013), using three manufacturing companies selected randomly from the food and beverage categories and a period of five years (2007-2011) using the static trade-off and the pecking order theory point of view. He adopted the use of correlation analysis method and revealed that each of debt to capital, debt to common equity, short term debt to total debt and the age of the firms' is significantly and positively related to return on asset and return on equity but long term debt to capital is significantly and relatively related to return on asset and return on return on equity. His hypothesis also tested that there is significant relationship between capital structure and financial performance using both return on asset and return on equity.

### 2.3.2 Negative relationship between capital structure and financial performance

In the contrast to the above, many studies had proved that capital structure related negatively with firm financial performance. (Arimi, 2010), did a study on the relationship between capital structure and financial performance among firms listed under the industrial and related sector at the Nairobi Stock Exchange. His study covered five years, from 2004 to 2008. This study found out that, there exists a negative relationship between debt-equity ratio and return on equity (ROE), that is to say, an increase in the debt-equity ratio leads to a decrease in ROE. This implies that companies are unwilling to source for funds externally when ROE is on the increase.

(Majumdar, S.K., Chhibber, P., 1999) And (Ghosh, 2007) reached that level debt (capital structure) associated inversely with firms performance. The result refers to the creditors who are using loans as disciplinary tool on the firm. This tool bases on the restrictions that impose by creditors on the firm as prevention the firm from distribute the earnings on the shareholders or impose restrictive conditions on the loans by increasing the interest rates or impose sufficient collaterals on loans, thus, these restrictions will lead firm to focus on how pay the debt burden without concerning in achieving earnings and reflect adversely on firm performance. (Abor, 2005) noted that various capital structure measure which represented short term debt, long term debt and total debt associated negatively and statistically with firm performance .The conclusion refers to that firms rely on borrowing extremely, it will not achieve tax shields and then it lead to increase borrowing cost of which the firm exposes to the bankruptcy risks and reduce the return.

Moreover, (Rao, N. , V. ,Al-Yahyee, K. and Syed, L., 2007) reached that capital structure related inversely on financial performance on Oman firms. The relationship refers to high borrowing

costs in Oman economy and to the weakness of the debt market activity in Oman. They suggested that tax savings as a result of debt using are not sufficient to meet the costs of debt and it would be the cost of debt greater than the rate of return. (Krishnan, V. and Moyer, R., 1997), (Gleason, K. C.; Mathur, L. , 2000) proved that capital structure also related negatively with firm financial performance.

### 2.3.3 Mixed results of capital structure and firm financial performance

(Hurdle, 1973), revealed that financial leverage effects negatively with profitability in accordance with two stage least squares(2SLS) and positively according to ordinary least squares(OLS). (Agarawal,R. and Zhao,X., 2007), Presented additional evidence on how the growth of the firm may affect on the relationship between financial structure and performance. High growth firms effect negatively between financial leverage and firm value, while low growth firms effect positively.

(Weill, 2008), investigated the effect of financial leverage on the firm performance in seven European countries. The study summarized that financial leverage related positively and significantly on firm performance in Spain and Italy, whereas negatively and significantly in Germany, France, Belgium and Norway, but insignificantly in Portugal. (Cheng, Y.; Liu, Y.; Chien, 2007) used threshold regression model on 650 Chinese firms(2001-2006).The results revealed that debt ratio and firm value positively when the debt ratio between(53.97%-70.48%),on the contrary , relationship be negatively when the debt ratio more than 70.48%. Eventually, (Li,H. , Meng, L. , Wang,Q. and Zhou,L., 2008) proved that financial leverage related negatively with return on asset, but it is positive relation with return on equity.

Another study by (Salteh, H. M., Ghanavati, E., Khanqah, V. T., & Khosroshahi, M. A., 2009), states that there is a positive relationship between the level of debt in a firm and its financial performance. They have conducted their analysis based on three different financial performance measurements, namely return on equity (ROE), return on assets (ROA) and firm value. Results of their study show that ROE and Tobin's Q suggest that debt ratio is positively associated with the performance while ROA shows a reverse relationship.

### 2.3.4 Influence of capital structure on financial performance of manufacturing companies

Besides, the mixed result of capital structure and financial performance of financial institution, some researchers are put their empirical results on capital structure and financial performance of manufacturing companies. (Khan, S., Sheikh, N. A., & Wang, Z., 2013), study empirically investigates the impact of the capital structure of Pakistan manufacturing firms on their financial performance for a sample of 69 listed firms for the period of 2003-2009. In this respect, they evaluate the responsiveness of stock returns to the changes in the capital structure by defining stock returns as dependent variable and leverage ratio, ROE, earnings per share and time interest earned ratio as independent variables. Based on an OLS analysis, they propose that the changes in the capital structure have significant impacts on the financial performance and stock returns of firms operating in manufacturing industry in Pakistan.

(Ningsih, 2013), examined the correlation of firms' capital structure towards its financial leverage and he focused on static tradeoff framework and pecking order framework. He used secondary data of publicly listed cement industry in ten year period (2003-2012). There are three ratios being used in this which are ROA, ROE and EPS and he used MS. Excel and E-Views 6. Descriptive statistic, linear regression test using pooled least square analysis, and hypothesis testing using F-test and T-test, are the method being used in data analysis. The result shows that capital structure indicators correlated significantly on financial leverage simultaneously. Meanwhile, the T-test result shows that only ROA and ROE correlated significantly with financial leverage.

The study of (Mahmoudi, 2014), stated in his study that the effect of capital structure on financial performance of cement companies and this study has been undertaken for the period of four years from 2008 to 2011 on 28 Iran cement companies and the researcher used return on equity (ROE) and return on asset (ROA) as proxy of financial performance, while used the short term debt to equity ratio (STD/E) and long term debt to equity ratio (LTD/E) as a proxy of capital structure. The results suggested that there was a significant and negative relationship between capital structure and financial performance.

### 2.3.5 Influence of capital structure on financial performance of other institutions

Modigliani and Miller (1958, 1963) indicate that the firm value is unrelated to debt structure and stimulated considerable discussion of this subject. Several studies found a close correlation among capital structure, operational risk and profitability. (Ebaid, 2009), examined the capital structure and financial performance of financial institutions, basically the aim was to check the relationship between debt level and financial performance of companies (listed at Egyptian stock exchange during the period of 1997 to 2005). By using the three accounting based measure of performance (ROA) return on assets (ROE) return on equity and gross profit margin. He found that there is negative significant influence of short term debt (STD) and the Total debt (TD) on the financial performance measured by the return on asset (ROA) but no significant relationship was found between long term debt (LTD) and this measure of financial performance. He also proposed that there is not significant influence of the debt (TD, STD and LTD) on financial performance measured by both gross profit margin and Return on equity .The results also indicated that control variable firm size has no significant effect on the firm's financial performance. In this research paper least squares regression model was used to check the financial performance of the firms. Furthermore, (Chen,J.S, Chen,M.C, Chen, W.J and Chen J.H, 2009), reported that recent research has found that there were both positive and negative effect of capital structure on the profitability of the insurance companies. (Chen,J.S, Chen,M.C, Chen, W.J and Chen J.H, 2009) However, found that capital structure exert a significantly negative effect on profitability life insurance industry in Taiwan. Similarly, (Naveed, A. Zulfqar. A and Ishfaq A., 2010), analysis on Pakistan life insurance sector indicates the negative relationship between leverage and profitability and predict that in Pakistan profitable life insurance companies are preferred to utilize small portion of debt. This result conform the idea that Pakistan life insurance companies follow pecking order pattern. I.e. preferred to employ internal financing than debt.

(Kamau, 2010), studied the relationship between capital structure and financial performance of insurance companies in Kenya. This study covered four years, from 2006 to 2009. The study found out that there is a weak relationship between financial performance and capital structure. This implies that debt to equity ratio accounted for only a small percentage of financial performance among the companies studied.

### 2.3.6 The influence of other variables on firm's financial performance

#### **Size**

Due to economies of scale the size of a firm is considered to be an important determinant of a firm's performance. Larger, well known firms have greater access to the long term capital market than smaller unknown firms. Smaller, unknown firms tend to either borrow short term by means of bank loans, or issue stock. This explains why larger companies will lean toward debt financing and smaller firms toward equity financing (Rao, N. , V. ,Al-Yahyee, K. and Syed, L., 2007). According to the studies (Orser, B. J., Hogarth-Scott, S., & Riding, A. L, 2000) using Canadian firms using changes in gross revenue to reflect performance. They found a positive effect for a firm's size support the arguments that size reflects greater diversification, economies of scale production, greater access to new technology and cheaper sources of funds. Besides, of those, (Shergill, J. &Sarkaria,M, 1999) using data of Indian firm also confirm a positive relationship between a firm's size and financial performance.

However, according to the study (Moen, 1999) for a Norwegian company finds that export performance is not subject to the firm's size (employment). He finds that small firms are just as successful as large firms and the main competitive advantages are their products and technology.

#### **Tangibility**

According to (Shergill, J. &Sarkaria,M, 1999) investigates the impacts industry and firm characteristics on the firm- level financial performance for the period 1980-1990 and cover 171 Indian firms in twenty-one industry the groups. They are using the difference between the firm's performance rates and the market average, ROE, ROA and others. They found that capital intensity is positively related to the financial performance. They used two sets of measures to reflect the financial performance: Return on equity and return on assets as indicators for a firm's profitability on one hand, and growth in sales, growth in dividends, and growth in net total assets as measures for growth on the other hand.

## **Liquidity**

Liquidity and its management determines to a great extent the growth and profitability of a firm. This is because either inadequate liquidity or excess liquidity may be injurious to the smooth operations of the organization. More recent studies have confirmed the existence of the tradeoff between liquidity and profitability. For instance (Gill A, Bigger N. & Mathur N., 2010) did a case study of Cement Industry in Pakistan and found significant negative relation between the firm's profitability and its liquidity level. Also, (Bhunia, A. and Brahma, S.B, 2011) studied the importance of liquidity management on profitability and found a significant negative relationship between the profitability measured by ROCE and all the independent variables (CR, LR, ALR, DER, AOI, AOD, and AOC) except for CR which indicated a positive influence on profitability.

Inversely, some study's findings had tended to render the profitability-liquidity trade off invalid. In other words, that there exist a direct and positive relationship between a longer liquidity and profitability. For instance, (Mathuva D, 2000) argued that a firm can have larger sales with a generous credit policy, which extends the cash cycle. In this case, the longer cash conversion cycle may result in higher profitability. Also, (Deloof, 2003) assert that, A longer cash conversion cycle might increase profitability because it leads to higher sales. The above arguments are in consistent with the findings of (Lyroudi & Lazaridis, 2000), studied this relationship among the food industry in Greek and found a positive and significant relationship between liquidity and profitability (measured by ROI and NPM). This result indicates that a longer cash conversion cycle can improve company's profits.

## **Capital adequacy**

Capital Adequacy is important for firms to maintain share holders' and creditors confidence and preventing the firms from going bankrupt. Capital is seen as a cushion to protect creditors and promote the stability and efficiency of financial system around the world. Capital Adequacy reflects the overall financial condition of the firms and also the ability of the management to meet the need for additional capital. It also indicates whether the firms have enough capital to absorb unexpected losses (Deloof, 2003)

## **Business risk**

According to the agency theory, the required return of the investors should be suitable to their risk in the firm. Shareholders will require high return in order to hold the risk related to the bankruptcy and financial distress since debt holders have the priority in the case of bankruptcy.

The effect of different capital structure and differing business risk are reflected in a firm's income statement. Operating leverage tends to magnify the effect of fluctuating sales and produce a percentage change in operating income (EBIT) larger than the changes in sales. In practice, firms tend to use capital structure, preferred stock and common equity with which the enterprise plans to raise needed funds. Since capital structure policy involves a strategic tradeoff between risk and expected return, the optimal capital structure policy must seek a prudent and informed balance between risk and return. The firm must consider its business risk, tax positions, financial flexibility and managerial conservatism managers do not share firm's profits with shareholders, and they are very likely to increase company's expenditures by purchasing everything they like and surrounding themselves of luxury and amenities. Hence, the main concern of shareholders is ensuring that managers do not waste firm's resources and run the firm in order to maximize its value, which entails finding a way to solve the principal-agent problem (Muritala, 2012). Many studies investigated the relationship between business risk and profitability. Among others (Shergill, J. & Sarkaria, M, 1999) using the data of Indian firms, they confirm the negative relationship between a firm's risk and financial Performance.

## **Growth opportunity (Sales turnover)**

Growth opportunities, in the literatures is considered as an important determinant of firm's performance, hence 'GRO', is used as a proxy for growth opportunities in this study. (Zeitun, R., Tian, G., 2007), argue in support of this, that firms with growth opportunities are able to generate profit from investment.

According to (Brush T. H., Bromiley P., & Hendrickx M, 2000) in the light of free cash flow hypothesis, they conducted in Maryland-USA and they found a strong positive relationship between sales growth and a firm's financial performance in terms of stockholders' returns and return on assets. Furthermore, (Hutchinson, M. & Gul, A, 2006) they found that firms

with high investment opportunities are associated with lower agency costs and better return on equity.

According to (Amidu, 2007), using return on equity and return on assets for Ghana, finds support for the fact that growing firms have a prospect of generating more returns for the owners.

## **Gross domestic Product (GDP)**

Gross domestic Product (GDP) is the total market value of goods and services produced in a country in a given year. During the declining GDP growth the demand for cement falls which in turn negatively affect the profitability of cement companies. On the contrary, in a growing economy as expressed by positive GDP growth, the demand for cement is high due to the nature of business cycle. During boom the demand for cement is high compared to recession (Sutton J. & Kellow N, 2010).

### **2.4 Overview of the Ethiopian cement industry's**

The role the construction industry plays in socio-economic development is significant. The industry is a distinct sector of the economy, which makes its direct contributions to economic growth. It provides the basis upon which other sectors can grow by constructing the physical facilities required for the production and distribution of goods and services and has a significant multiplier effect on the economy as a whole (Moavenzedah F. & Rossow J.A., 1975).

Cement as being one of the principal building and construction materials in the construction sector, is essential to meet society's needs for housing and basic infrastructures such as roads, hydro-dams, irrigation, water treatment facilities, government buildings, universities and hospitals. In Ethiopia, the construction sector is enjoying a boom which is due to heavy government investments on the construction of hydroelectric dams, housing projects, irrigation and roads. Accordingly, cement as being one of the critical ingredients, has a huge part to play on the construction of these large scale investment projects and it required large amount of fund either through issuance of share or long term debt with bank to fit the demand of cement.

According to the five year cement production target, the government has envisioned to raise the national cement production capacity to 13.7 million tons by the year 2015 which aimed to satisfy the increasing cement consumption that had been increasing by an average rate of around 30% during the past five years (MOI, 2011)

In Ethiopia, the first cement factory, Dire Dawa Cement and Lime Factory, was established by the Italian occupying forces in 1938. The plant had an initial capacity of 120 tons of clinker (the intermediate product obtained by burning limestone) per day. In response to the increasing demand for cement, the Addis Ababa and Massawa cement factories were established in 1964 and 1965 respectively, each with a capacity of 70,000 tons of clinker per year. In 1984, the State-owned Mughher Cement Factory was constructed and commissioned with a capacity of 300,000 tons per year, which created a large increase in capacity of the country's cement supply. Following Eritrea's independence in 1991, the Massawa cement factory was no longer in Ethiopia and Mughher was the only manufacturer in the sector until Messebo Cement was established in 1996 (Sutton J. & Kellow N, 2010)

For about twenty years, cement production was dominated by the two large players Mughher and Messobo cement factories. This low level of investment in the sector has created problems in relation with the supply and price of cement. Cement prices have been on a steady upward trend until the beginning of 2012 when the new cement giant Derba Midroc Cement entered the business. In addition, severe shortages of power supply which resulted the closure of the two major cement producers for a month period in the year 2009, and a continual growth in demand has forced the government to turn its attention on attracting investments towards the sector (MOI, 2011).

Based on the data from the Ministry of Industry, up to June, 2015 the number of cement manufacturers in the country has reached eighteen manufacturing industries (including five newly opened establishments). The installed production capacity has reached 11.2 million tons. This is expected to further increase to 17.15 million tons. The factories are actually producing 5.47 million tons per annum.

#### 2.4.1 Major actor of the cement sector

The leading manufacturer in the Ethiopian cement sector is Derba Midroc cement Plc, which started operation on February, 2012. The company has the capacity of supplying 2.3 million tons of cement per year which accounted for approximately 20% of the national production capacity in 2012 (MOI, 2011). However, because of the newly chartered cement factories in Ethiopia Derba Midroc were not included in this research. The second largest cement producer is the government owned Mughher Cement Enterprise which was established in 1984. The company has served as the only cement supplier starting from the independence of Eritrea in 1991 until 1996 when another cement factory, Messobo cement is established. In recent years the company implemented an expansion project with a capacity of 1.4 million tons per year. The company has now a combined capacity of producing 2.27 million tons of cement per year ((MOI, 2013/14)

Messobo Cement, the third largest cement producer, is established in 1996 by an endowment fund called EFFORT (endowment fund for the rehabilitation of Tigray) (MoI, 2013/14).

The fourth largest operational cement factory is National Cement Share Company which was previously known as Dire Dawa cement factory. The factory is a share company of East African Holdings Share Company and the government of Ethiopia. Currently, the factory has the capacity of producing 300 thousand tons per year (MoI, 2013/14).

Other investment projects in the sector that are currently operational include Abyssinia, Red fox, Jemma, Pioneer, Huan Shang, Enchini, Zhong Shang, Huan Yu, Debrešina business group (Hollela cement), Derba Midroc (Dejen Project) and East cement, ethio-cement, habesha cement and Dangote cement which is the newly chartered cement factory by the year 2015 (MoI,2013/14).

#### 2.4.2 Challenges within the cement sector

According to the Ministry of Industry the main reasons for the low supply of cement are mainly; power shortages, lack of adequate and sustainable availability of coal and a rising cost of production. Since Cement industry is an energy-intensive sector, all major operations of cement manufacturing critically hinge on the availability of power. Though not adequate, all operational

cement manufacturing plants are currently provided with a power supply from the Ethiopian Electric Power Corporation (EEPCo). During the year 2009, the corporation has instructed the nation's two largest cement plants Mughher and Messobo to close for a month due to a severe shortage in power supply. By the coming year, the government has planned to fully shift the energy source of cement factories from being dependent on the use of electric power and High Fuel Oil (HFO) that involve foreign currency spending, to that of coal and bio mass energy sources as alternative sources. In addition the government is looking at possible imports of coal from countries like South Africa and Pakistan with the aim of securing a sustainable supply of coal (MoI, 2011).

As is the case for all manufacturing industries the cost of production of cement is a major factor that determine the price of cement. In Ethiopia, cement production comprises of the following major expenses like Power & fuel costs, stores & spare parts, cement transportation charges, repair and maintenance costs, packing expenses and overhead costs. Out of these costs fuel oil alone costs around 60% of the total cost of production. Though one of the reasons for price rise of cement is profit motive of the cement companies, a rise in the cost of production specially the cost of fuel oil is a major factor that determine cement prices (MoI, 2011).

## 2.5 Conclusions and knowledge gap

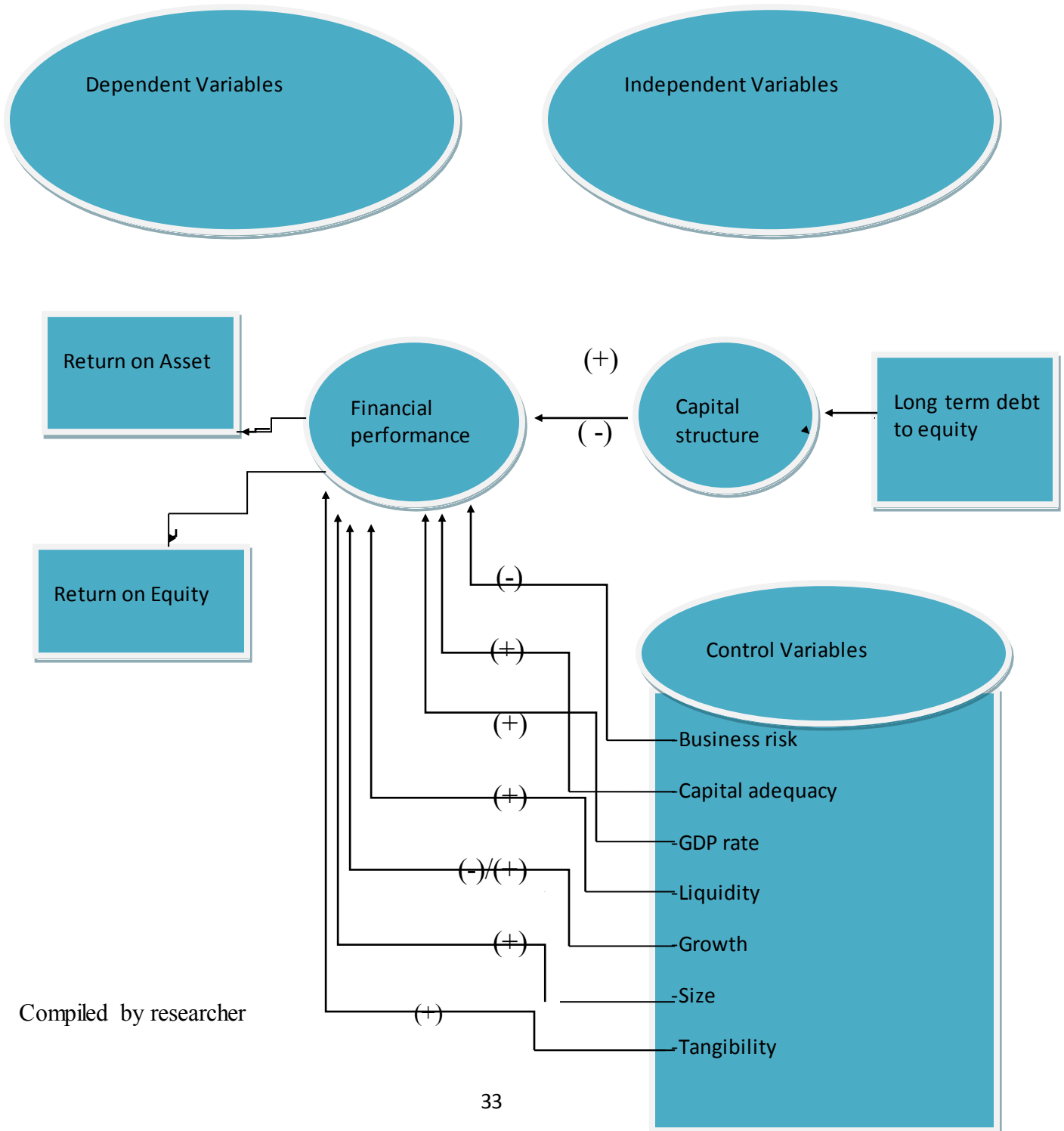
The modern capital structure theory was later developed since the publication of capital structure irrelevance framework by (Modigliani, F.,and Miller, M., 1958). They argued that a firm couldn't change the value of its outstanding securities by changing the proportions of its capital structure. Modigliani and Miller concluded that in a world without taxes, the value of the firm and also its overall costs of capital were independent of its choice of capital structure. A later study in 1963 by M&M concluded that by incorporating corporate tax, the market value of the firm is increased and the overall cost of capital is reduced to the point of interest being tax deductible. Those studies were conducted under different assumptions, which fit into the Particular situation. Trade-off theory, pecking-order theory, agency-theory and some other theories are empirical evidences that challenge Modigliani and Miller' capital structure studies.

The various studies done on capital structure have not yet resolved the puzzle of attaining an optimal capital structure by firms especially on the cement industry. Various empirical studies

reviewed in this chapter have further revealed the contradicting views of researchers on the subject of capital structure and firms financial performance. In Ethiopia, as far as the knowledge of the researcher is concerned, there are a few conducted researches about capital structure but those researches were entirely emphasized on investigating determinants of capital structure and there is no empirical study in Ethiopia concerning the relationship between capital structure and financial performance in the context of the Ethiopian cement industry. Hence this study addressed the knowledge gap on the relationship between capital structure and financial performance of cement companies in Ethiopia.

## 2.6 Conceptual frame work

After carefully reviewed the theoretical and empirical literature of capital structure and firms financial performance, the following conceptual model is formulated to examine the relationship between capital structure and financial performance of Ethiopian cement companies.



## **Chapter Three**

### **Research Methodology**

The preceding chapter presented reviews of literature on capital structure with respect to the theoretical perspectives and prior empirical studies. The results from a review of the literature are used to establish expectations for the relationship of capital structure and firms' financial performance and it confirms that there was no study conducted on capital structure and financial performance of cement companies in Ethiopia. This chapter outlines and explains the methodology employed to achieve the research objective. It starts by explaining the research source of in section 3.1. In section 3.2, population of the study and sample are discussed. Section 3.3 discusses about data type used in this study. Section 3.4 discusses about data presentation and analysis techniques used in the study. In order to conduct regression analysis by using E-views 8 application software, econometric model are develop in section 3.5. In section 3.6 discusses about different variable used in this research.

#### **3.1 Source of data**

In order to gather the required information which address the research question, only secondary data was collected from selected Ethiopian cement companies. The data for this study was gathered from Ethiopian revenue and customs authority large tax payers' branch office and the annual audited financial report published by the cement companies. Source of data for this study are balance sheet and income statement over five years period from 2010 up to 2014, which are mainly extracted from the audited financial report of cement companies.

#### **3.2 Population of the Study and Sample**

This study was conducted on Ethiopian cement industry, in which a total of eighteen cement companies are operating at the movement. For this research purpose out of eighteen cement companies operating in Ethiopia, the researcher selected only eight cement companies because the market share, production capacity and data availability of the selected companies are very high relatively with the excluded cement companies. Due to the high market share and

production capacity the researcher believes that the selected cement companies represent the total population. Therefore, out of eighteen cement companies working in Ethiopia, the following eight cement companies drawn for this research purpose. Thus are;

- Mughher cement enterprise
- Messobo cement factory
- National cement share company
- Abyssinia cement PLC
- East cement share company
- Huan shang cement factory
- Red fox cement factory
- Holleta cement factory

### 3.3 Data type

The nature of data used in this study enables the researcher to use panel data model which is deemed to have advantages over cross section and time series data methodology. Panel data is the combinations of cross-sectional and times series data. As (Brooks C. , 2008) states the advantage of using panel date set; first, it can address a broader range of issue and tackle more complex problem with panel data than would be possible with pure time series or pure cross-sectional data alone, and by structuring the model in appropriate way, the researcher can remove the impact of certain forms of omitted variable bias in the regression result. Second, it is often examined how the relationships between variables change dramatically. To do this, using pure time series data would often require a long run of data simply to get a sufficient number of observations to be able to conduct any meaning full hypothesis test. But by combining cross-sectional data and time series data, the researcher can increase the number of degree of freedom, and thus the power of test, by employing information on the dynamic behavior of a large number of entities at same time. According to (Baltagi, 2005), by combining time-series of cross section observations, panel data give more informative data, more variability; less co linearity among the variables and more efficiency.

### 3.4 Data analysis

In this study the researcher employed, descriptive analysis, diagnostics test, Wald test and the regression analysis.

Descriptive analysis is used to describe relevant aspects of capital structure and financial performance of Ethiopian cement companies and to provide detailed information about each relevant variable. Diagnostics tests such as Normality, Multicollinearity, Heteroskedasticity and autocorrelation tests were conducted to ensure that the data suits the basic assumptions of classical linear regression model. Wald test is used to test more than one coefficient simultaneously different from zero and to check the significance level of all explanatory variables in this research models. Regression analysis is used to examine the relationship between capital structure and financial performance of Ethiopian cement companies and to know the effect and magnitude of capital structure on financial performance of Ethiopian cement companies. Furthermore, in order to examine the relationship between capital structure and financial performance of Ethiopian cement companies, panel least square method is used.

Finally, the P-value was used to determine the significance of the constant term and the coefficients terms for each of the regressions. The importance of each of the regressions was determined by carrying out the F-test at 95% confidence level. The coefficient of determination  $R^2$  was used to measure the strength to which independent variables explain the variations in the dependent variables. The analysis done by using E-views software version 8.

### 3.5 Econometric model

In order to identify the effect of capital structure on Cement Companies financial performance, multiple regression analyses were applied. Multiple regressions are not only a technique, but a whole family of techniques which can be used to explore the relationship between one dependent variable and a number of independent variables (Brooks C. , 2008)

According to (Brooks C. , 2008), Econometricians use regression analysis to make quantitative estimates of economic relationships that previously have been completely theoretical in nature.

Regression is a statistical technique that attempts to “explain” movements in one variable, the dependent variable, as a function of movements in a set of other variables, called the independent (or explanatory) variables, through the quantification of a single equation (Brooks C. , 2008).

There will often exist several explanatory variables in a given situation. In a multiple regression we can find the best relationship between the response and the different explanatory variables. The general multivariate regression model with K independent variables can be written as follows (Brooks C. , 2008)

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki} + \epsilon_i \quad (i = 1, 2, 3, \dots, n)$$

Where  $Y_i$  is the  $i$ th observation of the dependent variable,  $X_{1i}, \dots, X_{ki}$  are the  $i$ th observation of the independent variables,  $\beta_0, \dots, \beta_k$  are the regression coefficients,  $\epsilon_i$  is the  $i$ th observation of the stochastic error term, and  $n$  is the number of observations.

The following models were used to identify the effect of capital structure on financial performance of Ethiopian cement companies. The study used more than one proxy of accounting measures to measure the financial performance of Ethiopian cement companies and the researcher used the proxy ROA and, ROE as accounting financial performance measure. Both financial performance measure variables reflect the dependent variable. The independent variable is capital structure measured by long-term debt to equity ratio and control variables consist of Firm size, tangibility, capital adequacy, GDP rate, business risk, growth and liquidity.

$$\text{Financial Performance} = f(\text{Capital Structure})$$

### **Model 1**

$$\text{ROA} = \alpha + \beta_1 (\text{LTDTE}) + \beta_2 (\text{CA}) + \beta_3 (\text{TAN}) + \beta_4 (\text{GRO}) + \beta_5 (\text{SIZE}) + \beta_6 (\text{BR}) + \epsilon_{it}$$

### **Model 2**

$$\text{ROE} = \alpha + \beta_1 (\text{LOGLTDTE}) + \beta_2 (\text{SIZE}) + \beta_3 (\text{TAN}) + \beta_4 (\text{CA}) + \beta_5 (\Delta\text{GDP}) + \beta_6 (\text{LOGLQ}) + \beta_7 (\text{BR}) + \epsilon_{it}$$

Where:

ROA= Return on asset

ROE= Return on equity

$\alpha$  = Constant coefficient

$\beta$  = Regression coefficients for measuring independent variables

LTDTE= Long term debt to total equity

CA= Capital adequacy

TAN= Tangibility

GRO= Growth

SIZE= Firms size

GDP= Gross domestic product rate

LQ= Liquidity ratio

BR= Business risk

$\epsilon_{it}$  = Error component showing unobserved factor

Finally, logarithm and difference has been used to rescale the data in order to indicate a better normal distribution for model 2.

## 3.6 Variable explanation and hypothesis

### 3.6.1 Dependent Variable

The financial performance is the dependent variable and measured by the return on assets (ROA) and return on equity (ROE). The reason for choosing return on asset (ROA) variable as a proxy of financial performance measurement is that shows the percentage of profit that a company earn in relation to its overall resource (total asset). ROA is key profitability ratio which measures the amount of profit made by a company per dollar of its asset. It shows the company ability to generate profit before interest and tax. Furthermore, return on asset measurements include all of company asset including those which arise from liability as well as those which arise from contribution by investors. Return on asset gives an idea as to how efficiently management use company asset to generate profit (Ghosh, 2007). Return on asset (ROA) has been used as a proxy of financial performance measurement by (Zeitun, R., Tian, G., 2007), (Salteh, H. M., Ghanavati, E., Khanqah, V. T., & Khosroshahi, M. A., 2009) and (Agarawal,R. and Zhao,X., 2007) in their previous study. Return on asset calculated by the following formula:

$$\text{ROA} = \frac{\text{Earnings before Interest and Tax}}{\text{Total Asset}}$$

The other reason for choosing return on equity (ROE) as a proxy of financial performance is that measures the rate of return for ownership interest (shareholder equity) of common stock owners and it also measures the efficiency of a firm at generating profits from each unit of shareholder equity (Donaldson, 1961). Return on equity (ROE) has been used as a proxy of financial performance measurement by (Abor, 2005), (Cheng, Y.; Liu, Y.; Chien, 2007), (Karadeniz, E., Kandir, S. Y., and Balcilar, M., 2009) and (Akinyomi, 2013) in their previous study. Return on equity (ROE) calculated by the following formula:

$$\text{ROE} = \frac{\text{Net Income}}{\text{Total Equity}}$$

### 3.6.2 Independent variable

Capital structure is the independent variable of this research and measured by long term debt to equity ratio. According to (Leon, 2013) and (Abor, 2005), long term debt to equity ratio measures long term debt financing as a percentage of total financing and they have been used long term debt to equity ratio as a measure of capital structure and it is calculated by following formula

$$\text{Long term debt to equity ratio} = \frac{\text{Long term debt}}{\text{Total equity}}$$

The statics theory predict that higher leverage is expected to lower agency costs, reduce inefficiency and thereby lead to improvement in firm's financial performance. (Berger & di Patti, 2002), argues that increasing the leverage ratio should result in lower agency costs of outside equity and improve firm performance, all else held constant.

However, the pecking order theory proposed by (Myers S. C., 1984), suggests that there is a hierarchy of firm preferences with regard to the financing of their investments and that there is no well-defined target debt ratio. It is so because of the existence of the asymmetric information problem between the firm and likely finance providers. Firms finance their needs, initially by using internally generated funds (that is, undistributed earnings, where there is no existence of information asymmetry), next by less risky debt if additional funds are needed and lastly by risky external equity issue to cover any remaining capital requirements. The order of preferences reflects relative costs of finance to vary between the different sources of finance. Furthermore, (Arimi, 2010) found out that, there exists a negative relationship between debt-equity ratio and return on equity (ROE), that is to say, an increase in the debt-equity ratio leads to a decrease in ROE.

From the above contradictory of theoretical and empirical results the researcher develops the following hypothesis:

### Hypothesis 1

*H0: Capital structure has no positive and significant effect on return on asset.*

### Hypothesis 2

*H0: Capital structure has no negative and significant effect on return on equity.*

### 3.6.3 Control variables

In order to isolate the association of particular variables and to enhance the explanatory power of independent variables in the model, many researchers (Abor, 2005), (Booth, L. , Aivazian, V. , Demirguc, A., Kunt and Maksimovic, v., 2001), (Cheng, Y.; Liu, Y.; Chien, 2007), (Goyal, 2013) and (Mwasa I., Leonard I., 2014) include control variables in their previous study that might affect the financial performance not captured by capital structure. Firm size, tangibility, capital adequacy, GDP rate, business risk, growth and liquidity are included in this research model as a proxy of control variables. Those control variables included in this research only for the purpose of enhancing the explanatory power of independent variables.

### 3.6.4 Summary of variables and its measurements

The description of each variable and their expected signs are given below in the following table.

Variables	Measurement	Source	Expected sign
<b>Dependent Variable</b>			
Return on Asset	ROA=EBIT/Total Asset	(Zeitun, R., Tian, G., 2007), (Salteh, H. M., Ghanavati, E., Khanqah, V. T., & Khosroshahi, M. A., 2009)	
Return on Equity	ROE= Net Inome/Total Equity	(Abor, 2005), (Cheng, Y.; Liu, Y.; Chien, 2007), (Karadeniz, E., Kandir, S. Y., and Balcilar, M.,, 2009)	
<b>Independent Variable</b>			
Long term debt to equity ratio	LTDER=Long term debt/Total equity	(Leon, 2013) & (Abor, 2005)	(+)/(-)
<b>Control Variables</b>			
Business risk	Standard deviation of operating income/Total asset	(Shergill, J. &Sarkaria,M, 1999)	(-)
Capital adequacy	Total equity/Total asset	Demirguc, A., Kunt and Maksimovic, v., 2001), (Deloof, 2003)	(+)
GDP rate		(Cheng, Y.; Liu, Y.; Chien, 2007)	(+)
Liquidity	Current asset/Current liability	(Goyal, 2013)	(+)(-)
Growth	Total sales/Total asset	(Hutchinson, M. &Gul, A, 2006)	(+)
Size	Natural logarizim of total asset	(Orser, B. J., Hogarth-Scott, S., & Riding, A. L, 2000)	(+)
Tangibility	Fixed asset/Total asset	(Shergill, J. &Sarkaria,M, 1999)	(+)

Figure4. Summary of variables and its measurements

(+) *When the independent variable increases, the dependent variable will also increase (decrease)*

(-) *When the independent variable decreases, the dependent variable will increase (decrease)*

## Chapter four

### Data analysis and interpretation

#### Introduction

In this chapter the collected data are presented, interpreted and analyzed through E-views 8. Section 4.1 presents the descriptive statistics of return on asset (ROA), return on equity (ROE), long term debt ratio (LTDR), capital adequacy (CA), tangibility (TAN), growth (GRO), firms size (SIZE), gross domestic product (GDP), liquidity ratio (LQ) and business risk (BR). Section 4.2 presents the diagnostic test like Heteroskedasticity Test, Autocorrelation test, Multicollinearity test, Normality test, Hausmen test and wald tests. In section 4.3, the random effect panel regression output presented to examine the relationship between capital structure and financial performance of sampled cement companies in Ethiopia. Finally discussion on regression output of dependent and independent variables in the models were presented in section 4.4.

#### 4.1 Descriptive statistics

In this part, the researcher discuss about the descriptive statistics of dependent and independent variables used in 2 models of this study. In the following table 4.1, the value of mean, standard deviation, minimum and maximum of return on asset (ROA) and return on equity (ROE) a proxy of financial performance (dependent variables), long term debt a proxy of capital structure (independent variable) and capital adequacy (CA), tangibility (TAN), growth (GRO), firms size (SIZE), gross domestic product (GDP), liquidity ratio (LQ) and business risk (BR) a proxy of control variables for this research models are calculated based on the data which was collected from the 8 listed cement companies' balance sheet and income statement of the period 2010-2014. The total sample consists of 40 observations which have been tested. The descriptive statistics of these observations are given in the following table 4.1.

Table 4.1 Summary of descriptive statistics

Variable	Mean	Standard Deviation	Minimum	Maximum	No. of observation
ROA	0.138	0.144	-0.137	0.488	40
ROE	0.223	1.069	-3.264	2.605	40
LTDR	0.531	0.285	0.004	0.883	40
CA	0.319	0.215	0.054	0.8	40
TAN	0.319	0.229	0.108	0.911	40
GRO	0.47	0.23	0.093	0.965	40
SIZE	9.201	0.292	8.726	9.768	40
GDP	10.032	0.824	8.8	11.3	40
LQ	1.72	1.411	0.294	8.07	40
BR	0.067	0.135	0.175	0.345	40

Source: Output of data analysis by author

As it is presented in table 4.1 above, During the period 2010-2014, the mean value of financial performance measured by return on asset (ROA) and return on equity (ROE) on average 13.8% and 22.3% respectively. It means that, the Ethiopian cement companies under this study generate 13.8% revenues from their invested total asset and the average return on equity is 22.3% during the period 2010- 2014. The standard deviation of return on asset (ROA) and return on equity (ROE), 0.144 and 1.069 respectively, this statistical measurement implies that, the volatility of return on asset (ROA) and return on equity (ROE) from the mean value is 0.144 and 1.069 respectively. Furthermore, with in the period 2010- 2014, the minimum and the maximum return on asset (ROA) are -0.137 and 0.488 and the minimum and the maximum return on equity (ROE) are -3.264 and 2.605 respectively. The mean value of long term debt ratio is 0.531, which means that cement companies under the study finance their project by long term debt i.e. 53.1% of their long term investment finance comes from long term debt. The mean value of capital

adequacy (CA), tangibility (TAN), growth (GRO), firms size (SIZE), gross domestic product (GDP), liquidity ratio (LQ) and business risk (BR) are 0.319, 0.319, 0.47, 9.201, 10.032, 1.72 and 0.067 respectively.

## 4.2 Diagnostic test

### 4.2.1 Heteroskedasticity Test

The classical assumption required for the OLS estimator to be efficient state that the variance of error term has to be constant and the same for all observation. This is referred to as a homoskedastic error term. When that assumption is violated and the variance is different for different observation we refer to this as heteroskedasticity, If the assumption of constant variance is violated, the least squares estimators are still unbiased, but the Gauss-Markov theorem does not hold anymore, and standardized scores do not have the assumed distribution, and therefore test results and confidence intervals are unreliable. Usually the standard errors of the regression coefficients are too large (Brooks C. , 2008). In order to test the following hypothesis Breusch-Pagan-Godfrey test were applied. The Breusch-pagan tests of the null hypothesis that the error variances are all equal versus the alternative that the error variance are a multiplicative function of one or more variables.

Following the general null hypothesis of Breusch-pagan tests, the researcher develops the following hypothesis to check the presence of heteroskedasticity:

*H0: homoskedastic error term*

*H1: heteroskedasticity error term*

Table 4.2.1 Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey test for ROA model

F-statistic	1.810687	Prob. F(6,33)	0.1274
Obs*R-squared	9.907067	Prob. Chi-Square(6)	0.1286
Scaled explained SS	4.738865	Prob. Chi-Square(6)	0.5777

Heteroskedasticity Test: Breusch-Pagan-Godfrey test for ROE

F-statistic	3.538754	Prob. F(7,32)	0.0563
Obs*R-squared	17.45339	Prob. Chi-Square(7)	0.1147
Scaled explained SS	14.84339	Prob. Chi-Square(7)	0.1381

Source: E-views 8 output by author

As can be seen in the above heteroskedasticity test, E-views offer F test result for model 1 and model 2 and the P value of F-statistic 0.1274 and 0.0563 respectively (see Appendix 1 for detail) and which is more than 5% of significance level. The conclusion from both model of Breusch-Pagan-Godfrey test in this case is that, the null hypothesis of homoskedasticity is failed to reject at 5 percent level of significant. This implies that there is no significant evidence for the presence of heteroskedasticity in this research models. The Chi-Square P value of both model also support the absence of heteroskedasticity.

#### 4.2.2 Autocorrelation test

It is assumed that the covariance of the errors over time is zero. If the errors are not uncorrelated with one another, it would be stated that they are autocorrelated or that they are serially correlated. The consequences of ignoring autocorrelation when it is present are similar to those of ignoring heteroscedasticity. The coefficient estimates derived by using OLS are still unbiased, but they are inefficient, meaning that the standard errors are biased. Furthermore, the R square is likely to be inflated (Brooks C. , 2008). A test of this assumption is therefore required.

Durbin--Watson (DW) and Breusch–Godfrey test are a widely applicable test to check the presence of autocorrelations. Durbin--Watson (DW) is a test for first order autocorrelation i.e. it

tests only for a relationship between an error and its immediately previous value. Breusch–Godfrey tests are a joint test for autocorrelation that will allow examination of the relationship between  $\hat{u}_t$  and several of its lagged values at the same time. The Breusch--Godfrey test is a more general test for autocorrelation up to the  $r$ th order (Brooks C. , 2008). Therefore, to check the presence of autocorrelation in this study, the researcher used Breusch–Godfrey test.

Hypotheses of this test are:

$$H_0 = \text{No autocorrelations errors}$$

$$H_1 = \text{Autocorrelations errors}$$

Table 4.2.2 Autocorrelation test

Breusch-Godfrey Serial Correlation LM Test: ROA model

F-statistic	2.001160	Prob. F(2,31)	0.1523
Obs*R-squared	4.573776	Prob. Chi-Square(2)	0.1016

Breusch-Godfrey Serial Correlation LM Test: for ROE

F-statistic	2.328008	Prob. F(2,30)	0.1149
Obs*R-squared	5.373977	Prob. Chi-Square(2)	0.0681

Source: E-views 8 output by author

As can be presented in the above autocorrelation test, E-views offer F test result for model 1 and model 2 and the P value of F-statistic 0.1523 and 0.1149 respectively (see Appendix 2 for detail) and which is more than 5% of significance level. The conclusion from both model of Breusch-Godfrey Serial Correlation LM test in this case is that, the null hypothesis of no autocorrelation is failed to reject at 5 percent of significant level. This implies that there is no significant evidence for the presence of autocorrelation in these research models. The Chi-Square P value of both model also support the absence of autocorrelation.

### 4.2.3 Multicollinearity test

It is assumed that the explanatory variables are not correlated with one another, but in any practical context, the correlation between explanatory variables will be non-zero, although this will generally be relatively benign in the sense that a small degree of association between explanatory variables will almost always occur but will not cause too much loss of precision. However, a problem occurs when the explanatory variables are very highly correlated with each other, and this problem is known as multicollinearity. It is possible to distinguish between two classes of multicollinearity: perfect multicollinearity and near multicollinearity (Brooks C. , 2008).

Table 4.2.3 Multicollinearity test  
Correlation matrix for ROA model

	LTDTE	CA	TAN	GRO	SIZE	BR
LTDTE	1.000000	0.797983	0.455277	0.342479	0.200405	-0.572010
CA	0.547983	1.000000	0.247861	0.035429	0.176477	-0.353199
TAN	0.455277	0.247861	1.000000	0.767169	0.208519	-0.762440
GRO	0.342479	0.035429	0.767169	1.000000	0.041331	-0.613703
SIZE	0.200405	0.176477	0.208519	0.041331	1.000000	-0.180152
BR	-0.572010	0.353199	0.762440	0.613703	0.180152	1.000000

Correlation matrix for ROE model

	LOGLTDTE	SIZE	TAN	CA	DGDP	LOGLQ	BR
LOGLTDTE	1.000000	0.178741	0.091374	0.778181	0.002221	0.245829	-0.12135
SIZE	0.178741	1.000000	0.208519	0.176477	0.004855	0.545347	-0.180152
TAN	0.091374	0.208519	1.000000	0.247861	0.103967	0.653511	-0.76244
CA	0.778181	0.176477	0.247861	1	0.005961	0.229429	-0.353199
DGDP	0.002221	0.004855	0.103967	0.005961	1	0.145017	-0.018391
LOGLQ	0.245829	0.545347	0.653511	0.229429	0.145017	1.000000	-0.611459
BR	-0.12135	0.180152	-0.76244	0.353199	0.018391	0.611459	1.000000

Source: E-views 8 output by author

As can be presented in the above table 4.2.3 multicollinearity test of both models, the researcher checked the correlation matrix, which varies between -1 and 1, if the p-value is 0, there is no linear correlation, and if the p-value is -1 or 1, we have a perfectly negative or positive relationship between the variables. According to (Pallant, 2005), usually the multicollinearity is exist if the correlation between two independent variables is more than 0.9( $r=0.9$  or above). As it

appears in the correlation matrix table above, there is no such high correlation between independent variables of both models.

#### 4.2.4 Normality test

This assumption is required in order to conduct hypothesis testing, particularly if the sample size is small. For sample sizes that are sufficiently large, violation of the normality assumption is virtually inconsequential. Based on the central limit theorem, the test statistic will asymptotically follow the appropriate distribution even in the absence of error normality. In smaller samples it is important to meet this assumption for the p-values of the F-test to be valid (Brooks C. , 2008).

The most often used diagnostic statistics to test for normality of the residuals is the Bera-Jarque test. In this study, the normality of the data was checked with the popular Bera-Jarque test statistic. It measures the difference of the skewness and kurtosis of the series with those from the normal distribution. A normal distribution is not skewed and is defined to have a coefficient of kurtosis of 3. Bera-Jarque formalizes this by testing the residuals for normality and testing whether the coefficient of skewness and kurtosis are zero and three respectively. The Bera-Jarque probability statistics is also expected not to be significant (Brooks 2008).

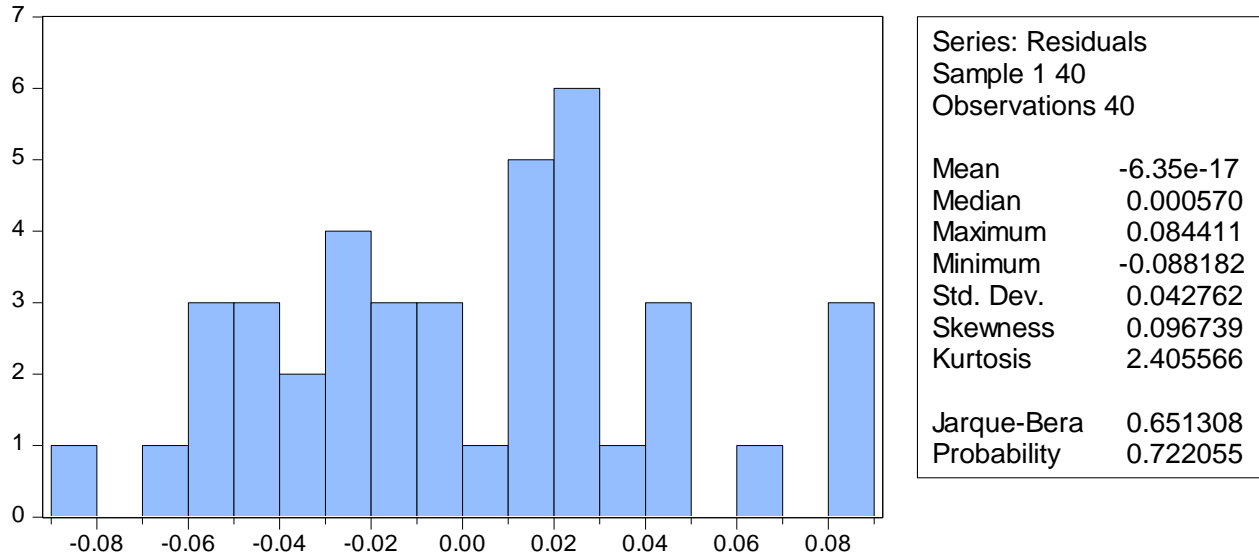
The hypothesis of normality distribution is:

*H<sub>0</sub> = residuals follows a normal distribution*

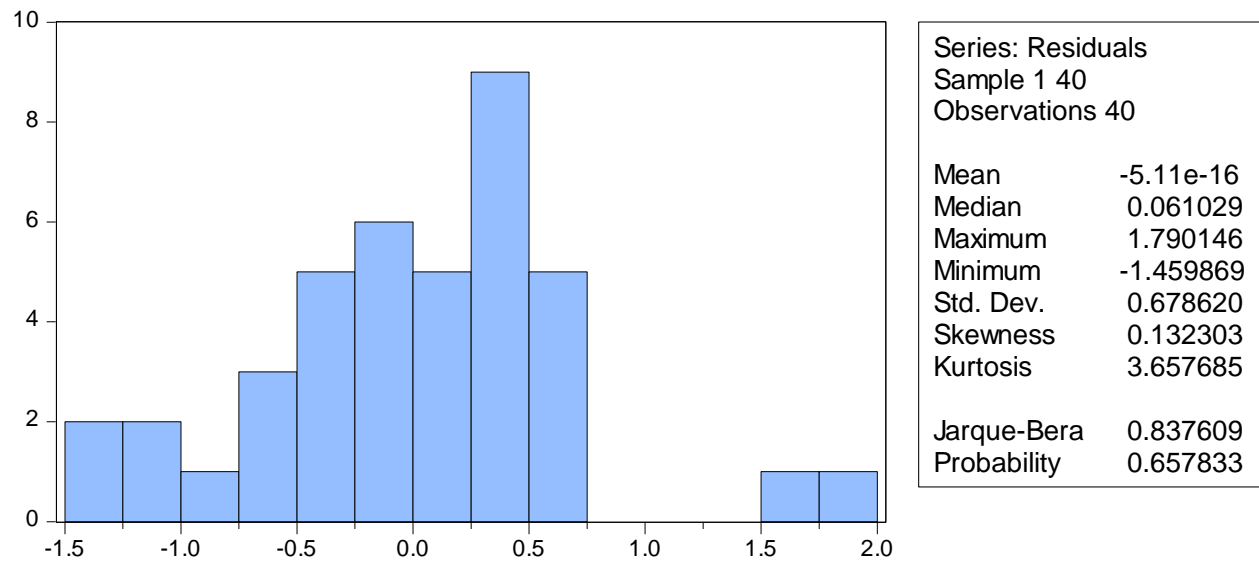
*H<sub>1</sub> = residuals do not follows a normal distribution*

Figure 4.2.4: Normality Test

Histogram-Normality test for model 1



Histogram-Normality test for model 2



Source: E-views 8 output by author

The Jarque–Bera test for normality is based on two measures, skewness and kurtosis. In the present context, skewness refers to how symmetric the residuals are around zero. Perfectly symmetric residuals will have a skewness of zero. As can be presented in figure 4.2.4, the skewness value for both model (ROA and ROE) residuals is 0.096739 and 0.132303 respectively. Kurtosis refers to the “peakedness” of the distribution. For a normal distribution the kurtosis value is 3. From Figure 4.2.4, we see that the model 1 and model 2 residuals have a kurtosis of 2.4055 and 3.65768 respectively. The Bera-Jarque probability statistics of model 1 and model 2 are 0.722 and 0.657 respectively which are more than 5% level of significant. The conclusion from both models of P-value in this case is that, the null hypothesis of the residuals follows a normal distribution is failed to reject at 5 percent level of significant. This implies that there is no significant evidence to support skewness value of both models (ROA and ROE) residuals is 0.096739 and 0.132303 sufficiently different from 0 and the Kurtosis value of both models (ROA and ROE) residuals is 2.4055 and 3.65768 sufficiently different from 3 at the 5% level of significance.

#### 4.2.5 Hausmen test

There are broadly two classes of panel estimator approaches that can be employed in financial research: fixed effects models and random effects models. The simplest types of fixed effects models allow the intercept in the regression model to differ cross-sectionally but not over time, while all of the slope estimates are fixed both cross-sectionally and over time. The random effects approach proposes different intercept terms for each entity and again these intercepts are constant over time, with the relationships between the explanatory and explained variables assumed to be the same both cross-sectionally and temporally (Brooks C. , 2008).

The question is which model is more appropriate fixed effect model or random effect model in this research models. In order to isolate, which model is appropriate the researcher used Hausman test. The Hausman test that examines whether the unobservable heterogeneity term is correlated with explanatory variables, while continuing to assume that regressors are uncorrelated with the disturbance term in each period. The null hypothesis for this test is that unobservable heterogeneity term is not correlated or random effect model is appropriate, with the independent

variables. If the null hypothesis is rejected then we employ Fixed Effects method (Brooks C. , 2008).

The Hausmen test hypothesis is

$H_0 = \text{Random effect model is appropriate}$

$H_1 = \text{Fixed effect model is appropriate}$

Table 4.2.5 Hausmen tests

Correlated Random Effects - Hausman Test for Model 1

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	6.876834	6	0.3324

Correlated Random Effects - Hausman Test for Model 2

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	6.177742	7	0.5192

Source: E-views 8 output by author

According to above table 4.2.5 shows Hausman specification test, the P-value of both models is 0.3324 and 0.5192 respectively (see Appendix 3 for detail), which are more than 5% level of significance. The conclusion from the above Hausmen tests results of both models of P-value in this case is that, the null hypothesis of the random effects is failed to reject at 5 percent of significant level. This implies that, for this research model random effect model is more appropriate than fixed effect model.

### 4.3 Regression analysis results

#### 4.3.1 Relationship between capital structure and financial performance (ROA)

Table 4.3.1 Regression output for model 1

Dependent Variable: ROA  
Method: Panel EGLS (Cross-section random effects)  
Date: 10/04/15 Time: 04:34  
Sample: 2010 2014  
Periods included: 5  
Cross-sections included: 8  
Total panel (balanced) observations: 40  
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.802295	0.185233	4.331274	0.0001***
LTDTE	0.004769	0.002160	2.208505	0.0343**
CA	0.032449	0.033629	0.964907	0.3416
TAN	0.074918	0.031687	2.364308	0.0241**
GRO	0.046611	0.024509	1.901806	0.0660*
SIZE	0.073827	0.018554	3.978964	0.0004***
BR	-1.151905	0.047956	-24.01995	0.0000***

Effects Specification		S.D.	Rho
Cross-section random		0.023562	0.6553
Idiosyncratic random		0.017089	0.3447

Weighted Statistics			
R-squared	0.946736	Mean dependent var	0.042705
Adjusted R-squared	0.937052	S.D. dependent var	0.100794
S.E. of regression	0.025289	Sum squared resid	0.021104
F-statistic	97.75925	Durbin-Watson stat	1.884927
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	0.843005	Mean dependent var	0.138411
Sum squared resid	0.127485	Durbin-Watson stat	1.701251

\*\*\* Correlation coefficient significant at 1%, \*\* correlation coefficient significant at 5% and \* correlation coefficient significant at 10%. Source: E-views 8 output by author

Table 4.3.1 show that, Adjusted R-squared is 0.937, this means 93.7% variation of ROA explained by independent variables of the model. The panel random effect estimation regression result in the above table shows coefficient intercept ( $\alpha$ ) is 0.802295. This means, when all explanatory variables took a value of zero, the average value ROA would be take 0.802295 unit and statistically significant at 1% of significance level.

As can be presented in the above table random effect regression output, a coefficient of capital structure measured by LTDTE is 0.004769 and its P-value is 0.0343. This implies that, holding other variables constant at their average value, when long term debt to equity ratio (LTDTE) increased by 1 unit, return on assets of sampled Ethiopian cement companies would be increased by 0.004769 units and statistically significant at 5% of significant level. In other words, there is a significant positive relationship between long term debt to equity ratio and returns on asset of cement companies were included in this study.

As can be seen in the above table 4.3.1, the coefficient of capital adequacy (CA) is 0.032449, this means, holding other independent variables constant at their average value, when capital adequacy (CA) increased by one unit, return on asset (ROA) would be increased by 0.032449 unit but statistically insignificant at 5 % of significance level.

The other control variable in this model is tangibility (TAN) and its coefficient is 0.074918. This means, holding other independent variables constant at their average value, when tangibility (TAN) increased by one unit, return on asset (ROA) would be increased by 0.074918 unit and statistically significant at 5 % level of significance. A coefficient of growth (GRO) is 0.046611. This implies that, holding other independent variables constant at their average value, when growth (GRO) increased by one unit, return on asset (ROA) would be increased by 0.046611 unit but statistically insignificant at 5 % level of significance.

The results of this research model shows; a coefficient of size is 0.073827. This indicate that, holding other independent variables constant at their average value, when cement companies size increased by one unit, return on asset (ROA) would be increased by 0.073827 unit and statistically significant at 1 % level of significance.

As expected sign of business risk from this model, the coefficient of business risk is -1.151905, this means, holding other independent variables constant at their average value, when cement companies business risk (BR) level increased by one unit, return on asset (ROA) would be decreased by -1.151905 units and statistically significant at 1 % of significance level.

### 4.3.2 Relationship between capital structure and financial performance (ROE)

Table 4.3.2 Regression output for model 2

Dependent Variable: ROE  
 Method: Panel EGLS (Cross-section random effects)  
 Date: 10/04/15 Time: 04:49  
 Sample: 2010 2014  
 Periods included: 5  
 Cross-sections included: 8  
 Total panel (balanced) observations: 40  
 Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.965647	4.710924	1.478616	0.1490
LOGLTDTE	-0.955136	0.307184	-3.109325	0.0039***
SIZE	0.893363	0.519556	1.719475	0.0952*
TAN	3.457953	0.968946	3.568777	0.0012***
CA	4.505985	1.389341	3.243254	0.0028***
DGDP	0.129562	0.091375	1.417922	0.1659
LOGLQ	3.356752	0.809506	4.146669	0.0002***
BR	-5.402030	1.486985	-3.632876	0.0010***

Effects Specification		S.D.	Rho
Cross-section random		0.000000	0.0000
Idiosyncratic random		0.748148	1.0000

Weighted Statistics			
R-squared	0.596656	Mean dependent var	0.222874
Adjusted R-squared	0.508425	S.D. dependent var	1.068536
S.E. of regression	0.749177	Sum squared resid	17.96050
F-statistic	6.762400	Durbin-Watson stat	2.334494
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	0.596656	Mean dependent var	0.222874
Sum squared resid	17.96050	Durbin-Watson stat	2.334494

\*\*\* Correlation coefficient significant at 1%, \*\* correlation coefficient significant at 5% and \* correlation coefficient significant at 10%. Source: E-views 8 output by author

Earlier the researcher in the above table 4.3.1 presented the regression output about the relationship between capital structures measured by long term debt to equity ratio (LTDTE) and return on asset (ROA) a proxy of financial performance of cement companies. Furthermore, in the above table 4.3.2, the researcher presented the regression output about the relationship between capital structures and return on equity (ROE) which is the other proxy of financial performance of cement companies in Ethiopia.

As explained above, the F-test measures the overall fit of the model, but the simplest and most commonly used measure of fit is  $R^2$ . This is a measure of the overall fit, and tells us how much of the variance in the dependent variable is explained by the model. Therefore, as can be presented in the above table 4.3.2, the cumulative influence of all the explanatory variables put together is able to explain the dependent variable up to 51% as indicated by the adjusted  $R^2$  and remaining 49% is controlled by other factors.

In order to ensure that the model assumptions are met, and to improve the fit of the model to the data and to become tests and confidence intervals more reliable statements which held the associated error probability, long term debt to equity ratio, liquidity ratio and GDP rate are transformed to log and difference.

As can be presented in the above table 4.3.2, the random effect estimation regression result shows that a coefficient intercept ( $\alpha$ ) is 6.965647. This means, when all explanatory variables took a value of zero, the average value ROE would be take 6.965647unit but statistically insignificant at 5% of significance level.

As can be seen in the table 4.3.2, the coefficient of LOGLTDTE is -0.955136. This implies that, holding other independent variables constant at their average value, when long term debt to equity ratio (LTDTE) increased by one percent, return on equity (ROE) would be decreased by -0.955136 unit and statistically significant at 1% level of significant.

The result presented in table 4.3.2, a coefficient of size is 0.893363. This indicate that, holding other independent variables constant at their average value, when cement companies size increased by one unit, return on equity (ROE) would be increased by 0.893363 unit but statistically insignificant at 1 % of significance level.

As can be shown in the above table 4.3.2, the coefficient of tangibility (TAN) is 3.457953, this means, holding other independent variables constant at their average value, when cement companies tangibility (TAN) ratio increased by one unit, return on equity (ROE) would be increased by 3.457953 unit and statistically significant at 1 % of significance level.

As can be seen in the above table 4.3.2, the coefficient of capital adequacy (CA) is 4.505985, this means, holding other independent variables constant at their average value, when capital adequacy (CA) increased by one unit, return on equity (ROE) would be increased by 4.505985 unit and statistically significant at 5 % of significance level.

As can be presented in the above table 4.3.2, the coefficient of  $\Delta$ GDP is 0.129562, this implies that, holding other independent variables constant at their average value, when the country gross domestic product rate increased by one unit, the sampled Ethiopian cement company's return on equity (ROE) would be increased by 0.129562 but statistically insignificant at 5% of significance level.

As can be seen in the table 4.3.2, the coefficient of LOGLQ is 3.356752. This implies that, holding other independent variables constant at their average value, when liquidity ratio of Ethiopian cement companies increased by one percent, return on equity (ROE) would be increased by 3.356752 unit and statistically significant at 1% of significant level.

Finally, the result presented in table 4.3.2, a coefficient of business risk (BR) is -5.402030. This indicates that, holding other independent variables constant at their average value, when sampled Ethiopian cement companies business risk level increased by one unit, return on equity (ROE) would be decreased by -5.402030 unit and statistically significant at 1 % of significance level.

#### 4.4. Discussions on regression results

In this section the results of the regression models are discussed and compared with other studies related to the subject of this study. Based on the results in table 4.3.1 and table 4.3.2, the relationship between the variables and their influence on financial performance of cement companies is explained. The data were analyzed in light of the research objective stated. Hence, the analysis is based on the results of the documentary analysis mainly using the results of the panel least square regression analysis between the dependent variables and the independent variables for the selected cement companies that have an impact on Cement Company's financial performance.

The empirical test results show that capital structure in Ethiopia on selected sample cement companies has brought a mixed impact. The major findings and their statistical significance are discussed in the following sub-sections.

##### 4.4.1. Capital structure and financial performance (ROA)

In this research, Long term debt to equity ratio was considered a proxy of capital structure that can affect the financial performance measured by return on asset (ROA) of cement companies in Ethiopia. As can be presented in the earlier theoretical literature review chapter, Proposition II of Modigliani and Miller and Trade-off theory suggested that, debts has positive impact on firms value. Furthermore, Static trade – off theory explained that, debt as a disciplinary tool to ensure that managers give preference to wealth creation for the equity-holders. Thus, in the companies that have high cash flow and profitability, increasing of debts can be used as a tool of reducing the scope for managers until resources of company may not be waste as a result of their individual purposes. The other conflicting problem is that managers may not receive all the benefits of their activities. This is seen when manager's share in ownership of company is low. When the manager's increase stock is high, this inefficiency decreases. Therefore, it is appropriate that by increasing debts instead of stock issuance prevent from decreasing of manager's share of ownership interest (Huang, G. and Song, F. M., 2006).

The results of the regression analysis shown in table 4.3.1 revealed that there was significant positive relationship between capital structure measured by long term debt to equity ratio

(LTDTE) and financial performance measured by return on asset (ROA), with a regression coefficient of 0.004769 and P-value of 0.0343. Therefore, the researcher reject the null hypothesis that there is no positive and significant relationship between capital structure and return on asset. This means, there is no ample evidence to support no positive and significant relationship between capital structure and return on asset. The statistical output in this study suggested that, when cement companies in Ethiopia increase their long term debt to finance their long term investment by 1%, simultaneously their return on asset (ROA) would be increases by 0.004769 units rather than financing their long term investment by issuance of common stock. Hence, this results consistent with Proposition II of Modigliani and Miller theory, Trade-off theory and Static trade – off theory and also, this study supported by (Ghosh, C., Nag, R., Sirmans, C., 2000), (Hadlock, C., James,, 2002), (Dessi R.and Donald R., 2003), (Margaritis, D. and Psillaki, M., 2010) and (Akinyomi, 2013) empirical results.

#### 4.4.2. Capital structure and financial performance (ROE)

As it is presented in table 4.3.2, capital structure was also considered to be one of the key factors that can affect the financial performance (ROE) of cement companies in Ethiopia. According to the pecking order theory, the firms will first use internal funds (retained earnings) before issuing debt and will finally only issue equity under pressure or when the investment requirement so far exceed debt capacity that it would lead to excessive leverage (Fama & French, 2005). This implies that, many measure of firm performance such as a firm's profitability is negatively correlated with financial leverage. This theory can be also interpreted in this way that high leverages companies would have less profitability.

The results of this regression analysis in table 4.3.2 revealed that, there was significant negative relationship between capital structure measured by long term debt to equity ratio (LTDTE) and return on equity (ROE), with a regression coefficient of -0.955136 and P-value of 0.0039. Due to this result and the absence of sufficient evidence to support the presence of no negative relationship between capital structure and return on equity, the researcher to reject the null hypothesis that there is negative and significant relationship between capital structure and return on equity. The random effect regression output of this study confirms that, cement companies in Ethiopia, when increase their long term debt to finance their long term investment by 1%,

simultaneously their return on equity (ROE) would be decreases by -0.955136 units and statistically significant at 5% of significance level. This result supported by pecking order theory. Furthermore, this result consistent with empirical results of (Arimi, 2010), (Gleason, K. C.; Mathur, L. , 2000), (Krishnan, V. and Moyer, R., 1997) and (Rao, N. , V. ,Al-Yahyee, K. and Syed, L., 2007).

#### 4.4.3 Firms size and financial performance

The panel random effect estimation result in above table 4.3.1 and table 4.3.2 reveals, there is significant positive relationship between size and financial performance (ROA) of sampled Ethiopian cement companies with a regression coefficient of 0.073827 and P- value of 0.0004 and firms size and financial performance (ROE) has also significant positive relationship with the coefficient of 0.893363 and P-value of 0.0952 (10% significance level).

The significance of firm size on firm's financial performance indicates that large firms can earn higher returns compared to smaller firms, most probably as a result of diversification of investment and economies of scale. This result is consistent with previous findings (Zeitun, R., Tian, G., 2007). Furthermore this study, a positive relationship between firm's size and financial performance supported by the arguments of trade-off theory that size reflects greater diversification, economies of scale production, greater access to new technology and cheaper sources of funds.

#### 4.4.4 Tangibility and financial performance

Asset tangibility is considered to be one of the major determinants of firm's financial performance. (Akintoye, 2008), argues that a firm which retains large investments in tangible assets will have smaller costs of financial distress than a firm that relies on intangible assets. As can be presented in the above table 4.3.1 and 4.3.2, the panel random effect regression result revealed that, there is a significant positive relationship between asset tangibility and financial performance of sampled Ethiopian cement companies. A high ratio indicates a lot of fixed assets and relatively little working capital, which could reduce the enterprise's ability to maintain

inventory and carry accounts receivable. This could potentially limit the company's ability to respond to bigger demand for their products or services. However, the company could more easily borrow by mortgaging those fixed assets and they could reduce their cost of financial distress. This study also supported by the empirical result of (Akintoye, 2008) and (Shergill, J. &Sarkaria,M, 1999).

#### 4.4.5 Liquidity and financial performance

A result from random effects models shows, a positive and significant relationship between firm liquidity and financial performance of sampled Ethiopian cement companies. Specifically, random effect estimation with a coefficient of 3.35675 and p-value of 0.0002 confirmed a statistical positive relationship between liquidity and return on equity ratio. The coefficient indicates that an increasing liquidity ratio leads to higher financial performance of sampled Ethiopian cement companies. In addition to this research empirical result, pecking order theory suggesting that the more liquid firm would use external financing due to their ability of paying back liabilities while trade of theory suggesting that high liquidity position for the firm indicates that this firm is strong enough to face any short or long term financial problems and this strong firm can perform better than a weak firm which has weak liquidity position in its financial statements. Furthermore, this study is consistent with empirical result of (Deloof, 2003) and (Mathuva D, 2000).

#### 4.4.6 Capital adequacy and financial performance

The random effect regression result in the above table 4.3.1 revealed that, capital adequacy and return on asset (ROA) has statistically insignificant positive relationship with regression coefficient of 0.032449 and P-value of 0.3416. However, as can be presented in the table 4.3.2, the regression coefficient of capital adequacy is 4.505985 and its P-value is 0.0028. This implying that, holding the other variable constant at their average value, when the capital adequacy ratio increase by one unit, sampled Ethiopian cement companies return on equity (ROE) would be increased by 4.505985 unit and statistically significant at 5% of significance level. In other words, there is significant positive relationship between capital adequacy and financial performance (ROE). This result is consistent with the empirical result of (Deloof, 2003).

#### 4.4.7 Business risk and financial performance

The panel random effect estimation result in above table 4.3.1 revealed that, the coefficient of business risk is -1.151905 and its P-value is 0.0000. This means, other variable constant at their average value, when the business risk level of sampled Ethiopian cement company increase by 1 unit, their return on asset (ROA) would be decrease by 1.151905 unit and statistically significant at 1% level of significant. Furthermore, table 4.3.2 conforms that, there is a significant negative relationship between business risk and sampled Ethiopian cement companies return on equity (ROE) to the regression coefficient of 5.40203 and P-value of 0.0010. Therefore, in this study business risk and financial performance has significant negative relationship. This result also supported by the finding of (Shergill, J. &Sarkaria,M, 1999).

#### 4.4.8 Growth opportunity and financial performance

As we have seen from random effect analysis method table 4.3.1, this study confirms that growth opportunity has positive impact on financial performance of Ethiopian cement companies. The panel random effect estimation regression result shows insignificant positive relationship between growths of sampled Ethiopian cement companies and their financial performance (ROA) with a regression coefficient of 0.046611 and P- value of 0.0660. But at 10% level of significant, growth opportunity and financial performance (ROA) has significant positive relationship. Trade-off theory considers growth opportunities as an indicator for the firm success; these firms are stronger to face financial distress. Firms with good opportunities have a good reputation in getting funds, easier access to the finance markets and reflected in better performance for these firms. Hence, this study is consistent with this theory. Furthermore, the study supported by the empirical study of (Hutchinson, M. &Gul, A, 2006), they found that firms with high investment opportunities are associated with lower agency costs and better return on equity.

#### 4.4.9 Gross domestic product and financial performance

The panel random effect estimation result in above table 4.3.2 revealed that, coefficient of change in gross domestic product rate is 0.129562 and P- value of 0.1659. This implies that, there is insignificant positive relationship between gross domestic product rate and financial performance sampled Ethiopian cement companies. As far as the knowledge of the researcher for this control variable, the researcher could not get sufficient empirical literature regarding the relationship between gross domestic product rate and financial performance. Therefore, further research will be required.

## **Chapter five**

### **Conclusion and recommendations**

This study was conducted to establish the relationship between capital structure and financial performance of cement companies in Ethiopia. This chapter provides a summary of findings presented in Chapter Four, conclusion and recommendations of the main findings.

#### **5.1 Conclusion**

The relationship between capital structure and financial performance variables has been widely analyzed by the researchers of developed countries. However as far as the knowledge of the researcher, in Ethiopia very little work has been done on determinants of capital structure but there is no empirical study on the relationship of capital structure and financial performance of cement companies in Ethiopia. Therefore, in this study the researcher tried to fill the gap by analyzed the relationship between capital structure and financial performance of cement companies in Ethiopia.

In order to examine the relationship between capital structure and financial performance, the researcher used long term debt to equity ratio as a proxy of capital structure and return on asset (ROA) and return on equity (ROE) as a proxy of financial performance. Furthermore, the researcher examined several control variables like size, tangibility, growth opportunity, capital adequacy, liquidity, business risk and gross domestic product rate relationship with financial performance of sampled cement companies in Ethiopia. To achieve the intended objective of the study, the researcher used quantitative approach. The quantitative data were collected from the annual audited financial statement of eight cement companies found in Ethiopia during the time period 2010 -2014. The collected data were analyzed by employing panel least square regression analysis model using statistical package 'EVIEW 8'.

The adjusted value of R square (0.937) of model one indicates that return on assets (ROA) of sampled cement companies in Ethiopia is nearly 93.7% depend on independent variable long term debt to equity ratio (LTDTE) and control variables (size, tangibility, growth opportunity, capital adequacy and business risk). Therefore, it implies that 93.7% variation of sampled cement companies ROA explained by these independent and control variables.

The adjusted value of R square (0.508) of model two indicates that return on equity (ROE) of sampled cement companies in Ethiopia is nearly 50.8% depend on independent variable logarithm of long term debt to equity ratio (LOGLTDTE) and control variables (size, tangibility, capital adequacy, logarithm of liquidity, business risk and change in gross domestic product rate). Therefore, this implies that 51% variation of sampled cement companies (ROE) explained by these independent and control variables.

The empirical test results show that capital structure has brought mixed relationship with financial performance of sampled cement companies in Ethiopia during the period 2010- 2014. Hence, capital structure has significant positive relationship with return on assets (ROA) of sampled cement companies. This result consistent with Proposition II of Modigliani and Miller theory, Trade-off theory and Static trade – off theory and furthermore, this result supported by (Ghosh, C., Nag, R., Sirmans, C., 2000), (Hadlock, C., James,, 2002), (Dessi R.and Donald R., 2003), (Margaritis, D. and Psillaki, M., 2010) and (Akinyomi, 2013) empirical results.

However, capital structure has significant negative relationship with return on equity (ROE) of sampled cement companies in Ethiopia at 5% of level significant. This finding is consistent with some previous studies (Gleason, K. C.; Mathur, L. , 2000), (Arimi, 2010), (Krishnan, V. and Moyer, R., 1997) and (Rao, N. , V. ,Al-Yahyee, K. and Syed, L., 2007). The result also consistent with the pecking order theory which indicates leverage is negatively related with firm's financial performance as high level of debt decreases the financial performance of the business. Furthermore, control variables tangibility and size has significant positive relationship with return on asset (ROA), while capital adequacy and growth opportunity has insignificant positive relationship with return on asset (ROA). Beside this, tangibility, capital adequacy and liquidity has significant positive relationship with return on equity (ROE); while size and gross domestic product rate has insignificant positive relationship with return on equity (ROE) and business risk has significant negative relationship with financial performance (ROA and ROE) of sampled cement companies at 5% of significant level.

## 5.2 Recommendations

Cement companies generally play a crucial role in the constructions development of every country. One critical decision cement companies face is the debt-equity choice. Among others, this choice is necessary for the financial performance determination of firms. What this means is that cement companies that are able to make their financing decision prudently would have a competitive advantage in the industry and thus making superior profits. Nonetheless, it is essential for researcher to recognize that this decision can only be wisely taken if cement companies know how debt policy influences their financial performance. Therefore cement companies should take into view the following matters in order to increase their financial performance.

- An appropriate mix of capital structure should be adopted in order to increase the financial performance of cement companies. Findings revealed that capital structure and return on equity (ROE) has significant negative relationship. That is in the case of higher long term debt, financial performance will tend to decline. The reason behind this may be due to the banks high lending interest rate engaged in the long term debt. In addition to these an increase in the level of debt also increases the riskiness of cement companies. Therefore, cement companies should employ or explore less long term debt finance with minimum interest rate and cement companies should concern much on internal sources of financing in order to increase their financial performance.
- Top management of every cement companies should make financial analysis and financing decision in order to remain profitable and competitive.

### 5.3 Suggestions for further research

During the course of this study several ideas and potential research areas have identified. The current research has compiled eight databases of listed cement companies' accounting data that demonstrate what can be done even with the limitations of currently available data. There is clearly enormous scope for more research that can inform an understanding of how the capital is structured, how it connects with the financial performance and what elements of capital structure make a difference. The purpose of this section is to serve as a source of inspiration for further researchers who want to write research papers within this area of work. To develop specific policy recommendations the following suggestions are given for further researches.

- Here the company's financial performance is computed based on long term debt to equity ratio, size, tangibility, growth opportunity, capital adequacy, liquidity, business risk and gross domestic product rate but other external variable (issues of tax, inflation rate, financial distress cost and other) which might provide a strong relationship between with a proxy of financial performance and help to uncover the better firm's financial performance in Ethiopia perspectives. Therefore, this study is left for future to be further explored too many factors or measures have impact on financial performance of cement companies.
- There are eighteen cement companies are listed in Ethiopia but this study has taken only eight cement companies. To generalize the analysis the sample size would be increased.
- When it comes to the measures for capital structure this study has only applied quantitative data for possessed capital by different owners. It would be interesting to in a more qualitative way to investigate managers' and owners' direct involvement in managing the firm and separate out the effect of active and more passive owners.

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# Appendices

## Appendix 1: Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey test for ROA model

F-statistic	1.810687	Prob. F(6,33)	0.1274
Obs*R-squared	9.907067	Prob. Chi-Square(6)	0.1286
Scaled explained SS	4.738865	Prob. Chi-Square(6)	0.5777

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 09/27/15 Time: 05:43

Sample: 1 40

Included observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.007218	0.011754	0.614104	0.5434
LTDTE	0.000213	0.000163	1.302954	0.2016
CA	-0.000193	0.002782	-0.069495	0.9450
TAN	-0.000442	0.002784	-0.158648	0.8749
GRO	-0.001472	0.002426	-0.606699	0.5482
SIZE	-0.000555	0.001163	-0.477310	0.6363
BR	-0.000356	0.004038	-0.088145	0.9303
R-squared	0.247677	Mean dependent var	0.001783	
Adjusted R-squared	0.110891	S.D. dependent var	0.002141	
S.E. of regression	0.002018	Akaike info criterion	-9.415321	
Sum squared resid	0.000134	Schwarz criterion	-9.119767	
Log likelihood	195.3064	Hannan-Quinn criter.	-9.308458	
F-statistic	1.810687	Durbin-Watson stat	2.307758	
Prob(F-statistic)	0.127361			

Heteroskedasticity Test: Breusch-Pagan-Godfrey test for ROE

F-statistic	3.538754	Prob. F(7,32)	0.0563
Obs*R-squared	17.45339	Prob. Chi-Square(7)	0.1147
Scaled explained SS	14.84339	Prob. Chi-Square(7)	0.1381

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 10/04/15 Time: 02:21

Sample: 1 40

Included observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.252147	3.868963	2.391377	0.0228
LOGLTDTE	0.287577	0.252283	1.139899	0.2628
SIZE	-0.942338	0.426698	-2.208442	0.0345
TAN	-0.106058	0.795771	-0.133277	0.8948
CA	0.278494	1.141031	0.244072	0.8087
DGDP	0.011899	0.075044	0.158554	0.8750
LOGLQ	0.679793	0.664827	1.022511	0.3142
BR	-3.240658	1.221223	-2.653617	0.0123
R-squared	0.436335	Mean dependent var		0.449013
Adjusted R-squared	0.313033	S.D. dependent var		0.741324
S.E. of regression	0.614435	Akaike info criterion		2.040629
Sum squared resid	12.08097	Schwarz criterion		2.378405
Log likelihood	-32.81258	Hannan-Quinn criter.		2.162758
F-statistic	3.538754	Durbin-Watson stat		2.375674
Prob(F-statistic)	0.056306			

Appendix 2: Autocorrelation test

Breusch-Godfrey Serial Correlation LM Test: for ROA model

F-statistic	2.001160	Prob. F(2,31)	0.1523
Obs*R-squared	4.573776	Prob. Chi-Square(2)	0.1016

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 09/29/15 Time: 11:33

Sample: 1 40

Included observations: 40

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.001310	0.264511	0.004953	0.9961
LTDTE	-0.001874	0.003835	-0.488701	0.6285
CA	-0.021670	0.063362	-0.342012	0.7346
TAN	0.017472	0.062889	0.277819	0.7830
GRO	0.026929	0.055903	0.481707	0.6334
SIZE	-0.001226	0.026140	-0.046906	0.9629
BR	-0.005661	0.090359	-0.062651	0.9504
RESID(-1)	0.345386	0.187776	1.839354	0.0755
RESID(-2)	0.078706	0.192854	0.408113	0.6860
R-squared	0.114344	Mean dependent var	-6.35E-17	
Adjusted R-squared	-0.114212	S.D. dependent var	0.042762	
S.E. of regression	0.045138	Akaike info criterion	-3.163075	
Sum squared resid	0.063161	Schwarz criterion	-2.783077	
Log likelihood	72.26149	Hannan-Quinn criter.	-3.025679	
F-statistic	0.500290	Durbin-Watson stat	1.742200	
Prob(F-statistic)	0.846519			

Breusch-Godfrey Serial Correlation LM Test: for ROE

F-statistic	2.328008	Prob. F(2,30)	0.1149
Obs*R-squared	5.373977	Prob. Chi-Square(2)	0.0681

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 10/04/15 Time: 02:36

Sample: 1 40

Included observations: 40

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.515021	4.597462	-0.329534	0.7440
LOGLTDTE	-0.102423	0.313032	-0.327195	0.7458
SIZE	0.205014	0.511038	0.401172	0.6911
TAN	-0.315795	0.943852	-0.334581	0.7403
CA	-0.407132	1.412746	-0.288185	0.7752
DGDP	-0.039468	0.091176	-0.432875	0.6682
LOGLQ	0.004413	0.806853	0.005470	0.9957
BR	-0.691851	1.510077	-0.458156	0.6501
RESID(-1)	-0.426099	0.197525	-2.157185	0.0391
RESID(-2)	-0.178761	0.210601	-0.848817	0.4027
R-squared	0.134349	Mean dependent var	-5.11E-16	
Adjusted R-squared	-0.125346	S.D. dependent var	0.678620	
S.E. of regression	0.719896	Akaike info criterion	2.392899	
Sum squared resid	15.54752	Schwarz criterion	2.815119	
Log likelihood	-37.85797	Hannan-Quinn criter.	2.545560	
F-statistic	0.517335	Durbin-Watson stat	1.922842	
Prob(F-statistic)	0.850275			

Appendix 3 Hausmen tests  
 Correlated Random Effects - Hausman Test for ROA  
 Equation: Untitled  
 Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	6.876834	6	0.3324

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LTDTE	0.000824	0.001360	0.000000	0.2641
CA	0.062399	0.058187	0.000029	0.4307
TAN	0.040820	0.045625	0.000043	0.4654
GRO	0.005441	0.012855	0.000029	0.1708
SIZE	0.049476	0.055001	0.000048	0.4240
BR	-1.169980	-1.164963	0.000141	0.6722

Cross-section random effects test equation:

Dependent Variable: ROA  
 Method: Panel Least Squares  
 Date: 10/04/15 Time: 04:16  
 Sample: 2010 2014  
 Periods included: 5  
 Cross-sections included: 8  
 Total panel (balanced) observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.559930	0.235832	2.374274	0.0253
LTDTE	0.000824	0.002439	0.337575	0.7384
CA	0.062399	0.036307	1.718659	0.0976
TAN	0.040820	0.035255	1.157841	0.2575
GRO	0.005441	0.027134	0.200521	0.8426
SIZE	0.049476	0.023810	2.077962	0.0477
BR	-1.169980	0.054595	-21.43015	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.990649	Mean dependent var	0.138411
Adjusted R-squared	0.985974	S.D. dependent var	0.144296
S.E. of regression	0.017089	Akaike info criterion	-5.031534
Sum squared resid	0.007593	Schwarz criterion	-4.440426
Log likelihood	114.6307	Hannan-Quinn criter.	-4.817808
F-statistic	211.8914	Durbin-Watson stat	1.909380
Prob(F-statistic)	0.000000		

Correlated Random Effects - Hausman Test for ROE

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	6.177742	7	0.5192

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LOGLTDTE	-1.757488	-0.973569	1.464837	0.5172
LOGLQ	4.533519	3.451470	0.413521	0.0924
BR	-6.927647	-5.584534	2.672477	0.4113
TAN	6.548147	3.619059	6.341578	0.2448
CA	5.774644	4.576174	3.805864	0.5390
DGDP	0.139613	0.128697	0.001441	0.7737
SIZE	1.319156	0.946415	0.596568	0.6294

Cross-section random effects test equation:

Dependent Variable: ROE

Method: Panel Least Squares

Date: 10/04/15 Time: 02:10

Sample: 2010 2014

Periods included: 5

Cross-sections included: 8

Total panel (balanced) observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.122762	8.980685	1.015820	0.3194
LOGLTDTE	-1.757488	1.251278	-1.404555	0.1725
LOGLQ	4.533519	1.041937	4.351050	0.0002
BR	-6.927647	2.228572	-3.108559	0.0046
TAN	6.548147	2.709468	2.416765	0.0233
CA	5.774644	2.410682	2.395440	0.0244
DGDP	0.139613	0.098375	1.419198	0.1682
SIZE	1.319156	0.942500	1.399636	0.1739

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.685753	Mean dependent var	0.222874
Adjusted R-squared	0.509774	S.D. dependent var	1.068536
S.E. of regression	0.748148	Akaike info criterion	2.537564
Sum squared resid	13.99313	Schwarz criterion	3.170894
Log likelihood	-35.75128	Hannan-Quinn criter.	2.766556
F-statistic	3.896797	Durbin-Watson stat	2.801980
Prob(F-statistic)	0.001509		



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