

Addis Ababa  
University

(Since 1950)



**ADDIS ABABA UNIVERSITY**  
**COLLEGE OF BUSINESS AND ECONOMICS**  
**DEPARTMENT OF ACCOUNTING AND FINANCE**

**THE EFFECT OF INVESTMENT ON FINANCIAL PERFORMANCE  
OF INSURANCE COMPANY IN ETHIOPIA**

*A Thesis Submitted to the Department of Accounting & Finance in Partial  
Fulfilment of the Requirements for the Degree of Master of Science in  
Accounting and Finance.*

**BY**

**BINYAM HAILU**

**GSE/1444/08**

**June, 2018**

**ADDIS ABABA, ETHIOPIA**

## **Statement of Declaration**

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of **DR. Abebe Yitayew**. All sources of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

Name: **Binyam Hailu**

Signature\_\_\_\_\_

Date\_\_\_\_\_

**Place and date of submission: Addis Ababa University, March, 2018**

## **Statement of Certification**

This is to certify that **Binyam Hailu** has carried out his thesis work on the topic entitled “**The Effect of Investment on Financial Performance of Insurance Company in Ethiopia**”. The work is original in nature and is suitable for the submission for the reward of Master of Science Degree in Accounting and Finance.

**Advisor:-**

**Name Dr. Abebe Yitayew**

**Signature** \_\_\_\_\_

**Date** \_\_\_\_\_

**ADDIS ABABA UNIVERSITY**

**DEPARTMENT OF ACCOUNTING AND FINANCE**

**COLLEGE OF BUSINESS AND ECONOMICS**

**Declaration**

This is to certify that the thesis prepared by **Binyam Hailu**, entitled: **The Effect of Investment on Financial Performance of Insurance Company 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.

**Approved by:**

External

Examiner\_\_\_\_\_Signature\_\_\_\_\_Date\_\_\_\_\_

Internal

Examiner\_\_\_\_\_Signature\_\_\_\_\_Date\_\_\_\_\_

Advisor

\_\_\_\_\_Signature\_\_\_\_\_Date\_\_\_\_\_

## **TABLE OF CONTENTS**

Statement of Declaration	
Statement of Certification	
Declaration	
Table of contents .....	i
Acknowledgements .....	iii
List of Table .....	iv
List of Figure .....	v
List of Acronyms .....	vi
Abstract .....	vii
CHAPTER ONE .....	1
INTRODUCTION .....	1
1.1. Background of the Study .....	1
1.2. Statement of the Problem .....	3
1.3 Research question .....	4
1.4. Objectives of the study .....	4
1.4.1. General Objective .....	4
1.4.2 Specific Objectives .....	4
1.5. Hypothesis .....	4
1.6 Scope of the Study .....	5
1.7 Significant of the Study .....	5
1.8. Limitation of the study .....	6
1.9 Organization of the study .....	6
CHAPTER TWO .....	7
2. LITERATURE REVIEW .....	7
2.1 Theoretical Literature .....	7
2.1.2 Types of investment .....	7
2.1.2.2 Investment in government securities .....	9
2.1.2.3 Investment in fixed time deposits .....	9
2.1.2.4. Investment in fixed asset .....	9
2.1.2.5 Supervisory body requirements .....	10
2.2. Theories on investment .....	10
2.2.1 Modern portfolio theory .....	10
2.2.2 The Capital Asset Pricing Model .....	11
2.2.3 Arbitrage Pricing Theory (APT) .....	12
2.2.4 Resource Dependency Theory .....	13
2.3 Determinants of Financial Performance in Insurance Companies .....	13
2.4 Empirical review .....	14

2.5. Conclusion and knowledge gap .....	21
2.6. Conceptual framework .....	22
CHAPTER THREE .....	23
RESEARCH METHODOLOGY .....	23
3.1 Research design .....	23
3.2 Research approach .....	23
3.3. Target Population of the Study .....	23
3.4. Sample and Sampling Techniques .....	24
3.5 Data sources and instruments .....	24
3.6. Data presentation and Data analysis .....	24
3.7 Model specification .....	27
3.8. Variables description and Hypothesis development .....	28
CHAPTER FOUR .....	31
DATA ANALYSIS AND PRESENTATION .....	31
4.1. Descriptive Statistics of the Data .....	32
4.2 Correlation Analysis .....	33
4.3. Regression model tests .....	34
4.3.1 Model Selection (Random Effect versus Fixed Effect Models) .....	34
4.3.2 Tests for the Classical Linear Regression Model (CLRM) assumptions .....	35
4.6. Result of the regression Analysis .....	40
4.6.1. Regression result .....	40
CHAPTER FIVE .....	47
SUMMARY OF FINDING, CONCLUSION, RECOMMENDATION AND FURTHER RESEARCH .....	47
5.1. Summary of Finding .....	47
5.2. Conclusion .....	47
5.3. Recommendation .....	49
5.4. Direction for further research .....	49
Reference .....	50
Appendix .....	54
Appendix 1:-Descriptive Analysis .....	54
Appendix 3:-Test of Heteroskedasticity .....	56
Appendix 5:- Insurance Companies in Ethiopia .....	58
Appendix: - 6 raw data used for analysis .....	59

## **Acknowledgements**

First and foremost, I want to thank the Almighty God for his guidance, protection, divine provision and brightened direction of my personal and academic journey.

Next, I wish to extend my deepest gratitude to my advisor, Dr. Abebe Yitayew, for his valuable comments, persistent help in doing this thesis.

It is my pleasure to thank staff members of all insurance companies under study particularly those staffs working in departments of finance, marketing and corporate planning, who give me the relevant data that are very much valuable for this study.

I am also deeply obligated to my friends for their valuable suggestions and helpful comments.

My special thanks go to my parents and my family for their endless support.

<b>List of Table</b>	<b>Page</b>
Table 4.1 Descriptive Statistics.....	32
Table 4.2 Correlation Matrix.....	34
Table 4.3 Hausman Test.....	35
Table 4.4 Heteroskedasticity Test.....	36
Table 4.5 Breusch-Godfrey Serial Correlation LM Test.....	37
Table 4.6 Correlation Matrix Between independent variables.....	39
Table 4.7 Regression Result.....	41
Table 4.8 Summary of actual & expected signs of explanatory variables on the ROA.....	46



<b>List of Figure</b>	<b>Page</b>
Figure 2.1 Schematic Conceptual Framework.....	22
Figure 4.1 Normality Test Result.....	38

## **List of Acronyms**

AIC	Awash Insurance Company S.C.
AISC	Africa Insurance Company
ALM	Assets and Liability Management
APT	Arbitrage pricing theory
CAPM	Capital Asset Pricing Model
CLRM	Classical Linear Regression Model
DW	Durbin-Watson
EI	Equity Investment
EIC	Ethiopian Insurance Corporation
FEM	Fixed Effect Model
FTD	Fixed Time Deposit
GIC	GLOBAL INSURANCE COMPANY S.C
IFA	Investment in Fixed Asset
IGS	Investment in Government Security
IS	Insurance size
LR	Liquidity Ratio
NBE	National Bank of Ethiopia
NIC	Nib Insurance Company
NICE	National Insurance Company of Ethiopia s.c
NIISC	Nile Insurance S.C
NISCO	Nyala Insurance S.C
OLS	Ordinary Least Square
REM	Random Effect Model
ROA	Return on Asset
UNIC	United Insurance Company S.C.

## **Abstract**

*This thesis investigates the effect of investment on financial performance of insurance company in Ethiopia. The objective of this study was to investigate the Effect of Investment on Financial Performance of Insurance Company in Ethiopia. This aimed investment improves financial performance of insurance companies or not. The analysis considered the presence of different insurance companies i.e. public and private insurance companies. The study used a sample of 9 insurance out of 17 from 2006 to 2016 year financial statements. The random effect regression technique and correlation was used to analyse the data using the econometric package Eviews software. The sampled data was also presented and analysed by using descriptive statistic by mean, standard deviation, maximum and minimum. The dependent variables used to estimate insurance companies performances were return on asset. The researcher used Investment in fixed asset (IFA), Investment in government securities (IGS), Investment in equity (IE) and Investment in fixed time deposit (FTD) as an independent variables. The researcher also used insurance size and liquidity ratio as control variables. The study finds that insurance performance measurement i.e. ROA has a strong and significant relationship with Investment in fixed asset and investment in government securities. On the other hand investment in equity has a negative and insignificant effect on return on asset. Investment in government security and fixed assets have also shown significant and positive effect. However, investment in fixed time deposit has a positive and insignificant effect on return on asset at 5% level of significant. Furthermore insurance size and liquidity ratio has a significant and positive effect on return on asset. So the study recommended insurance companies are advised to invest in Fixed asset & Government Securities in order to enhance the financial performances.*

**Key Words: Securities, Investment ,Assets, ROA**

# CHAPTER ONE

## INTRODUCTION

### 1.1. Background of the Study

Insurance industry is an important and integral component of macro economy and has emerged as a dominant institutional player in the financial market impacting the health of economy through its multidimensional role in saving and capital market. (Husain et al, 2016) It acts as a mobilizer of savings, a financial intermediary, a promoter of investment activities, a stabilizer of financial markets and a risk manager. Insurance companies generally function on two dimensional landscapes, which embrace a) underwriting activity, which is mainly centred on collecting premiums and honouring claim; b) investment activity, which is meant to dispense allowed assets into various investments to earn additional revenues in the form of interest, dividends and realized capital gains (Husain et al, 2016)

An investment is the current commitment of resources for a period of time in the expectation of receiving future resources that will compensate the investor for the time the resources are committed, the expected rate of inflation and the risk – the uncertainty of future payments. Investment may also be defined as the change in capital stock during a period. Consequently, unlike capital, investment is a flow term and not a stock term. This means that capital is measured only at a point in time, while investment can only be measured over a period of time (Trygve, 2006).

The most common investment opportunities that are pursued by most of these institutions world over include investment in real estate, equities, treasury bills and bonds, deposits with banks, and certificates of deposits. These investments expected to earn additional revenues in the form of interest, dividends and realized capital gains.

Investment earnings made by insurance firms make a valuable contribution to their operating results and enable them to reduce premiums and increase dividends and bonuses, thereby improving their competitiveness (Cummins and Grace, 1994; Citibank, 1994). It's also evident that linking investment earnings to firm-specific factors such as organizational form and size could enable policyholders and shareholders to make better-informed insurance and investment choices. Ideally, a portfolio manager should increase the systematic risk of the portfolio in anticipation of a market upturn and decrease the beta prior to a market downturn (Boose, 1993).

Insurance companies can invest their funds in short term and long-term financial instruments viz., securities of money market and capital market. The investment portfolio is generally overwhelmed by long-term assets, but one part of funds is invested in short-terms instruments for securitization of liquidity. Investment portfolio must be in accordance with liquidity need, profitability, reinsurance arrangements, leverage and stream of premium. Every portfolio should also be rebalanced from time to time so that highest possible level of return for a given level of risk can be obtained. Insurer should determine investment portfolio by using a robust optimization framework and diversifying investment portfolio into higher income generating strategies with firm specific constraints to increase overall efficiency and risk generating return. The point of convergence for insurance investment portfolio is to ensure long-term safety, and profitability of customer's funds. Therefore, in this view of public interest, investment pattern of insurance companies is regulated in some countries (Vaidyanathan et al, 2000).

Most institutional investors around the globe such as insurance companies invest the money they receive in various sectors in order to receive returns. The most common investment opportunities that are pursued by most of these institutions world over include investment in real estate, equities, treasury bills and bonds, deposits with banks, and certificates of deposits. For instance in the year 2012 alone, most institutional investors invested more than 80% of their portfolio in bonds and equities. However, there seems to be a trend where most organizations are now moving away from bills and bonds and investing in other assets such as real estate. The income earned by the institutions from these investments is largely positive in many countries despite the economic pressures that lead to economic instability in some countries (OECD, 2013).

The purpose of this paper is to provide robust empirical analysis on the relationship between investment & financial performance of Insurance companies in Ethiopia.

## **1.2. Statement of the Problem**

Insurance companies generally recognise the importance of separating the responsibility for managing their insurance businesses, from that of managing the investments backing their reserves and capital. Due to the scale of investments on an insurance company's balance sheet and the impact of investment results on its profitability, the management of these investments is a key function (Zurich, 2010). Similar to other investors, insurance and tactful operators also prefer higher returns from their investments to minimize the cost of insurance tactful products and to maximize wealth of the shareholders. The insurers must ensure the returns that exceed pricing assumptions and maintain an appropriate relationship between life insurer's tactful operator's asset and liability cash flows (Black et al, 2000). Thus, the return from investment offers an important contribution to their operation as a whole through favourable premium charges to their potential policyholders and attractive bonuses and dividends to their shareholders, thereby improving their competitiveness (Cummins et al, 1994; Smith, 1989; Oppenheimer et al, 1983).

Mariam (2013) found that investment in real estate & government securities have direct relationship with the overall profitability of insurance company. However, investment in bank deposit & stock have an inverse relationship. However, as per Veronica (2013) the results show that investments in real estate, certificates of deposit, Government securities, corporate bonds and stocks have a significant impact on the financial performance of the insurance companies since the variables have major effect on financial performance.

Hence, as far as the researcher knowledge, a single study corresponding with this research is conducted by Eskedar (2016) about effect of investment on commercial banks in Ethiopia. However, this research is in its industry selection. Thus, most researches didn't mainly concentrate on the effect of investment on financial performance in Ethiopian insurance companies. Thus, due to the importance of investment for insurance companies and absence of empirical studies on Ethiopia insurance companies pertaining to this topic incorporating crucial investment variables collectively is what motivated the researcher to examine how performance of Ethiopian insurance companies have been affected.

### **1.3 Research question**

The main research questions of this study are:

- What is the effect of investment in government securities on performance of Ethiopian insurance companies?
- What is the effect of investment in fixed time deposit on performance of Ethiopian insurance companies?
- What is the effect of investment in equity on performance of Ethiopian insurance companies?
- What is the effect of investment in fixed asset on performance of Ethiopian insurance companies?

### **1.4. Objectives of the study**

#### ***1.4.1 General Objective***

The general objective of the study is to examine the effect of investment on performance of insurance companies in Ethiopia.

#### ***1.4.2 Specific Objectives***

**The specific objectives of the study are;**

- To study the effect of investment in government securities on performance of insurance companies in Ethiopia.
- To scrutinize the effect of investment in fixed time deposit on performance of insurance companies in Ethiopia.
- To analyze the effect investment in equity on performance of insurance companies in Ethiopia.
- To analyze the effect of investment in fixed asset on performance of Ethiopian insurance companies.

### **1.5. Hypothesis**

*H<sub>1</sub>: Investment in government securities has a positive and significant effect on performance of insurance companies.*

*H<sub>2</sub>: Investment in deposit has a positive and significant effect on performance of insurance companies.*

*H<sub>3</sub>: Investment in equity has a positive and significant effect on performance of insurance companies.*

*H<sub>4</sub>: Investment in fixed asset has a positive and significant effect on performance of insurance companies.*

*H<sub>5</sub>: Insurance size has a positive and significant effect on performance of insurance companies.*

*H<sub>6</sub>: Liquidity ratio has a positive and significant effect on performance of insurance companies.*

## **1.6 Scope of the Study**

The study was limited on the effect of Investment on performance of insurance companies in Ethiopia and made the analysis using secondary source of data. The study had taken in to account the performance of insurance companies for the last 11 years that is from 2006 to 2016. In order to get the required data's the researcher included 9 insurance companies that started operation before 2006, out of which 1 government owned and 8 private insurance companies in Ethiopian.

The study only used four independent variables i.e. investment in fixed time deposit, investment in government security, investment in equity and investment in fixed asset. In addition the researcher used insurance size and liquidity ratio as control variables. In addition the researcher only used return on asset as a dependent variables for performance measurement.

## **1.7 Significant of the Study**

The research will give importance points to the insurance sector to act on their investment policy by using the opportunities that NBE allowed them and how to manage their investment portfolio without rejecting the regulation. Findings from this study will also help national bank of Ethiopia to improve the investment regulation without making the policy highly restrictive. Furthermore, the study will help other researchers as a source of reference and an initial point for those who want to make further study on the area of insurance investment.



## **1.8. Limitation of the study**

Secondary data for eleven years (2006-2016) collected from sampled nine Ethiopian insurance companies. In addition, the study focus on firm specific variables only, the industry specific as well as macroeconomic variables are not included under this study. Thus, the primary limitations are the scope and sample size.

The analysis and its derived conclusions based on the secondary data sources (i.e. mainly on published annual reports of the sampled Ethiopian insurance companies), both the dependent and independent variables proxies by numbers from this past data sources. Hence, the historical data may not reflect the current and future economic situation.

## **1.9 Organization of the study**

The research paper is organized in to five chapters. Chapter one is an introduction part , which includes back ground of the study, statement of the problem, objectives of the study, scope, significance and limitation of the study are presented. Chapter two is review of literature in which theories, empirical evidence and conceptual frame work are identified. Chapter three contained research methodology where research design, research approach, population, sampling method, sample size, sources of data, instruments, data analysis technique, model specification, variable definition and hypothesis development were covered. Chapter four focused on the results and discussion in which the findings results that are interpreted. Finally, Chapter five brought to an end the research with summary, conclusion and possible recommendation

## **CHAPTER TWO**

### **2. LITERATURE REVIEW**

This section presented theoretical, empirical review, conclusion and knowledge gap and conceptual frame works on the effect of investment on the performance of Ethiopian insurance companies. Accordingly, the first section presents theoretical literature about different investment in insurance and also explained investment theory. The second part discussed about various empirical studies related to the impact of investment on performance of Ethiopian insurance companies. The gaps in existing literature described in the third part and the conceptual framework depicted in the fourth part.

#### **2.1 Theoretical Literature**

##### ***2.1.1 Meaning of Investment***

In the financial sense investment is the commitment of a person's fund to derive future income in the form of income, dividend premium, pension benefit, or appreciation, in the value of their capital. Examples include purchasing of shares, debentures, post office saving certificates, insurance policies are all investments in the financial sense such investment generates financial assets. Investment in the economic sense means the net addition to the economy's capital stock which consists of goods and services, that are used in the production of other goods and services. Examples include new constructions of plants and machines and inventories (Weebly, 2013).

##### ***2.1.2 Types of investment***

According Harvey (2012) there are different types of investments that can be made by firms. Both individuals and companies can have investments. This may include stocks, mutual fund distributions, investment in Government securities, interest-bearing bank accounts (Fixed time deposits), bonds, and other debt instruments. A firm may also opt to invest in rental property or real estate or other assets owned for investment purposes.

### ***2.1.2.1 Stock Investment***

Long-term debt securities can be described as long-term debt instruments representing the issuer's contractual obligation. Long term securities have maturity longer than 1 year. The buyer (investor) of these securities is lending money to the issuer, who undertake obligation periodically to pay interest on this loan and repay the principal at a stated maturity date. Long-term debt securities are traded in the capital markets. From the investor's point of view these securities can be treated as a "safe" asset. But in reality the safety of investment in fixed-income securities is strongly related with the default risk of an issuer. The major representatives of long-term debt securities are bonds, but today there are a big variety of different kinds of bonds ,which differ not only by the different issuers (governments, municipals, companies, agencies, etc.), but by different schemes of interest payments which is a result of bringing financial innovations to the long-term debt securities market.( Kristina , 2010)

Preferred stocks are equity security, which has infinite life and pay dividends. But preferred stock is attributed to the type of fixed-income securities, because the dividend for preferred stock is fixed in amount and known in advance. Though, this security provides for the investor the flow of income very similar to that of the bond. The main difference between preferred stocks and bonds is that for preferred stock the flows are forever, if the stock is not callable. The preferred stockholders are paid after the debt securities holders but before the common stockholders in terms of priorities in payments of income and in case of liquidation of the company. If the issuer fails to pay the dividend in any year, the unpaid dividends will have to be paid if the issue is cumulative. If preferred stock is issued as noncumulative, dividends for the years with losses do not have to be paid. Usually same rights to vote in general meetings for preferred stockholders are suspended. Because of having the features attributed for both equity and fixed-income securities preferred stocks is known as hybrid security. A most preferred stock is issued as noncumulative and call able. In recent years the preferred stocks with option of convertibility to common stock are proliferating.( Kristina , 2010)

Common stock is the other type of investment vehicles which is one of most popular among investors with long-term horizon of their investments. Common stock represents the ownership interest of corporations or the equity of the stockholders. Holders of common stock are entitled to attend and vote at a general meeting of shareholders, to receive declared

dividends and to receive their share of the residual assets, if any, if the corporation is bankrupt. As previously mentioned by Veronica, increased investment on stocks both quoted and unquoted improves the financial performance of the insurance firms(Veronica,2013)

#### ***2.1.2.2 Investment in government securities***

Treasury bills (also called T-bills) are securities representing financial obligations of the government. It has maturities of less than one year. They have the unique feature of being issued at a discount from their nominal value and the difference between nominal value and discount price is the only sum which is paid at the maturity for these short term securities because the interest is not paid in cash, only accrued. The other important feature of T-bills is that they are treated as risk-free securities ignoring inflation and default of a government, which was rare in developed countries, the T-bill will pay the fixed stated yield with certainty.( Kristina , 2010)

#### ***2.1.2.3 Investment in fixed time deposits***

Certificate of deposit is debt instrument issued by bank that indicates a specified sum of money has been deposited at the issuing depository institution. It bears a maturity date and specified interest rate and can be issued in any denomination. Most certificates of deposit cannot be traded and they incur penalties for early withdrawal. For large money-market investors financial institutions allow their large-denomination certificates of deposits to be traded as negotiable certificates of deposits (Kristina 2010).

#### ***2.1.2.4. Investment in fixed asset***

Fixed asset investment is a measure of capital spending. It refers to any investment within the measurement period in physical assets, such as real estate infrastructure, machinery, etc. that are held for more than one year.Ibam (2007) argued that a company's investment in fixed asset is dependent, to a large degree, on its line of business. Some businesses are more capital intensive than others. According to Ibam (2007) fixed asset turnover ratio looked at asset over time and compares the ratio to that of competitors. This gives the investor an idea of how effectively a company's management is using fixed asset. It is a rough measure of the productivity of a company's fixed assets with respect to generating sales. The higher the number of times turned over, the better. However investors look for consistency or increasing fixed assets turnover rates as positive balance sheet investment qualities . Sayeed and Hogue (2009) studied the impact of assets and liability management on profitability of public and

private insurance companies in Bangladesh. According to them, insurances' profitability is almost always of concern in modern economy. Insurances are in business to receive premium and to issue debt securities on the one hand and create or invest in assets on the other hand. Thus insurance companies incur cost for their liabilities and earn income from their assets. Thus profitability of insurance is directly affected by management of their assets and liability. Their study examined how assets and liability management together with external variable such as degree of market concentration and inflation rate impact the profitability of selected insurance companies in Bangladesh. The study also dealt with the impact of Assets and Liability Management (ALM) on the profitability of the sixteen Bangladesh insurance companies classified into private and public. The results show that the use of total income the dependent variable for private and public insurance show evidence that all of the assets have significant contribution to total income of the private insurance companies.

#### ***2.1.2.5 Supervisory body requirements***

As stipulated in NBE directive SIB/25/2004, The General Insurance Funds of an insurance company shall be invested in the manner prescribed hereunder: In Treasury Bills and bank deposits not less than 65% of admitted assets; Provided, however, that aggregate bank deposits (checking, savings and time deposits) held with any one bank shall not exceed 25% of total admitted assets; In investments in company shares not exceeding 15% of total admitted assets; In real estate not exceeding 10% of total admitted assets; 10% of admitted assets in investments of the insurance company's choice.

## **2.2. Theories on investment**

### ***2.2.1 Modern portfolio theory***

Modern portfolio theory, relying on the work of Markowitz (1952) and the principals of the Capital Asset Pricing Model (CAPM), suggests that investors can improve the performance of their portfolios by allocating their investments into different classes of financial securities and industrial sectors that are not expected to react similarly if new information emerges. Solnik (1974) extends this theory to an international context and suggests that diversifying globally, as opposed to a strictly domestic portfolio, will lead to optimization of the risk-return tradeoff. Therefore, investors should allocate their money into assets exhibiting low return correlation. A paper written by RiadhAloui, Mohamed Safouane Ben Aissa, and DucKhung in 2011 at the Paris School of Management, France, examines the extreme

correlations between the BRIC economies and the US, especially over 2007-2009. Empirical evidence indicates that although BRIC markets have many features in common, they do not behave similarly in regard to their financial linkages to the US. In his paper, Markowitz formally presented his view that although investors want to maximize returns on securities they also want to minimize uncertainty, or risk. These are conflicting objectives which must be balanced against each other when the investor makes his or her decision. Markowitz asserts that investors should base their portfolio decisions only on expected returns, i.e. the measure of potential rewards in any portfolio, and standard deviation, the measure of risk. The investor should estimate the expected returns and standard deviation of each portfolio and then choose the best one on the grounds of the relative magnitudes of these two parameters (Sharpe, et al, 1999).

As previously mentioned, Markowitz rejected the expected returns rule on the grounds that it neither acknowledged nor accounted for the need for diversification, contrary to his expected return variance of return rule. In addition, he concluded that the expected return-variance of return rule not only revealed the benefits of diversification but that it pointed towards the right type of diversification for the right reason (Mandelbrot, 2004). It is not enough to diversify by simply increasing the number of securities held. If, for example, most of the firms in the portfolio are within the same industry they are more likely to do poorly at the same time than firms in separate industries. In the same way it is not enough to make variance small to invest in large number of securities. It should be avoided to invest in securities with high covariance among themselves and it is obvious that firms in different industries have lower covariance than firms within the same industry (Markowitz, 1952).

Simply put, Markowitz concluded that by mixing stocks that flip tail and those that flip heads you can lower the risk of your overall portfolio. If you spread your investments across unrelated stocks you will maximize your potential profit whether the economy is slowing down or growing. If you then add more and more stock in different combinations you have what Markowitz called an 'efficient' portfolio. An efficient portfolio is the portfolio which gives the highest profit with the least risk. The aim of Markowitz's methods is to construct that kind of portfolio (Mandelbrot, 2004)

### ***2.2.2 The Capital Asset Pricing Model***

The background of CAPM was the study of the influence of investor behaviour on asset prices. The result of that study was a theory of asset valuation in an equilibrium situation, drawing together risk and return, which is the CAPM (Lintner, 1966) Several authors have contributed to the model, first and foremost Sharpe (1964), but also Treynor, Mossin, Litner and Black (1965). The CAPM is the first model to introduce the notion of risk into the valuation of assets. It evaluates both asset returns in connection to market returns and the sensitivity of the security to the market (Amenc & Le Sourd, 2003).

CAPM is in principle a method to calculate the rate of return which it is normal to demand of an asset of a certain nature. The search for the normal rate of return is divided into two parts according to CAPM. On the one hand, a risk-free rate is found. On the other hand, the rate of return on a risky asset is found, constituting the risk premium. In CAPM the standard deviation of a single asset does not matter greatly, rather the effect of the asset on the systematic risk of the portfolio to which the asset is added. The main concern is the conjunction between the rate of return of the efficient portfolio and a single asset. If the conclusion of the CAPM is that the correlation between the rate of return of the portfolio and an asset is high, then it is appropriate to demand a high risk premium of that asset. If the correlation is low, on the other hand, only a low risk premium should be demanded (Sciubba, 2006).

### ***2.2.3 Arbitrage Pricing Theory (APT)***

Arbitrage pricing theory (APT) holds that the expected return of a financial asset is largely based on its "beta". Beta is the measure of the relationship between company related factors which influence financial performance and the overall market in which the latter competes. Typically a company which has a beta of one will reflect the market whereas a beta score of 0.75 means that a company will move up or down to the extent of 75 per cent of the corresponding market movement. The Arbitrage Pricing Theory (APT) was developed primarily by Ross (1976) heuristic argument for the theory is based on the preclusion of arbitrage. The APT is a substitute for the Capital Asset Pricing Model (CAPM) in that both assert a linear relation between assets' expected returns and their covariance with other random variables. (In the CAPM, the covariance is with the market portfolio's return.) The covariance is interpreted as a measure of risk that investors cannot avoid by diversification.

The slope coefficient in the linear relation between the expected returns and the covariance is interpreted as a risk premium. Such a relation is closely tied to mean-variance efficiency.

Arbitrage Pricing Theory can be useful if one is investing in a company and wanted to measure the historical share price sensitivity to huge market fluctuations typical during the onset of bull and bear markets. Based on an investor's long-term and short-term goals different investment strategies could be planned using APT as an exhibit. For example, if a company had a beta of one thereby likely to follow the market an investor anticipating a recession would hold off purchasing that stock if their goal was to invest their money for no longer than a few years and vice versa. There have been a considerable number of studies, which attempt to justify the empirical applicability of the Arbitrage Pricing Theory (APT) as compared to the Capital Asset Pricing Model (CAPM). APT differs from the CAPM in hypothesizing that actual and expected security returns are sensitive, not just to one type of non-diversifiable risk (i.e. beta or market risk) but to a variety of different types of risks. Many studies have also endeavoured to identify the macroeconomic factors underlying the APT (Ross 1976).

#### ***2.2.4 Resource Dependency Theory***

This theory was developed by Pfeffer and Salancik (1978). The theory is based on the assumption that environments are the source of scarce resources and organizations are dependent on these finite resources for survival. A lack of control over these resources thus acts to create uncertainty for firms operating in that environment. Organizations must develop ways to exploit these resources, which are also being sought by other firms, in order to ensure their own survival. They established factors that have significant influence on the level of dependence an organization has on particular resources. The first factor relates to overall importance of the resource to the firm; second is the scarcity of the resource. The scarcer a resource is the more dependent the firm becomes. Finally, another factor influencing resource dependence is the competition between organizations for control of that resource. Together, all three of these factors act to influence the level of dependence that an organization has for a particular resource. Resource dependence theory also infers that a firm's strategic options are determined to a great extent by the environment. Since firms are dependent on the environment for resources, they need to enact strategies that would allow them to acquire these resources. Therefore, the external environment has already been determined for these firms, and they experience little strategic choice (Pfeffer and Salancik 1978).



### **2.3 Determinants of Financial Performance in Insurance Companies**

There are several factors that determine the financial performance of insurance companies. These factors largely fall into two main categories. The first category of determinants relates to internal factors whereas the second category relates to factors that originate from outside the organization (Mwangi and Murigu, 2015). One of the internal determinants of financial performance of insurance companies is the leverage of the firm. This is normally a ratio that reveals how an insurance company is able to manage borrowed funds in the generation of its own wealth. It also reveals how the insurance firm manages its economic exposure in order to overcome losses that are unexpected (Adams and Buckle, 2000).

The performance of an insurance company can also be determined by the size of the firm itself. The size of the insurance firm has a very significant relationship with the efficiency of its operations. A large insurance firm has enough resources that can enable it to exploit the economies of scale and scope thus providing it with the ability to significantly reduce its operating costs and enhance its performance. However, this may not be the case with small firms that must struggle to gather enough resources. For insurance firms, the size can be equated to the net premium that is earned after deductions such as reinsurance. The amount of premium earned by an insurance company largely determines the fraction of policy liabilities the firm can be able to handle (Teece, 2009).

Shiu (2004) argues that the age of an insurance company is also a very important determinant of its financial performance. Older firms, by the fact that they have been in operation for a longer time have learnt various business tricks and have enormous experience that can enable them to overcome business challenges that are presented by the dynamic environment. However, on the other hand the age of a firm may also work to its detriment especially in cases where older firms are rigid to change. When it comes to adoption of changes in the market there is evidence of an inverse relationship between the age of a firm and its financial performance (Shiu, 2004).

There are other factors that also determine the financial performance of insurance companies. They include the underwriting risk (Adams and Buckle, 2000); the equity that is controlled by the firm which is actually the amount of funds raised by the owners of the insurance company (Mwangi and Murigu, 2015); the level liquidity of the insurance company which reflects the firm's ability to meet its short term credit repayments (Mwangi and Murigu,

2015) as well as the ownership structure of the insurance firm. The ownership structure determines the type of decisions to be made in the running of the insurance firm which in turn determine its financial performance (Agiobenebo and Ezirim, 2002).

## **2.4 Empirical review**

Veronica (2013) studied on the relation between investment & financial performance of insurance companies in Kenya. The research objective was to establish the relationship between investment and financial performance of insurance companies in Kenya. The researcher uses 45 insurance companies in Kenya as target population. Out of the total population secondary data was collected from 32 insurance firms. She used Multivariate regression and correlation analysis. The results show that investments in real estate, certificates of deposit, Government securities, corporate bonds and stocks have a significant impact on the financial performance of the insurance companies since the variables have major effect on financial performance.

Olatunji et al. (2014) studied on Investment in Fixed Assets and Firm Profitability. The research objective was to examine the effect of investment in fixed assets on profitability of selected Nigerian banks. The researchers collected data from annual reports and accounts of selected Nigerian commercial Banks. They employed correlation and multiple regressions to analyse the relationship between the dependent variable (Net profit) and independent variables (Building, Land, Leasehold premises, fixtures and fitting, and investment in computers). The findings offer by the researchers show that there is a significant relationship between dependent variable and the independent variables with the adjusted  $R^2$  @ 96%. Therefore, investments in fixed assets have strong and positive statistical impact on the profitability of banking sector in Nigeria. In order to improve bank profitability through efficient management of fixed assets, Nigerian banks should increase fixed assets investments in form of ICT. Fixed assets utilization and productivity needs to be monitored to boost profitability for shareholders' satisfaction.

Adams et al. (2003) studied on the determinants of corporate financial performance in the Bermuda insurance market, Applied Financial Economics, .This study examines the determinants of corporate (i.e. underwriting and investment related) financial performance in the Bermuda insurance market. The researchers used panel data for 1993–1997, it was found that, as expected, highly leveraged, lowly liquid companies and reinsurers have better operational performance than lowly leveraged, highly liquid companies and direct insurers.

Contrary to what was hypothesized, performance was positively related to underwriting risk. However, the size of companies and the scope of their activities were not found to be important explanatory factors.

Amal et al. (2012) studied on the factors affecting the financial performance of Jordanian Insurance Companies Listed at Amman Stock Exchange. The study was aimed at investigating the factors that mostly affect financial performance of Jordanian Insurance Companies. The researchers considered as population all insurance companies' enlisted at Amman stock Exchange during the period (2002-2007) which count (25) insurance company. The researchers was used to analyse the collected data by using a number of basic statistical techniques such as T-test and Multiple- regression. The results showed that the following variables (Leverage, liquidity, Size, Management competence index) have a positive statistical effect on the financial performance of Jordanian Insurance Companies. The researcher recommended that a high consideration of increasing the company assets will lead to a good financial performance and there is a significant need to have highly qualified employees in the top managerial staff.

Meaza (2014) studied on the determinants of insurance companies' profitability in Ethiopia. The purpose of the study was to examine the effects of firm specific factors (size of company, leverage ratio, liquidity ratio, loss ratio/ risk, tangibility of assets, growth and managerial efficiency) and macroeconomic factors (economic growth and inflation) on profitability peroxide by ROA. The researcher collected sample data from ten insurance companies for six years (2008-2013). Secondary data obtained from the financial statements (Balance sheet and Profit/Loss account) of insurance companies, and financial publications of MOFED are analysed. From the regression result; size, leverage, tangibility of asset, loss ratio/ risk, firm growth and managerial efficiency are identified as significant determinants of profitability hence firm size, tangibility of asset, firm growth and, managerial efficiency are positively related. In contrast, leverage and loss ratio/ risk are negatively but significantly related with profitability. Liquidity, inflation, and economic growth were not significant determinants of profitability.

Yuvaraj et al. (2013) studied on the performance of Insurance Companies in Ethiopia. They analysed the effects of firm specific factors (age of company, size of company, volume of capital, leverage ratio, liquidity ratio, growth and tangibility of assets) on profitability proxied by Return on Assets. The researchers used as sample nine of Ethiopian insurance companies

for nine years (2003-2011). They also collected Secondary data from the financial statements (Balance sheet and Profit/Loss account) of insurance companies, financial publications of National Bank of Ethiopia. From the regression results; growth, leverage, volume of capital, size, and liquidity were identified as most important determinant factors of profitability hence growth, size, and volume of capita are positively related. In contrast, liquidity ratio and leverage ratio were negatively but significantly related with profitability. The age of companies and tangibility of assets were not significantly related with profitability.

Mariam (2013) studied on the relationship between portfolio holding & financial performance of Insurance companies in Kenya. The research objective was to establish the relationship between portfolio holding and financial performance of insurance companies in Kenya. The population of the study was all insurance companies operating in Kenya as at 31st December, 2012. The main source of data was secondary data from the Insurance Regulatory Authority, Association of Kenya Insurers, and insurance companies themselves. The researcher conducted a multiple regression analysis in order to determine the relationship between portfolio holding and financial performance of insurance companies in Kenya. The study found that there is a positive and strong relationship between portfolio and financial performance of the insurance companies. The researcher found that investment in real estate & government securities have direct relationship with the overall profitability of insurance company. However, investment in bank deposit & stock have an inverse relationship.

Almas et al. (2008) studied on investment & performance of firms: correlation or causality? The purpose of this paper was to provide robust empirical analysis of the possible two-way causal relationship between investment and performance at the firm level. The performance variables include sales, value added, profit, cash flow, capital structure and employment. The investment variables are research and development and physical capital. A multivariate vector autoregressive approach is applied to a panel of Swedish firms observed between 1992 and 2000. Results show evidence of some two-way causal relationships, which are mainly transitory in character. Significant heterogeneity is observed in the firms' investment and performance behavior by their size.

Mohammed (2014) studied on the determinants of capital structure & its impact on the performance of Ethiopian insurance industry .The research objective was examining the determinants of capital structure and its impact on the performance of Ethiopian insurance industry. Thus, the major focus of this study was to investigate empirically firm specific

factors such as, firm leverage, growth opportunities, size, risk, tangibility and liquidity were impacts on performance in Ethiopian insurance industry in panel data. In this research the researcher only used secondary data from nine insurance companies in Ethiopia. Document review has been used for collecting data from 2004-2013 annual reports. The results show that firm leverage, Size, tangibility and business risk were significant impact on performance of Ethiopian insurance companies. While firm growth and liquidity were not clear and statistical proved relationship are obtained from the regression analysis. The results provide strong evidence in support of the pecking order theory of capital structure which asserts that leverage was a significant determinant of firms' performance. A significant negative relationship is established between leverage and performance. From the findings the researcher recommended that the sample of Ethiopian insurance industry use more equity than debt in financing their business activities, this because if the value of business can be enhanced with debt capital, it is dangerous for the firm. Each Ethiopian insurance industry establishes with the aid of professional financial managers, that particular debt-equity mix that maximizes its value and minimizes its weighted average cost of capital.

Emine (2015) studied on effects of firm-specific factors on the profitability of non-life insurance companies in Turkey. Hence, the study covered a period of eight years between 2006 and 2013. Depending on the existence of data, 24 out of 36 non-life insurance companies operating in Turkey as of 2013 have been selected for this study. Eight independent variables were tested; these are size of the company, age of the company, loss ratio, insurance leverage ratio, current ratio, premium growth rate, motor insurance and premium retention ratio. Two variables were used in this study as the profitability measure of non-life insurance companies. One of these was technical profitability ratio and the other was sales profitability ratio. The main results of the study demonstrated that the profitability of non-life insurance companies was statistically significant and positively related to the size of the company and premium growth rate, whereas profitability was statistically significant and negatively related to the age of the company, loss ratio, and current ratio. However, the share of motor insurance in the companies' insurance portfolio and the premium retention ratio were not found to be important explanatory variables. Besides, the relationship between insurance leverage ratio and technical profitability ratio were significant at the 5% level. However, the relationship between insurance leverage ratio and sales profitability ratio were not statistically significant.

Abate (2012) studied on Factors Affecting Profitability of Insurance Companies in Ethiopia. The purpose of this paper was to examine the effects of firm specific factors (age of company, size of company, volume of capital, leverage ratio, liquidity ratio, growth and tangibility of assets) on profitability proxied by ROA. The researcher use Profitability as dependent variable while age of company, size of company, volume of capital, leverage liquidity ratio, growth and tangibility of assets) as independent variables. The sample in this study includes nine Ethiopian insurance companies for nine years (2003-2011).The researcher use Secondary data obtained from the financial statements (Balance sheet and Profit/Loss account) of insurance companies, financial publications of NBE are analysed. The researcher found from the regression results; growth, leverage, volume of capital, size, and liquidity are identified as most important determinant factors of profitability hence growth, size, and volume of capita are positively related. In contrast, liquidity ratio and leverage ratio are negatively but significantly related with profitability. Lastly, age of company and tangibility of assets are not significantly related with profitability.

As stated by Shu-Hua (2003) the purpose of managing market risk, insurers use various financial rating systems and methodologies to evaluate the financial performance. Many prior papers used data envelopment analysis (DEA) model to evaluate operational performance of firms. However, fewer papers explore the investment performance by DEA and Malmquist Productivity Index (MPI). Notably, the life insurers in Taiwan must maintain their relative investment efficiency and operational performance because declining profit could lead to serious interest spread loss or business failure. After the insurance market opened in 1987, the whole market structure changed. Facing more highly intensive competition, life insurers should set a goal of higher efficiency of investment performance and profitability. The main purpose of this study is to determine the capital investment efficiency and change based on the DEA results and MPI. Further, some hypotheses were created to test if there is a statistically significant difference among the DEA model and TFI of CAMEL-S model for life insurers. Finally, to identify efficient investment tools which are relative to investment return rate of life insurers by using regression model. One of results showed that more insurers should revise their investment strategies to improve company's overall financial performance.

According to Husain (2016) the study major determinants of long-term investment of the non-life insurance industry of India. The annual financial statements of nineteen non-life

insurance companies covering a period of 5 years (2011-2015) were sampled and analyzed through panel regression. The findings indicate that, as expected, highly liquid, highly profitable and large size insurance companies have invested more in long term than lowly liquid, lowly profitable and small size companies. The researcher also find that insurance companies with higher risk retention ratio and higher leveraged ratio have invested less in long term than insurance companies with lower risk retention ratio and lower leveraged ratio.

As conducted by Joseph et al (2011) the study identifies the determinants of profitability in the life insurance industry of Ghana. The study also examines the relationship among the three measures of insurers' profitability, which are investment income, underwriting profit and the overall (total) net profit. The financial statements of ten (10) life insurance companies covering a period of eleven years (2000 to 2010) were sampled and analyzed through panel regression. The findings indicate that whereas gross written premiums have a positive relationship with insurers' sales profitability, its relationship with investment income is a negative one. Also, the results showed that life insurers have been incurring large underwriting losses due to overtrading and price undercutting. The results further revealed a setting-off rather than a complementary relationship between underwriting profit and investment income towards the enhancement of the overall profitability of life insurers.

This study took a causal research design approach. The study entailed a census of all the investment companies operating in Kenya and listed in the Nairobi Securities Exchange. There are four investment companies listed in Nairobi Securities Exchange. The study covered a period of five years starting in the year 2007 to year 2011. The study used secondary data sources available at the companies' books of account and the NSE or Capital Market Authority offices. The study used the multiple linear regression equation and the method of estimation was Ordinary Least Squares (OLS) so as to establish the impact of investment portfolio choice on profitability of investment companies. The study revealed that investment portfolio choice affects the financial performance of investment companies listed in the Nairobi Securities Exchange. The study found that investment in bonds positively influences the financial performance of investment companies listed in the NSE. The study also found that investment in real estate and equity by investment companies positively impacted in the financial performance, it was found that size of the company positively impacted in the financial performance of investment companies. There is need for the management of investment companies to have solid organization structure, organization

structure will influence their investment portfolio choice which impact on their financial performance (Ezekiel, 2013)

Damaris (2011) studied on the relationship between investment portfolio choice and profitability of investment companies listed in the Nairobi securities exchange. This study sought to establish the relationship between investment portfolio choice and profitability of investment companies listed in the Nairobi Securities exchange. The researcher used descriptive research design in form of a survey & four companies listed as Investment Companies at the Nairobi Securities Exchange (NSE, 2012) as population. The researcher employed a stratified random sampling to select 49 senior and middle level managers who are in-charge of the different lines of investments engaged by their organization from each firm's finance and investments division. The researcher used structured questionnaires as the main data collection instrument. Pilot testing was conducted to establish the validity of the research instrument. The content analysis was used to analyze the respondents' views about the relationship between investment portfolio choice and profitability of investment companies listed in the Nairobi Securities Exchange. Tables and other graphical presentations as appropriate were used to present the data collected for ease of understanding and analysis. Data was presented using tables, and pie charts to make them reader friendly. The researcher found that investment is not just about picking stocks. The study also concludes that investment projects which tend to promise both high returns and a high risk are not attractive for most institutional investors. The study further concludes that revealed that risk assessment of the investment opportunities has an effects on performance, regarding liquidity the study concludes that investment institutions utilize their exposure and resources to develop detailed economic analysis and market area studies, liquidity preference affects the performance of investment companies, and finally that there is a great need for investors for real investment trusts because they considered offering more liquid investment vehicles that formed part of a well-diversified investment.

## **2.5. Conclusion and knowledge gap**

Even though, the aforementioned empirical review tried to demonstrate different findings as per their study area and countries context, it does not necessarily mean that it would replicate elsewhere. Moreover; the target population or frame of reference, and research methodology is different among countries and researchers. In addition, in the above studies revealed mixed results, which one's conclusion contradicts with another.



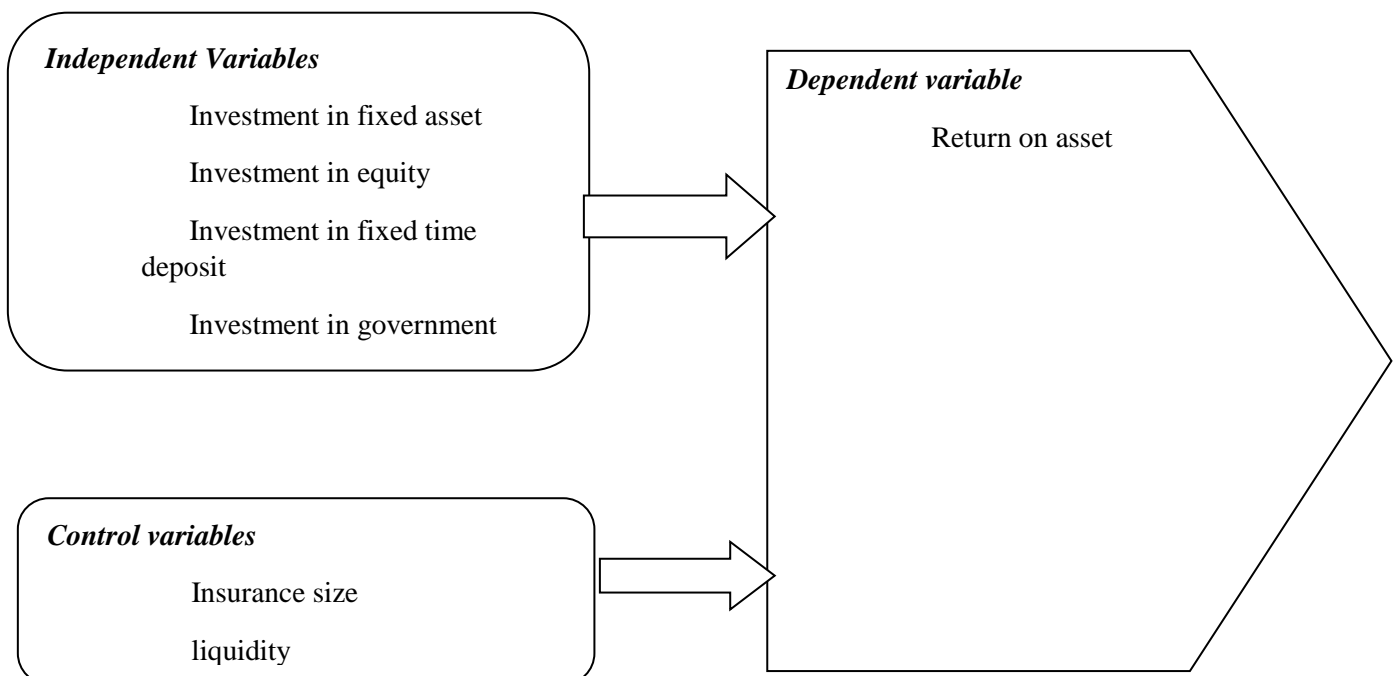
On the above stated literature review some studies founds that there is a positive and significant relationship between investment and insurance performance and other studies founds that there is a negative and significant relationship between investment and insurance performance.

But as reviewed the related literature, research on the effect of investment on insurance performance on Ethiopian insurance industry is very scarce. So the researcher intends to work on the effect of investment on performance of Ethiopian insurance companies. Therefore by taking into account above stated issues the researcher seeks to investigate the effect of investment on performance of Ethiopian insurance companies.

## 2.6. Conceptual framework

This conceptual framework were describes the effect of investment on insurance performance. It also describes the effect of different types of investment sources on insurance performance as well as the relationship between the control variables like insurance size, and liquidity with insurance performance. This relationship described in the following diagram:

**Figure 2.1: Schematic Conceptual Framework**



**Source: researcher's personal design**

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

This chapter deals with research methodology used to carry out the research. This study was aim to assess the effect of investment on insurance performance. It comprises research design, target population and method of sampling techniques, method of data collection, presentation and analysis, variable definition and measurement and model specification of the thesis.

#### **3.1 Research design**

The researcher used quantitative type research approach with explanatory type of research Cooper et al. (2003) discussed that explanatory studies unlike descriptive studies, go beyond observing and describing the condition and tries to explain the reasons of the phenomenon. Thus, explanatory research design was used in this research because the study identifies the cause and effect of investment and insurance companies' performance which is appropriate for the objective of the study.

#### **3.2 Research approach**

The quantitative aspect of the research method aimed to obtain data needed to explain the relationship between factor affecting of insurance companies' performance in Ethiopia. Hence, survey design (structured review of documents) is applied for this study. A survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population. From sample results, the research generalizes or makes claims about the population (Creswell, 2009).

#### **3.3. Target Population of the Study**

The study populations are all insurance companies registered by NBE. Currently, there are seventeen insurance companies in Ethiopian that are one government owned and sixteen privately owned insurance companies these are; Ethiopian insurance corporation, Awash insurance S.C, African insurance S.C, National insurance company of Ethiopia S.C, Nyala insurance S.C, Nile insurance S.C, United insurance S.C, Global insurance S.C, Nib insurance S.C, Lion insurance S.C, Oromia Insurance S.C, Abay insurance S.C, Berhan

insurance S.C, Tsehay insurance S.C, Ethio life and general insurance S.C, Lucy insurance S.C and Bunna insurance S.C.

### **3.4. Sample and Sampling Techniques**

The total populations of insurance companies are seventeen but for the study purpose the researcher used sample of nine insurance companies. These insurances were selected due to their market share, total assets and profit. As NBE (2015/16) annual report stated that these nine insurance companies together accounted for 70% of the market share based on their number of branch and capital held by all Ethiopian insurance companies. In addition, according to their audited financial statements, sample of nine insurance companies has covered 86% and 96% of total assets and profit within the total population respectively as calculated their average amount with in the period of eleven years from 2006 to 2016. Based on these reasons, it is reasonable that sample of eight insurance companies can properly refer the total number of the population.

Due to above facts, the sample of insurance companies are Ethiopian insurance corporation, Awash insurance S.C, African insurance S.C, National insurance company of Ethiopia S.C, Nyala insurance S.C, Nile insurance S.C, United insurance S.C, Nib insurance s.c and Global insurance S.C. According to Suheyli (2015) as cited in Singh (2006) when the subjects used in the sample is homogeneous, using purposive sampling technique is appropriate. Hence, the researcher employed purposive sampling method to draw the sample from the population and meet the study objective. The matrix for the frame is 11\*9 that includes 99 observations.

### **3.5 Data sources and instruments**

This study obtained the necessary data through secondary data sources. Secondary data on sample of nine insurance companies are obtained from insurance companies' audited financial statements and annual reports filed with NBE through document review. Furthermore, secondary data collected from books, journals and website.

### **3.6. Data presentation and Data analysis**

To achieve objective of the study, the study only concentrated on quantitative analysis. Hence, the researcher used econometric model to identify and measure the effect of investment on performance of Ethiopian insurance companies and used Ordinary Least Square (OLS) method using Eviews-8 econometric software package for the study.

According to Brooks (2008) regression is concerned with describing and evaluating the relationship between a given variable (usually called the dependent variable) and one or more other variables (usually known as the independent variables). Thus, the researcher adopted panel data regression model to examine the effect of investment on insurance companies' performance.

As stated by Brooks (2008) panel data is favored for situation often arises in financial modeling where we have data comprising both time series and cross-sectional elements. In addition, we can address a broader range of issues and tackle more complex problems with panel data than would be possible with pure time-series or pure cross-sectional data alone. Accordingly, the study model focused on panel data technique that comprises both cross-sectional elements and time-series elements; the cross-sectional element is reflected by the different Ethiopian insurance companies (nine) and the time-series element is revealed by the period of study (2006-2016). Therefore, the collected panel data is analyzed using descriptive statistics, correlations and multiple linear regression analysis. The rationale for choosing Ordinary Least Square (OLS) is that, if the Classical Linear Regression Model (CLRM) assumptions hold true, then the estimators determined by OLS will have a number of desirable properties, and are known as Best Linear Unbiased Estimators (Brooks, 2008). Diagnostic checking is done to test whether the sample is consistent with the following assumptions. According to Brooks (2008), the assumptions of ordinary least squares are:

I. The errors have zero mean ( $E(u_t) = 0$ )

II. Variance of the errors is constant ( $\text{Var}(u_t) = \sigma^2 < \infty$ )

III. Covariance between the error terms over time is zero ( $\text{cov}(u_i, u_j) = 0$  for  $i \neq j$ )

IV. Test for Normality ( $u_t \sim N(0, \sigma^2)$ )

V. Multicollinearity Test

If all the above assumptions are consistent with the sample, E-view result will be accurate and reliable. The following tests are done in this research to test the above assumptions.

### **I. The errors have zero mean ( $E(u_t) = 0$ )**

Relay on Brooks (2008), the first assumption required is that the average value of the errors is zero. In fact, if a constant term is included in the regression equation, this assumption will never be violated.

### **II. Variance of the errors is constant ( $\text{Var}(u_t) = \sigma^2 < \infty$ ) (heteroscedasticity)**

According to Brooks (2008), the variance of the errors is constant this is known as the assumption of homoscedasticity. If the errors do not have a constant variance, they are said to be heteroscedastic. If heteroscedasticity occur, the estimators of the ordinary least square method are inefficient and hypothesis testing is no longer reliable or valid as it will underestimate the variances and standard errors. There are several tests to detect the Heteroscedasticity problem, which are Park Test, Glesjer Test, Breusch-Pagan-Goldfrey Test, White's Test and Autoregressive Conditional Heteroscedasticity (ARCH) test. In this study, the popular white test was employed to test for the presence of heteroscedasticity. The hypothesis for the Heteroscedasticity test was formulated as follow;

H0: There is no Heteroscedasticity problem in the model.

H1: There is Heteroscedasticity problem in the model.

$\alpha = 0.05$

Decision Rule: Reject H0 if p-value is less than significance level. Otherwise, do not reject H0.

### **III. Covariance between the error terms over time is zero ( $\text{cov}(u_i, u_j) = 0$ for $i \neq j$ ) (Autocorrelation)**

According to Brooks (2008), when the error term for any observation is related to the error term of other observation, it indicates that autocorrelation problem exist in this model. In the case of autocorrelation problem, the estimated parameters can still remain unbiased and consistent, but it is inefficient. The result of T-test, F-test or the confidence interval will become invalid due to the variances of estimators tend to be underestimated or overestimated. Due to the invalid hypothesis testing, it may lead to misleading results on the significance of

parameters in the model. Therefore, the study test for the existence of autocorrelation, the popular Durbin–Watson test and Breusch-Godfrey test were employed.

H0: There is no autocorrelation problem in the model.

H1: There is autocorrelation problem in the model.

$\alpha = 0.05$

Decision Rule: Reject H0 if p-value less than significance level. Otherwise, do not reject H0.

#### **VI. Normality ( $ut \sim N(0, \sigma^2)$ )**

As per Brooks (2008) normality tests are used to determine if a data set is well-modeled by a normal distribution. With the normality assumption, ordinary least square estimation can be easily derived and would be much more valid and straight forward. This study used Jarque Bera Test (JB test) to find out whether the error term is normally distributed or not. The hypothesis for the normality test was formulated as follow:

H0: Error term is normally distributed

H1: Error term is not normally distributed

$\alpha = 0.05$

Decision Rule: Reject H0 if p-value of JB tests less than significance level. Otherwise, do not reject H0.

#### **IV. Multicollinearity**

According to Brooks (2008), Multicollinearity will occur when some or all of the independent variables are highly correlated with one another. If the multicollinearity occurs, the regression model is unable to tell which independent variables are influencing the dependent variable. This study used high pair-wise correlation coefficients method to test the presence of multicollinearity problem in a regression model, because it shows the correlation of independent variables between each other one by one. Malhotra (2007) stated that multicollinearity problems exists when the correlation coefficient among explanatory variables should be greater than 0.75. However, Brooks (2008) mentioned that if the

correlation coefficient along with the independent variables is 0.8 and above, multicollinearity problems will be existed.

### 3.7 Model specification

The researcher used the multiple linear regression and Random effect model. Modelling is based on panel data techniques. Panel data comprises of both cross-sectional elements and time-series elements; the cross-sectional element is reflected by the different Ethiopian insurance companies and the time-series element is reflected in the period of study (2006-2016). The study used a panel regression technique to analyse the effect of investment on performance of insurance companies. The superiority of panel data in question is because it contains more information; it incorporates variability among cross section units and across time (Gujarati, 2004).

$$ROA_{it} = \beta_0 + \beta_1 IFA_{it} + \beta_2 IGS_{it} + \beta_3 FTD_{it} + \beta_4 EI_{it} + \beta_5 IS_{it} + \beta_6 LR_{it} + \varepsilon$$

Where:

ROA= Return on asset;

IFA= investment in Fixed Asset

IGS= investment in government securities

FTD= investment in fixed timed deposit

EI= investment in equity

IS= insurance size

LR = liquidity ratio

$\varepsilon$  =is the error component for company i at time t assumed to have mean zero  $E[\varepsilon_{it}] = 0$

$\beta_0$ = Constant

$\beta = 1, 2, 3 \dots 6$  are parameters to be estimate;

i = Insurance company  $i = 1 \dots 9$ ; and t = the index of time periods and  $t = 1 \dots 11$

### **3.8. Variables description and Hypothesis development**

#### **❖ Dependent Variable**

Profit is the ultimate goal of Insurance companies. All the strategies designed and activities performed thereof are meant to realize this grand objective. Therefore to measure performance the dependent variable will be profitability. To calculate the profitability of Insurance companies there are variety of ratios used of which ROA and ROE are the major ones Alexandru (2008). For this research ROA was used because to identify & measure from which investment can get higher return.

#### **Return on Asset (ROA)**

The study employed return on assets to measure performance of insurance companies. According to Daniel et al. (2013) mentioned that return on total assets (ROA) is calculated as net profit before tax by total assets. This is probably the most important single ratio in comparing the efficiency and financial performance of insurance companies as it indicates the returns generated from the assets that Insurers owns. In addition, as stated by Ana-Maria et al. (2014), the return on total assets ratio represents one of the most used methods of quantifying financial performance. It was developed in 1919 by Dupont and it emphasizes the company's ability to efficiently use its assets. As indicated by Mirie (2015), financial performance is a measure of an organization's earnings, profits, appreciations in value as evidenced by the rise in the entity's share price.

As explained by Amal (2012) return on assets determines an organization's ability to make use of its assets and return on equity reveals what return investors take for their investments. The advantages of financial measures are the easiness of calculation and that definitions are agreed worldwide. Accordingly, in most previous studies on insurance sector, return on asset (ROA) is being used as a proxy of performance (Arif et al., 2015; Adrian, 2014; Yuvaraj et al., 2013 and Mirie, 2015). Thus, the study has taken return on asset (ROA) as dependent variable to measure performance of Ethiopian insurance companies.

#### **❖ The Independent Variables**

**Investment in fixed asset (IFA):** it includes investment in fixed asset securities. It is measured natural logarithm of total fixed asset investment. Relay on the variables that used



on their studies for Olatunji et al. (2014), Veronica (2013) and Mariam (2013), their final results were fixed asset has a positive and significant effect on performance of insurance companies.

IFA= Natural log. Investment in fixed asset

*H<sub>1</sub>: Investment in fixed asset has a positive and significant effect on performance of insurance companies.*

**Investment in government securities (IGS):** includes investment in Treasury bill and other securities issued by national government.. Relay on the variables that used on their studies for Mariam (2013) and Veronica (2013), their final results were government security has a positive and significant effect on performance of insurance companies.

IGS= Natural log. Investment in government securities

*H<sub>2</sub>: Investment in government security has a positive and significant effect on performance of insurance companies.*

**Investment in fixed time deposit (FTD):** it includes investment made in form of saving deposit, special saving account & time deposit by the insurance companies. It is the natural logarithm of total deposits made by the insurance companies over total investment. Relay on the variables that used on their studies for Josephet al (2011) and Damaris (2011), their final results were investment in fixed time deposit has a positive and significant effect on performance of insurance companies.

FTD= Natural log. Investment in fixed time deposit

*H<sub>3</sub>: Investment in fixed time deposit has a positive and significant effect on performance of insurance companies.*

**Investment in Equity (EI):** it includes investment in other company shares or stocks. It is the natural logarithm of total investment in stock over total investment made by the insurance companies. Relay on the variables that used on his studies of Husain (2016), his final conclusion was investment in equity has a positive and significant effect on performance of insurance companies.

EI= Natural log. Investment of equity investment

*H<sub>4</sub>: Investment in equity has a positive and significant effect on performance of insurance companies.*

### ❖ Control variables

**Insurance size (IS):** Size variable is the natural logarithm of total insurance assets. This control variable represents the effects of insurance size in the models. Size variable is used in most of the recent studies in the literature. Relay on the variables that used on their studies for Adams et al. (2003), Amal et al. (2012), Meaza (2014), Yuvaraj et al. (2013) and Emine (2015), their final results were insurance size has a positive and significant effect on performance of insurance companies.

**IS=** Natural log. Total insurance assets

*H<sub>5</sub>: Insurance size has a positive and significant effect on performance of insurance companies.*

**Liquidity ratio (LR):** Liquidity of the insurance companies in this study was measured by the ratio of current assets to current liabilities. Liquidity describes the degree to which an asset or security can be quickly bought or sold in the market without affecting the asset's price. Relay on the variables that used on their studies for Mohammed (2014), Meaza (2014), Yuvaraj et al. (2013) and Emine (2015), their findings were Liquidity has a positive and significant effect on performance of insurance companies.

**Liquidity = Current Assets/Current Liabilities.**

*H<sub>6</sub>: Liquidity has a positive and significant effect on performance of insurance companies.*

## CHAPTER FOUR

### DATA ANALYSIS AND PRESENTATION

This chapter of the research paper presents the data analysis and present the outcome of the results. To reach to the possible outcome in the effect of investment on performance of insurance companies in Ethiopia, the research used the annual balanced panel data, where all the variables are observed for each cross-section and each time period. The study has a time series segment spanning from the period 2006 up to 2016 and a cross section segment which considered nine Ethiopian insurance companies that are: EIC, Awash, Global, Nile, Nice, Africa, Nib, Nyala and UNIC. Accordingly, the result of descriptive statistics, correlation analysis, the test of CLRM assumption and result of the regression analysis are presented in the following sub-sections.

#### 4.1. Descriptive Statistics of the Data

The descriptive statistics for the dependent and independent variables for nine insurance of Ethiopia from year 2006 to 2016 with a total of 99 observations are presented below.

**Table 4.1 Descriptive Statistics**

	ROA	EI	IFA	FTD	IS	LR	IGS
Mean	0.096369	7.336586	7.627098	2.655147	8.447184	1.005967	1.575142
Median	0.087412	7.525214	7.641665	0.000000	8.490000	0.992054	0.000000
Maximum	0.393986	8.472739	8.959187	9.703800	9.896890	2.306164	8.268107
Minimum	-0.026528	5.301030	6.129658	0.000000	7.000000	0.262554	0.000000
Std. Dev.	0.054407	0.713602	0.478974	3.764799	0.514576	0.247464	3.029881
Observations	99	99	99	99	99	99	99

*Source: - annual report of sample insurance computed using E-views (2006-2016)*

As indicated in the above table, the profitability measured (ROA) shows that Ethiopian insurance companies has achieved on average before tax profit over the last eleven years. For the total sample, the mean of ROA was 9.63% with a maximum of 39.39% and a minimum of -2.65%. That means most profitable Insurance among the sampled earned 39.39% profit from investment. Regarding the standard deviation, it means the value of ROA deviate from its mean to both sides by 5.44 percent which indicate there was low variation from the mean.

The mean value of the control variable LR was 100.59% and maximum and the minimum value of 230.61% and 26.25% respectively. This result shows that most insurance kept 230.61% of its current asset from the current liability and the less insurance companies kept 26.25%. The standard deviation of the LR was 24.74%.

The average value for equity investment as measured by natural log of total investment was 7.34 with standard deviation of 0.71, maximum of 8.47 and the minimum of 5.30. Form the sample insurance companies maximum level of investment was 8.47.

The average value for total asset which is found on insurance companies as measured by log total asset is 8.44 with standard deviation of 0.51, maximum of 9.89 and minimum of 7. This means most of the sample insurance companies have log of 9.89.

The average value for government securities investment as measured by log of the government securities investment was 1.58 with standard deviation of 3.03, maximum of 8.96 and minimum of zero.

The average value for fixed asset investment as measured by log of the fixed asset investment was 7.62 with standard deviation of 0.48, maximum of 8.27 and minimum of 6.12. This means most of the sample insurance companies are investing on fixed asset.

The average value for fixed time deposit investment as measured by natural log of total investment in fixed time deposit is 2.65 with standard deviation of 3.76, maximum of 9.7 and the minimum of 0. Form the sample insurance companies maximum level of investment was 9.7.

## **4.2 Correlation Analysis**

Correlation measures the degree of linear association between variables. Values of the correlation coefficient are always ranged between +1 and -1. A correlation coefficient of +1 indicates that the existence of a perfect positive association between the two variables, while a correlation coefficient of -1 indicates perfect negative association. A correlation coefficient of zero, on the other hand, indicates the absence of relationship (association) between two variables (Brooks, 2008).The table below shows the correlation matrix among dependent and independent variables.

**Table 4.2 Correlation Matrix**

	ROA	EI	IFA	FTD	IS	LR	IGS
ROA	1.000000						
EI	0.123001	1.000000					
IFA	0.055259	0.445844	1.000000				
FTD	0.209966	0.134620	0.050082	1.000000			
IS	0.507230	0.509106	0.493055	0.151777	1.000000		
LR	0.231129	-0.366308	-0.409289	0.026246	-0.128631	1.000000	-0.053366
IGS	0.300492	0.154690	0.294105	0.114087	0.457357	-0.053366	1.000000

*Source: - annual report of sample insurance computed using E-views (2006-2016)*

This study had calculated correlation of dependent variable with the independent and control variables. From the table equity investment, fixed asset investment, fixed time deposit, investment in government security, Insurance size & liquidity ratio had a positive correlation with return on asset. It refers that when these investments increases, performance of Ethiopian insurance companies will be increase.

### **4.3 Regression model tests**

For valid hypothesis testing and to make data available for reliable results, the test of assumption of regression model is required. Accordingly, the study has gone through the most critical regression diagnostic tests consisting of normality, multicollinearity, heteroskedasticity, autocorrelation and model specification tests accordingly.

#### ***4.3.1 Model Selection (Random Effect versus Fixed Effect Models)***

As Brooks (2008) referring on his book, there are broadly two classes of panel estimator approaches that can be employed in financial research: fixed effects models and random effects models. The choice between both approaches is done by running a Hausman test. To conduct a Hausman test the number of cross section should be greater than the number of coefficients to be estimated. But, in this study the numbers of cross section aren't greater than the number of coefficients to be estimated so it is not possible to conduct a Hausman test. Therefore a fixed cross-sectional effect is specified in the estimation so as to capture unobserved idiosyncratic effects of different insurance companies. Thus, to determine whether the fixed effects are necessary or not this study run the Hausman specification test as recommended by Brooks (2008) and others. The hypothesis for the model selection test was formulated as follow;

H0: Random effects model is appropriate.

H1: Fixed effects model is appropriate.

$\alpha = 0.05$

Decision Rule: Reject H0 if P value is less than significant level 0.05. Otherwise, do not reject H0.

### Table 4.3 Hausman Test

Correlated Random Effects - Hausman Test  
Equation: EQ01  
Test cross-section random effects

---

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	3.846819	6	0.6974

---

Source: *annual report of sample insurance computed using E-views (2006-2016)*

The Hausman model selection test for this study has a p-value of 0.6974 for the regression models. Thus, the null hypothesis which is random effect model appropriate was accepted and the research used the random effect model.

#### **4.3.2 Tests for the Classical Linear Regression Model (CLRM) assumptions**

To maintain the data validity and robustness of the regressed result of the research, the basic classical linear regression model (CLRM) assumptions must be tested for identifying any misspecification and correcting them so as to augment the research quality (Brooks,2008). There are different CLRM assumptions that need to be satisfied and that are tested in this study, which are: errors equal zero mean test, heteroscedasticity, autocorrelation, normality, multicollinearity and model specification test.

### I. The errors have zero mean ( $E(u_t) = 0$ )

This part shows the test for the assumptions of classical linear regression model (CLRM) namely the error have zero mean, heteroscedasticity, autocorrelation, normality and multicollinearity.

Relay on Brooks (2008), the first assumption required is that the average value of the errors is zero. In fact, if a constant term is included in the regression equation, this assumption will never be violated. Hence, study's regression model has included a constant term, so that this assumption was not violated.

### II. Test for heteroskedasticity assumption ( $\text{var}(u_t) = \sigma^2 < \infty$ )

As indicated by Brooks (2008), this assumption requires that the variance of the errors to be constant. If the errors do not have a constant variance, it is said that the assumption of homoscedasticity has been violated. This violation is termed as heteroscedasticity. In this study test was used to test for existence of heteroscedasticity across the range of explanatory variables.

H0: The variance of the error is homoscedasticity

H1: The variance of the error is heteroscedasticity

#### Table 4.4 Heteroskedasticity Test

Heteroskedasticity Test: White

---

F-statistic	1.396398	Prob. F(7,89)	0.2168
Obs*R-squared	9.599156	Prob. Chi-Square(7)	0.2124
Scaled explained SS	6.151139	Prob. Chi-Square(7)	0.5222

---

Source: *annual report of sample insurance computed using E-views (2006-2016)*

In this case, both the F- statistic and R-squared versions of the test statistic give the same conclusion that there is no evidence for the presence of heteroscedasticity, since the p-values are considerably in excess of 0.05 and also the third version of the test statistic, ‘Scaled explained SS’, which as the name suggests is based on a normalised version of the explained sum of squares from the auxiliary regression, suggests also that there is no evidence of heteroscedasticity. Thus, the conclusion of the test has shown that no evidence of heteroscedasticity and the null hypothesis is accepted.

### III. Test for autocorrelation assumption ( $cov(u_i, u_j) = 0$ for $i \neq j$ )

This assumption stated that the covariance between the error terms over time (or cross sectionals, for that type of data) is zero. In other words, it is assumed that the errors are uncorrelated with one another. If the errors are not uncorrelated with one another, it would be stated that they are auto correlated or that they are serially correlated (Brooks, 2008).

The study used both Durbin-Watson (DW) and Breusch-Godfrey test for the existence of autocorrelation. In addition, lagged value of a variable (ROA (-1)) is used in this research in order to adjust the autocorrelation. As per Brooks (2008) lagged the value is simply the value that the variable took during a previous period. So from the regression result DW is 1.89 it is closed to two.

**Table 4.5 Breusch-Godfrey Serial Correlation LM Test**

Breusch-Godfrey Serial Correlation LM Test:

---

F-statistic	2.132834	Prob. F(3,87)	0.1019
Obs*R-squared	6.645230	Prob. Chi-Square(3)	0.0841

---

**Source:** *annual report of sample insurance computed using E-views (2006-2016)*

Both versions of the test; F- statistic and R-squared version of the test indicate that the null hypothesis of no autocorrelation should not be rejected, since the p-values are considerably in



excess of 0.05. The conclusion from both versions of the test described that the null hypothesis of no autocorrelation is not rejected.

## VI. Normality ( $ut \sim N(0, \sigma^2)$ )

As per Brooks (2008) normality tests are used to determine if a data set is well-modeled by a normal distribution. With the normality assumption, ordinary least square estimation can be easily derived and would be much more valid and straight forward. This study used JarqueBera Test (JB test) to find out whether the error term is normally distributed or not. The hypothesis for the normality test was formulated as follow:

H0: Error term is normally distributed

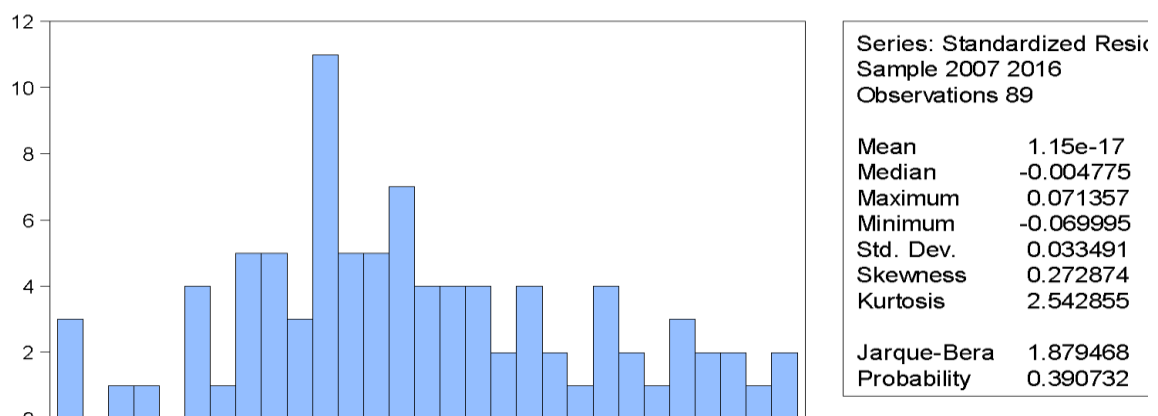
H1: Error term is not normally distributed

$\alpha = 0.05$

Decision Rule: Reject H0 if p-value of JB tests less than significance level. Otherwise, do not reject H0.

This means that the p-value given at the bottom of the normality test screen should be greater than 0.05 to not reject the null of normality hypothesis at the 5% level. The test result for the model provides a p-value of greater than 5% evidencing that residuals are normally distributed and the histogram is bell shape for both models.

**Figure 4.1 Normality Test Result**



Source: annual report of sample insurance computed using E-views 8

The above diagram witnesses that normality assumption holds, i.e., the coefficient of kurtosis was close to 3, skewness was zero and the Bera-Jarque statistic has a P-value of 0.889 implying that the data were consistent with a normal distribution assumption. Based on the statistical result, the study failed to reject the null hypothesis of normality at the 5% significance level.

## V. Test for multicollinearity

As referred by Brooks (2008), an implicit assumption that is made when using the OLS estimation method is that the explanatory variables are not correlated with one another. If there is no relationship between the explanatory variables, they would be said to be orthogonal to one another. However, a problem occurs when the explanatory variables are very highly correlated with each other, and this problem is known as multicollinearity.

Malhotra (2007) stated that multicollinearity problems exists when the correlation coefficient among explanatory variables should be greater than 0.75. However, Brooks (2008) mentioned that if the correlation coefficient along with the independent variables is 0.8 and above, multicollinearity problems will be existed.

**Table 4.6 Correlation Matrix between independent variables**

	EI	IFA	FTD	IS	LR	IGS
EI	1.000000					
IFA	0.445844	1.000000				
FTD	0.134620	0.050082	1.000000			
IS	0.509106	0.493055	0.151777	1.000000		
LR	-0.366308	-0.409289	0.026246	-0.128631	1.000000	-0.053366
IGS	0.154690	0.294105	0.114087	0.457357	-0.053366	1.000000

*Source: annual report of sample insurance computed using E-views 8*

The method used in this study to test the existence of multicollinearity was by checking the Pearson correlation between the independent variables. The correlations between the independent variables are shown in table 4.6 above. All correlation results are below 0.75, which indicates that multicollinearity is not a problem for this study.

## 4.6. Result of the regression Analysis

### 4.6.1. Regression result

$$ROA_{it} = -0.34 + 0.0233IFA_{it} + 0.00288IGS_{it} + 0.00042FTD_{it} - 0.0044EI_{it} + 0.0226IS_{it} + 0.0828LR_{it} + \varepsilon$$

To identify the appropriate methodology, the study performed Hausman test. It is used to test whether fixed-effect model versus the random effect model is the best model. Therefore, the test results show that random effect model is appropriate as per Table 4.3.

The output of the econometrics model by random effect shows that strong explanatory power of the model based on the result of  $R^2$ . The  $R^2$  measures the success of the regression in predicting the values of the dependent variable in the sample. In standard settings, may be interpreted as the fraction of the variance of the dependent variable explained by the independent variables. The statistic will equal one if the regression fits perfectly, and zero if it fits no better than the simple mean of the dependent variable. As it said before,  $R^2$  values indicate the explanatory power of the model and in this study adjusted  $R^2$  value which takes into account the loss of degrees of freedom associated with adding extra variables were inferred to see the explanatory powers of the models.

From the Table 4.7 below the value of  $R^2$  is 0.64 and the value of adjusted  $R^2$  is 0.60. There is a rule of thumb which can be used to determine the  $R^2$  value is as follows: 0.1: poor fit, 0.11 to 0.30: modest fit, 0.31 to 0.50: moderate fit, >0.50: strong fit (Muijs, 2004). Here in the study  $R^2$  of 0.60 indicates that the formula is strongly fit for predicting the ROA. This indicates that the independent variables are collectively 60 percent related to the dependent variable ROA. Another way, that of changes that occur in the dependent variable, 60% are attributable to the independent variables.

In the regression outputs the beta coefficient may be negative or positive; beta indicates that each variable's level of influence on the dependent variable. The positive beta coefficient means that variable has a positive impact on the dependent variable, and a negative one has a negative impact on the dependant variable. It tell us on average when independent variable increase by 1 percent the dependent variable is increased or decreased by beta amount but the independent variables should a statistically significant impact on the dependent variable. On this study FTD, IFA, IS, LR and IGS, have a positive impact on ROA and EI has a negative impact on ROA.

On the other hand the P-value indicates at what percentage or precession level of each variable is statistically significant or insignificant in explaining ROA. On the regression output IFA, IS, LR and IGS are significant impact on return on asset. This is because the P value of the stated variables is less than 5% significance level valued 0.0348, 0.0462, 0.0001, 0.0310, 0.0000 and 0.0310 for IFA, IS, LR and IGS respectively. However and FTD have insignificant impact on return on asset, because of the P value is greater than 5% significant level, value 0.6674 and 0.4819 for EI and ID respectively.

The  $\beta_0$  is the constant, where the regression line intercepts the y axis, representing the amount the dependent will be when all the independent variables are 0. Here  $\beta_0$  is -0.346269 if the independent variable is zero and the probability of the coefficient is significant.

**Table 4. 7 Regression result**

Dependent Variable: ROA  
 Method: Panel EGLS (Cross-section random effects)  
 Date: 12/26/17 Time: 13:40  
 Sample (adjusted): 2007 2016  
 Periods included: 10  
 Cross-sections included: 9  
 Total panel (unbalanced) observations: 89  
 Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.346269	0.093562	-3.700966	0.0004
EI	-0.004357	0.006167	-0.706561	0.4819
IFA	0.023395	0.010896	2.147139	0.0348
FTD	0.000417	0.000966	0.431344	0.6674
IS	0.022579	0.011150	2.025046	0.0462
LR	0.082893	0.020749	3.995078	0.0001
IGS	0.002884	0.001313	2.195952	0.0310
DUM515	0.300658	0.041184	7.300394	0.0000
ROA(-1)	0.158811	0.072345	2.195193	0.0310
Effects Specification				
			S.D.	Rho
Cross-section random			0.000000	0.0000
Idiosyncratic random			0.032920	1.0000
Weighted Statistics				

Mean dependent			
R-squared	0.635314	var	0.099579
Adjusted R-squared	0.598846	S.D. dependent var	0.055458
S.E. of regression	0.035125	Sum squared resid	0.098702
F-statistic	17.42087	Durbin-Watson stat	1.891932
Prob(F-statistic)	0.000000		

---

Unweighted Statistics

---

Mean dependent			
R-squared	0.635314	var	0.099579
Sum squared resid	0.098702	Durbin-Watson stat	1.891932

---

Source: *annual report of sample insurance computed using E-views 8*

According to the result obtained from Table 4.7 clearly show that there is strong and significant relationship between dependent and independent variables of IFA, IS, LR and IGS with ROA which are being modelled in this study. Let see each variables one by one.

### ***Government securities***

***H<sub>1</sub>***: *Investment in Government securities has a positive and significant effect on performance of insurance companies.*

According to the regression result of Government securities (GS) has a positive relationship with Ethiopian insurance companies' performance by a coefficient estimate of 0.002884. This means that holding other independent variables constant and when one percent increases in Government securities, consequently it increases return on asset (ROA) of Ethiopian insurance companies by 0.2884% and the p value of Government securities (GS) is 0.0310 reveals that it is statistically significant at 5% level of significance. Accordingly, the result supports the working hypothesis that Government securities has positive and statistically significant effect on performance of insurance companies in Ethiopia for the period of 2006 to 2016. So the researcher found that a relatively strong and significant relationship between investment in government securities and return on asset. Thus, this outcome is consistent with prior study of Veronica (2013) that point out the positive significant effect of government securities on insurance performance. The study findings also reveal that there is a moderate positive correlation of 0.542 between return on assets and investment in Government securities. This implies that as insurance companies increase their investment in Government

securities, the return on assets also increases. This is an indication that an increase in the amount invested in Government securities increase the income earned by the insurance firms thus improving their financial performance. In addition the finding of the researcher is consistent and in line with Mariam (2013). She concludes that regard to investment in government securities, the study concludes that an investment in government securities has a positive impact on the overall profitability of the insurance industry. An increase in investments in the government securities lead to increased profitability of the insurance industry.

### ***Fixed time deposit***

***H<sub>2</sub>: Investment in Fixed time deposit has a positive and significant effect on performance of insurance companies.***

According to the regression result of fixed time deposit (FTD) has a positive relationship with Ethiopian insurance companies' performance by a coefficient estimate of 0.000417. This means that holding other independent variables constant and when one percent increases in fixed time deposit, consequently it increases return on asset (ROA) of Ethiopian insurance companies by 0.0417%. However, the p value of fixed time deposit (FTD) is 0.6674 reveals that it is statistically insignificant at 5% level of significance. Accordingly, the result didn't support the working hypothesis that fixed time deposit has positive and statistically significant effect on performance of insurance companies in Ethiopia for the period of 2006 to 2016. Similar with the initial hypothesis, the result of the regressions analysis has no significant impact on insurance company's financial performance even at 10% significance level. This implies that the increase or decrease in fixed time deposits has not statistical significant effect on insurance performance. But this finding is contradict with Veronica (2013). She concludes that there is a positive and significant relationship between return on assets and the amount of funds invested in certificates of deposits by the insurance companies in Kenya. This implies that an increase in the investment on deposits with other financial institutions improves the return on assets of the firms. This is an indication that when insurance firms increase the amount of funds invested as deposits they earn more income that enhances their financial performance. This finding also contradict with Mariam (2013). She concludes that there is an inverse relationship between Overall profitability of the Insurance industry and Bank Deposits. More over the finding of this thesis is contradict with Shu-Hua (2014). He concludes that there is a positive and significant relationship between return on

assets and the amount of funds invested in bank deposits by the insurance companies in Taiwan.

### ***Equity investment***

*H<sub>3</sub>: Investment in Equity has a positive and significant effect on performance of insurance companies.*

According to the regression result of equity investment (EI) has a negative relationship with Ethiopian insurance companies' performance by a coefficient estimate of -0.004357. This means that holding other independent variables constant and when one percent increases in equity investment, consequently it decreases return on asset (ROA) of Ethiopian insurance companies by 0.4357%. However, the p value of equity investment (EI) is 0.4819 reveals that it is statistically insignificant at 5% level of significance. Accordingly, the result didn't support the working hypothesis that equity investment has positive and statistically significant effect on performance of insurance companies in Ethiopia for the period of 2006 to 2016. This finding is consistent with consistent with Mariam (2013). She concludes that there is an inverse relationship between Overall profitability of the Insurance industry and equity investment. But the researcher result is negative and insignificant effect on return on asset. This implies that the increase or decrease in equity investment has not statistical significant effect on return on asset. However the finding of the researcher is contradicted with Veronica (2013). She concludes that an increased investment on stocks both quoted and unquoted improves the financial performance of the insurance firms. However, it was established that there was a very weak correlation between investment in corporate bonds and return on assets.

### ***Fixed asset***

*H<sub>4</sub>: Investment in fixed asset has a positive and significant effect on performance of insurance companies.*

According to the regression result of fixed asset (FA) has a positive relationship with Ethiopian insurance companies' performance by a coefficient estimate of 0.023395. This means that holding other independent variables constant and when one percent increases in fixed asset, consequently it increases return on asset (ROA) of Ethiopian insurance companies by 2.3395% and the p value of fixed asset is 0.0348 reveals that it is statistically

significant at 5% level of significance. Accordingly, the result supports the working hypothesis that fixed asset has positive and statistically significant effect on performance of insurance companies in Ethiopia for the period of 2006 to 2016. Thus, this outcome is consistent with prior study of Veronica (2013) that point out the positive significant effect of fixed asset on performance. She concludes that an increased investment on real estate or fixed assets improves the financial performance of the insurance firms. So insurance firms are benefited by increasing the share of investment in fixed asset. This is due to insurance company may be increases rent revenue and decreases rent expenses by increasing the share of fixed asset on the total asset portfolio. This finding also consistent with Mariam (2013). She concludes that there is direct relationship between return on asset of the Insurance industry and fixed asset investment.

### ***Insurance size***

*H<sub>5</sub>: Insurance size has a positive and significant effect on performance of insurance companies.*

According to the regression result of insurance size (IS) has a positive relationship with Ethiopian insurance companies' performance by a coefficient estimate of 0.022579. This means that holding other independent variables constant and when one percent increases in insurance size, consequently it increases return on asset (ROA) of Ethiopian insurance companies by 2.2579% and the p value of insurance size is 0.0462 reveals that it is statistically significant at 5% level of significance. Accordingly, the result supports the working hypothesis that insurance size has positive and statistically significant effect on performance of insurance companies in Ethiopia for the period of 2006 to 2016. This finding is consistent with Charumathi (2012), concludes that profitability of life insurers is positively and significantly influenced by insurance size. In addition Almajali and et al (2012) concludes that there is a positive statistical effect of Size on the financial performance of Jordanian Insurance Companies. Moreover Malik (2011) also find significantly positive association between size of the company and profitability. However this outcome is inconsistent with prior study of Meaza (2014) that point out that there is a negative and insignificant effect of insurance size on insurance performance.



### ***Liquidity ratio***

*H<sub>6</sub>: Liquidity ratio has a positive and significant effect on performance of insurance companies.*

According to the regression result of liquidity ratio (LR) has a positive relationship with Ethiopian insurance companies' performance by a coefficient estimate of 0.082893. This means that holding other independent variables constant and when one percent increases in liquidity ratio, consequently it increases return on asset (ROA) of Ethiopian insurance companies by 8.2893% and the p value of liquidity ratio is 0.0001 reveals that it is statistically significant at 1% level of significance. Accordingly, the result supports the working hypothesis that liquidity ratio has positive and statistically significant effect on performance of insurance companies in Ethiopia for the period of 2006 to 2016. However this outcome is inconsistent with prior study of Meaza (2014) that point out that there is a negative and insignificant effect of liquidity ratio on insurance performance.

**Table 4.8 Summary of actual and expected signs of explanatory variables on the ROA**

<b>Independent Variables</b>	<b>Alternative Hypothesis on return on asset</b>	<b>Actual effect</b>
IGS	Investment in Government securities has a positive and significant effect on performance of insurance companies	Significant and Positive
FTD	Investment in Fixed time deposit has a positive and significant effect on performance of insurance companies	Insignificant and positive
EI	Investment in Equity has a positive and significant effect on performance of insurance companies	Insignificant and Negative
FA	Investment in fixed asset has a positive and significant effect on performance of insurance companies	Significant and Positive
IS	Insurance size has a positive and significant effect on performance of insurance companies	Significant and Positive
LR	Liquidity ratio has a positive and significant effect on performance of insurance companies	Significant and Positive

**Source: own compilation from the research**

## **CHAPTER FIVE**

### **SUMMARY OF FINDING, CONCLUSION, RECOMMENDATION AND FURTHER RESEARCH**

#### **5.1. Summary of Finding**

The research general objective was to examine the effect of investment on financial performance of insurance companies in Ethiopia. The study used eleven (11) years period of time from 2006-2016 data from nine (9) selected insurance companies in Ethiopia. It carried out by constructing a balanced panel regression model using OLS and as per the Hausman test, random effect model was adopted for secondary data obtained from audited annual report.

The overall result obtained from the regression model indicates that investment has an effect on financial performance of insurance companies in Ethiopia. The dependent variable used to measure insurance financial performance was return on asset and independent variables these are investment in government security, fixed time deposit, equity investment, fixed asset, insurance size and liquidity ratio in order to attain the objective of the study.

From the regression result, investment in government security, fixed asset, insurance size and liquidity ratio had positive and significant effect on Ethiopian insurers' financial performance whereas, fixed time deposit and equity investment insignificant effect on Ethiopian insurance companies' financial performance.

#### **5.2. Conclusion**

The research general objective was to examine the effect of investment on performance of insurance companies in Ethiopia. The study used 11 years data from nine selected insurance companies in Ethiopia from 2006-2016 year. It carried out by constructing a balanced panel regression model based on OLS and random effect (RE) model of the secondary data obtained from the audited annual report of sampled insurance companies in Ethiopia.

The overall result obtained from the regression model indicates that investment has an effect on performance of insurance companies in Ethiopia. The dependent variables used to measure insurance performance was return on asset and in order to achieve the objectives, the study used four independent variables were, equity investment, fixed asset investment, fixed

time deposit and Government securities. Insurance size & liquidity ratio were also taken into consideration as a control variable

From the regression result, Government securities, fixed asset investment, insurance size and liquidity ratio had a positive and significant effect on performance of insurance companies. Fixed time deposit had positive but insignificant effect on performance of insurance companies. However Equity investment had negative and insignificant effect on performance of insurance companies.

- The result shows that Government securities had a positive and significant effect on the performance of insurance companies. This implies that when insurance increase the amount of Government securities it increases their performance.
- Fixed asset investment has a significant effect on the performance of insurance companies. This implies that fixed asset investment has a direct relationship with performance. As insurance invested on fixed asset like building and other intangible assets either for their business or in other industries they can earn higher profit and can also increase their market share.
- Insurance size has a positive and significant effect on the performance of insurance companies. This implies that when insurance companies size increase that can enable it to exploit the economies of scale and scope thus providing it with the ability to significantly reduce its operating costs and enhance its performance.
- Liquidity ratio has a positive & significant effect on the performance of insurance companies. This implies that increase in operating cash flow ratio positively affect the financial performance of insurance companies.
- Fixed time deposit has positive but insignificant effect on performance of insurance companies. This implies that the increase or decrease in fixed time deposits has not statistical significant effect on insurance performance
- Equity investment has negative but insignificant effect on the performance of insurance. This implies that the increase or decrease in equity investment has not statistical significant effect on return on asset.

So the researcher concludes that investment in government securities, investment in fixed asset, insurance size and liquidity ratio has a positive and significant effect on performance of insurance companies.

### **5.3. Recommendation**

The analysis indicated that Government securities were significant related to performance of insurance companies. So, Ethiopian insurance companies should invest in government security in order to generate risk free income.

In addition investments in fixed assets have strong and statistical positive impact on the performance of insurance sectors in Ethiopia. In order to improve insurance performance there should be efficient management of fixed assets. Ethiopian insurance should improve the level of fixed assets investments and the fixed assets should be utilized effectively and productively in order to boost their performance for their shareholders' satisfaction.

Moreover Management bodies of insurance companies should strive to give an emphasis to firm specific factors like insurance size and liquidity ratio. Because, those firm specific factors have significant effect on performance of the insurance company.

### **5.4. Direction for further research**

There is need to carry out a research to establish the factors that explain 47% of the variance on the financial performance of insurance companies in Ethiopia since the studies so far conducted are not comprehensive enough.

In addition the future researcher should focus on the effect of NBE regulation on performance of insurance companies due to restrictions made by the NBE on investment share over the total asset portfolio.

## References

- Abate, G. (2012). Factors Affecting Profitability of Insurance Companies in Ethiopia. Unpublished Master's Thesis. Addis Ababa University.
- Adams, M. & Buckle, M. (2000) .The Determinants of Operational Performance in Bermuda Insurance Market. *Applied Financial Economics* (13) 133-143
- Adrian, R. (2014). The relationship between financial risk and financial performance insurance companies in Kenya.
- Agiobenebo, T. J. & Ezirim, B.C. (2002) Impact of Financial Intermediation on the Profitability of Insurance Companies in Nigeria. *First Bank of Nigeria Quarterly Review* 2 (1) 4-14.
- Alexandru C, Genu G, Romanescu, M.L. 2008.The Assessment of Banking Performances- Indicators of Performance in Bank Area. University of Constant in Brancusi Targu Jiu, Romania.
- Almas, H. & Hans, L.(2008). Investment and performance of firms: Correlation or Causality? *Corporate Ownership & Control / Volume 6, Issue 2, Winter 2008 – Continued – 2.*
- Amal, Y. & Sameer, A. (2012). Factors affecting the financial performance of Jordanian insurance companies listed at Amman stock exchange. *Journal of Management Research*, 2012, Vol. 4, No. 2.
- Amal, y. (2012). Factors affecting the financial performance of Jordanian insurance companies listed at Amman stock exchange. *Journal of management research*, 4(2), 266-289.
- Ana-maria, B. & Ghiorghe, B. (2014). The determinants of financial performance in the Romanian insurance market. *International journal of academic research in accounting, finance and management sciences*, 4(1), 300-308.
- Arif, A. & Showket, A. (2015). Relationship between Financial Risk and Financial Performance: An Insight of Indian Insurance Industry. *International Journal of Science and Research*, 4(11), 1424-1433.
- B. charumathi, (2012). On the Determinants of Profitability of Indian
- Black, K. Jr. and H.D. Skipper Jr. (2000). *Life & health insurance*. New Jersey: prentice hall, inc.
- Boose, M. A. (1993). Investment returns of life insurers: tests of agency theory and its alternatives, *managerial finance*, vol. 19, no. 6, pp. 18–34.

- Brooks, C. (2008). *Introductory econometrics for finance*. 2nd edn, Cambridge university press, New York.
- Cooper, d & Schindler, p. (2003). *Business research methods*. 8th edn, McGraw-Hill, New York. Correlation or causality?
- Creswell, w. (2009). *Research design: quantitative, qualitative and mixed methods approaches*, 3rd edn. Sage publications, California.
- Cummins, J.D. & Grace, e. (1994). Tax management and investment strategies of property-liability insurers, *journal of banking and finance*, vol. 18, no. 1, January, pp. 43–72.
- Damaris, G. (2011). Relationship between investment portfolio choice and profitability of investment companies listed in the Nairobi securities exchange. Unpublished Master's Thesis. Kenyatta University.
- Daniel, S. (2017). The effect of financial risk on performance of insurance companies in Ethiopia. Unpublished Master's Thesis. Addis Ababa University.
- Devraj, (2014) the effect of liquidity on the financial performance of non-financial companies listed at the Nairobi securities exchange.
- Emine, O. (2015). The Effects of Firm-Specific Factors on the Profitability of Non-Life Insurance Companies in Turkey. *International Journal of Financial Studies*, 3, 510-529.
- Eskedar, A. (2016). The effect of investment on performance of commercial banks in Ethiopia.
- Ezekiel, K. (2008). The impact of investment portfolio choice on financial performance of investment companies in Kenya. Unpublished Master's Thesis. University of Nairobi.
- Harvey, C. (2012) investment income.
- Harvey, C. (2012) Investment Income. *Farlex Financial Dictionary*.
- Husain, A. & Nikita, K. (2016). Strategies for long term investment by non-life insurance companies in India. *Arabian Journal of Business and Management Review*, 2016, 6:6 DOI: 10.4172/2223-5833.1000280
- Ibam, (2007). How to evaluate a company before investing. *Stock exchange news sat*. Available from, [www.rediff.com](http://www.rediff.com) [Accessed 20th February, 2011].
- Joseph, O., Frank G. & Lordina, A. (2013). The financial performance of life insurance companies in Ghana. *Journal of banking and finance*, 18, pp. 43-72.
- Kristina, L. (2010). *Investment Analysis and Portfolio Management*, Kaunas, Lithuania, Vytautas Magnus University.
- Life Insurers – An Empirical Study, *World Congress on Engineering Vol I*, London, U.K.

- Lintner, J. (1965). The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets. *The Review of Economics and Statistics*, Vol. 47, No. 1, pp. 13 -37.
- M. Adams & M. Buckle (2003). The determinants of corporate financial performance in the Bermuda insurance market, *Applied Financial Economics*, 13:2, 133-143, DOI: 10.1080/09603100210105030
- Malhotra, N. (2007). *Marketing Research: An applied orientation*, 5th ed., PHI, New Delhi.
- Malik, H. (2011), ‘determinants of insurance companies’ profitability: an analysis of insurance
- Mandelbrot, B.(2004).*The (Mis) Behaviour of Markets*. New York: Basic Books.
- Mariam, A. (2013). The relationship between portfolio holding and financial performance of insurance companies in Kenya.
- Markowitz, H. (1952). The utility of wealth. *The Journal of Political Economy*, 151–158.
- Meaza, M. (2014). Determinants of insurance companies’ profitability in Ethiopia. Unpublished master’s thesis. Addis Ababa University.
- Mirie, M. (2015). Determinants of financial performance in general insurance companies in Kenya. *European Scientific Journal*, 11(1), 288-297.
- Mohammed, G. (2014). Determinants of capital structure and its impact on the performance of Ethiopian insurance industry. Unpublished master’s thesis. Jimma University.
- Mwangi, M. and Murigu, J. (2015) .*The Determinants of Financial Performance In General Insurance Companies in Kenya*. *European Scientific Journal* 11 (1). 196-199
- National Bank of Ethiopia (NBE), annual report for 2015/2016, Addis Ababa
- National bank of Ethiopia (NBE), investment of insurance funds directive (SIB/25/2004), Addis Ababa.
- OECD (2013) pension markets in focus. Organization for economic cooperation and development, annual report.
- Oolatunji, Toyin, Adegbite, Tajudeen, (2014). Investment in fixed assets and firm profitability: empirical evidence from the Nigerian banking sector. Available at <http://www.asianonlinejournals.com/index.php/AJSSMS>. *Asian Journal of Social Sciences and Management Studies*, Vol. 1, No. 3, 78-82, 2014.
- Opppeheimer, H.R. and G.C. Schlarbaum (1983). Investment policies of p-l insurers and pension plans: a lesson from ben-graham, *the journal of risk and insurance*, 50, pp. 611-630.
- Performance in the Bermuda insurance marketresearch, vol. 4, no. 2, pp. 266-289

- Pfeffer, J. & Salancik G.R. (1978). *The External control of organization. Are source dependent perspective.* New York: Haper & row.
- Riadh Aloui, Mohammed Safouane, 2011, Global Financial crisis, extreme interdependences, and contagion effects: The role of economic structure? , *Journal of Banking & Finance*, 35, 130-141.
- Sayed. M. A. and Hogue, M. S. (2009). *Impact of Assets and Liability Management on Profitability: A Study of Public VS Private Commercial Bank in Bangladesh.* (Online: [www.wbicconpro.com/30%5B/%5D.pdf](http://www.wbicconpro.com/30%5B/%5D.pdf)). Retrieved on 5th December, 2010.
- Shiu, Y. (2004) *Determinants of United Kingdom General Insurance Company Performance.* *British Actuarial Journal* 10 (5) 1079-1110)
- Shu-Hua, H. (2003). *A study of investment performance and overall financial performance for life insurers in Taiwan.* Leader University, Taiwan.
- Smith, M.I. (1989). *Investment returns and yields to holders of insurance,* *journal of business*, 62, pp. 81-98.
- Solnik, B. (1974). *Why Not Diversify Internationally rather than Domestically?* *Financial Analysts journal*, 17-34.
- Suheyli, R. (2015). *Determinants of profitability on insurance companies in Ethiopia.* Unpublished master's thesis. Addis Ababa University.
- Teece, D. J. (2009) *Dynamic Capabilities and Strategic Management.* New York, Oxford University Press.
- Trygve, R. S. (2006). *Risk return measurement in portfolio selection and performance appraisal models.* *Journal of financial and quantitative analysis*, financial times prentice hall, New Jersey.
- Vaidyanathan, R. & Sriram, K. (2000) *regulatory framework for investments of insurance and pension funds in India: emerging scenario.*
- Veronica, N. (2013). *The relationship between investment and financial performance of insurance companies in Kenya.* Unpublished Master's Thesis. University of Nairobi.
- Weebly, (2013) *scope of investment management.* Available at [http://imsmo.weebly.com/uploads/1/5/0/7/15071506/investment\\_management\\_unit\\_1.pdf](http://imsmo.weebly.com/uploads/1/5/0/7/15071506/investment_management_unit_1.pdf) accessed on 15/12/2014.
- Yuvaraj, S. & Abate, G. (2013). *A study on the performance of insurance companies in Ethiopia.* *International Journal of Marketing, Financial Services & Management Research*, 2(7), 139-150.
- Zurich. (2010). *Investment management a creator of value in an insurance company*



## Appendix

### Appendix 1:-Descriptive Analysis

	ROA	EI	IFA	FTD	IS	LR	IGS
Mean	0.096369	7.336586	7.627098	2.655147	8.447184	1.005967	1.575142
Median	0.087412	7.525214	7.641665	0.000000	8.490000	0.992054	0.000000
Maximum	0.393986	8.472739	8.959187	9.703800	9.896890	2.306164	8.268107
Minimum	- 0.026528	5.301030	6.129658	0.000000	7.000000	0.262554	0.000000
Std. Dev.	0.054407	0.713602	0.478974	3.764799	0.514576	0.247464	3.029881
Skewness	1.735715	- 1.761346	- 0.172239	0.748960	0.115076	1.246198	1.418301
Kurtosis	10.61783	5.539043	3.068859	1.650360	3.215242	10.63321	3.074881
Jarque-Bera	283.2486	76.21008	0.498770	16.43056	0.401335	260.5986	32.54318
Probability	0.000000	0.000000	0.779280	0.000270	0.818184	0.000000	0.000000
Sum	9.347802	711.6488	739.8285	257.5493	819.3769	97.57879	152.7888
Sum Sq. Dev.	0.284170	48.88581	22.02390	1360.677	25.41972	5.878874	881.2972
Observations	99	99	99	99	99	99	99

## Appendix 2:-Hausman Test

Correlated Random Effects - Hausman Test

Equation: EQ01

Test cross-section random effects

---

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	3.846819	6	0.6974

---

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
EI	-0.007481	-0.006622	0.000101	0.9319
IFA	-0.006136	-0.010298	0.000061	0.5927
FTD	0.002319	0.002116	0.000000	0.6472
IS	0.064407	0.063420	0.000013	0.7847
LR	0.042971	0.043926	0.000088	0.9187
IGS	0.001742	0.001643	0.000000	0.7893

---

Cross-section random effects test equation:

Dependent Variable: ROA

Method: Panel Least Squares

Date: 12/26/17 Time: 13:45

Sample: 2006 2016

Periods included: 11

Cross-sections included: 9

Total panel (unbalanced) observations: 99

---

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.398136	0.126354	-3.150955	0.0023
EI	-0.007481	0.014662	-0.510202	0.6113
IFA	-0.006136	0.015963	-0.384398	0.7017
FTD	0.002319	0.001352	1.715706	0.0900
IS	0.064407	0.012747	5.052546	0.0000
LR	0.042971	0.023841	1.802420	0.0752
IGS	0.001742	0.001705	1.021909	0.3098

---

## Effects Specification

---

Cross-section fixed (dummy variables)

---

R-squared	0.503199	Mean dependent var	0.096369
Adjusted R-squared	0.418379	S.D. dependent var	0.054407
S.E. of regression	0.041493	Akaike info criterion	-3.385305
Sum squared resid	0.141176	Schwarz criterion	-2.987153
Log likelihood	179.1873	Hannan-Quinn criter.	-3.224312
F-statistic	5.932573	Durbin-Watson stat	1.986605
Prob(F-statistic)	0.000000		

---

### Appendix 3:-Test of Heteroskedasticity

Heteroskedasticity Test: White

---

F-statistic	1.396398	Prob. F(7,89)	0.2168
Obs*R-squared	9.599156	Prob. Chi-Square(7)	0.2124
Scaled explained SS	6.151139	Prob. Chi-Square(7)	0.5222

---

Test Equation:  
 Dependent Variable: RESFTD^2  
 Method: Least Squares  
 Date: 12/26/17 Time: 13:48  
 Sample: 1 99  
 Included observations: 99

---

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.001284	0.001822	-0.704811	0.4828
EI^2	1.08E-05	2.10E-05	0.514576	0.6081
IFA^2	5.31E-05	2.96E-05	1.791255	0.0767
FTD^2	-1.75E-06	5.29E-06	-0.331464	0.7411
IS^2	-2.41E-05	2.65E-05	-0.910571	0.3650
LR^2	0.000669	0.000291	2.297072	0.0240
IGS^2	-9.94E-06	8.02E-06	-1.239354	0.2185
DUM54^2	3.48E-05	0.001835	0.018986	0.9849

---

R-squared	0.098960	Mean dependent var	0.001242
Adjusted R-squared	0.028092	S.D. dependent var	0.001541
S.E. of regression	0.001519	Akaike info criterion	-10.06247
Sum squared resid	0.000205	Schwarz criterion	-9.850119
Log likelihood	496.0296	Hannan-Quinn criter.	-9.976603
F-statistic	1.396398	Durbin-Watson stat	1.467730
Prob(F-statistic)	0.216780		

---

### Appendix 4: - Test of autocorrelation

Breusch-Godfrey Serial Correlation LM Test:

---

F-statistic	2.132834	Prob. F(3,87)	0.1019
Obs*R-squared	6.645230	Prob. Chi-Square(3)	0.0841

---

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 12/26/17 Time: 13:50

Sample: 1 99

Included observations: 99

Presample and interior missing value lagged residuals set to zero.

---

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.067240	0.107870	0.623341	0.5347
EI	-0.004393	0.008438	-0.520621	0.6040
IFA	-0.001893	0.011895	-0.159152	0.8739
FTD	0.000271	0.001233	0.219973	0.8264
IS	-0.000926	0.012010	-0.077059	0.9388
LR	-0.014120	0.021846	-0.646334	0.5198
IGS	0.000341	0.001678	0.203057	0.8396
RESID(-1)	0.208945	0.110400	1.892619	0.0617
RESID(-2)	0.148033	0.113498	1.304287	0.1956
RESID(-3)	0.013594	0.116705	0.116479	0.9075

---

		Mean dependent	
R-squared	0.068508	var	4.71E-17
djusted R-squared	-0.027854	S.D. dependent var	0.042771
		Akaike info	
S.E. of regression	0.043363	criterion	-3.341057
Sum squared resid	0.163587	Schwarz criterion	-3.075623
		Hannan-Quinn	
Log likelihood	172.0413	criter.	-3.233729
F-statistic	0.710945	Durbin-Watson stat	2.008054
Prob(F-statistic)	0.697407		

---

### Appendix 5:- Insurance Companies in Ethiopia

<i>S/ N</i>	<i>Name</i>	<i>Established Date</i>	<i>Type(life &amp; non-life insurance)</i>	<i>Ownership</i>	<i>Sample</i>
1	<i>Ethiopian Insurance Corporation</i>	1975	<i>Both</i>	<i>Governmental</i>	<i>Include</i>
2	<i>Africa Insurance company S.C</i>	01/12/1994	<i>Both</i>	<i>Private</i>	>>
3	<i>Awash insurance company S.C</i>	01/10/1994	<i>Both</i>	>>	>>
4	<i>National Insurance company of Ethiopia S.C</i>	23/09/1994	<i>non-life insurance</i>	>>	>>
5	<i>Nyala Insurance company S.C</i>	06/01/1995	<i>Both</i>	>>	>>
6	<i>Nile Insurance company S.C</i>	11/04/1995	<i>Both</i>	>>	>>
7	<i>The United Insurance S.C</i>	01/04/1997	<i>Both</i>	>>	>>
8	<i>Global Insurance Company S.C</i>	11/01/1997	<i>non-life insurance</i>	>>	>>
9	<i>Nib Insurance Company S.C</i>	01/05/2002	<i>Both</i>	>>	>>
10	<i>Lion Insurance Company S.C</i>	01/07/2007	<i>non-life insurance</i>	>>	<i>Exclude</i>
11	<i>Oromia Insurance Company S.C</i>	26/01/2009	<i>Both</i>	>>	>>
12	<i>Abay Insurance Company S.C</i>	06/07/2010	<i>non-life insurance</i>	>>	>>
13	<i>Berhan Insurance Company S.C</i>	24/05/2011	<i>non-life insurance</i>	>>	>>
14	<i>Tsehay Insurance Company S.C</i>	08/03/2012	<i>non-life insurance</i>	>>	>>
15	<i>Ethio life &amp; General Insurance Company S.C</i>	23/10/2008	<i>Both</i>	>>	>>
16	<i>Lucy Insurance Company S.C</i>	2011	<i>non-life insurance</i>	>>	>>
17	<i>Bunna Insurance Company S.C</i>	2012	<i>non-life insurance</i>	>>	>>

Source: <http://www.nbe.gov.et/financial/insurer>

**Appendix: - 6 raw data used for analysis**

<b>Insurance</b>	<b>Year</b>	<b>ROA</b>	<b>FTD</b>	<b>IGS</b>	<b>LR</b>	<b>IS</b>	<b>EI</b>	<b>IFA</b>
EIC	2006	0.071888	8.450919	0	1.230721	9	7.846851	7.809963
EIC	2007	0.088101	8.524738	0	1.207223	9	7.250568	7.793649
EIC	2008	0.090924	8.565395	0	0.992397	9	8.199532	7.797148
EIC	2009	0.097293	8.671381	7.783102	1.106992	9	7.525214	7.816936
EIC	2010	0.117099	0	7.906464	1.087209	9	7.553701	7.886171
EIC	2011	0.112184	8.723857	7.906464	0.991663	9.11	7.768072	8.01339
EIC	2012	0.136635	8.834579	7.906464	0.94054	9.25	7.768868	8.018641
EIC	2013	0.165243	8.992329	7.906464	0.967744	9.32	6.199347	8.15661
EIC	2014	0.192055	0	7.906464	0.984857	9.36	7.777082	8.260788
EIC	2015	0.189145	5.25973	0	0.946154	9.39	8.472739	8.25729
EIC	2016	0.184851	5.494356	7.095993	1.030246	9.45	8.343456	8.27129
AIC	2006	0.060358	0	0	1.104621	8	7.12514	7.06759
AIC	2007	0.065026	0	0	0.989195	8	7.2739	7.302788
AIC	2008	0.068483	0	0	0.817114	8	7.464462	7.500887
AIC	2009	0.05207	0	0	0.785623	8	7.447739	7.648464
AIC	2010	0.11089	0	0	0.832172	8	7.495357	7.741648
AIC	2011	0.079546	0	0	0.784643	8.52	7.606569	8.054253
AIC	2012	0.079825	0	0	0.850715	8.67	7.730124	8.029743
AIC	2013	0.152133	0	0	0.889015	8.75	7.794968	8.061538
AIC	2014	0.111642	0	0	0.860947	8.76	7.841879	8.160414
AIC	2015	0.116114	5.86795	0	0.832184	8.81	7.927499	8.222939
AIC	2016	0.074371	0	0	0.823841	8.92	8.105915	8.342451
GIC	2006	0.04319	0	0	2.306164	7	5.30103	6.777243
GIC	2007	0.054569	0	0	1.54321	8	5.30103	7.124219
GIC	2008	0.045189	0	0	0.846608	8	5.322219	7.379805
GIC	2009	0.05411	0	0	0.961882	8	5.322219	7.388374
GIC	2010	0.078026	0	0	0.839504	8	5.322219	7.477186
GIC	2011	0.036416	0	0	0.919467	7.82	5.78533	7.472401
GIC	2012	0.020302	0	0	0.915967	7.97	6.093422	7.513911
GIC	2013	0.153184	7.447158	5.799341	1.134974	8.09	5.322219	7.52795
GIC	2014	0.160344	0	0	1.351905	8.19	5.322219	7.541837
GIC	2015	0.136417	0	0	1.631958	8.27	5.914872	7.526834
GIC	2016	0.117261	7.954725	0	1.469099	8.34	7.272306	7.513348

NIISC	2006	0.035728	0	0	1.020999	8	7.360889	7.505293
NIISC	2007	0.022735	0	0	0.881023	8	7.557489	7.538246
NIISC	2008	-0.02653	0	0	0.684281	8	7.690486	7.641665
NIISC	2009	0.021733	7.63679	0	0.718439	8	7.690575	7.634165
NIISC	2010	0.137929	8.561282	0	0.92746	8	7.69212	8.959187
NIISC	2011	0.097951	7.924211	6.69897	0.964231	8.43	7.69212	7.674127
NIISC	2012	0.101956	8.203013	0	1.089122	8.56	7.69212	7.672247
NIISC	2013	0.109611	0	6.081014	1.110828	8.63	7.69212	7.805618
NIISC	2014	0.118709	0	0	1.089974	8.69	7.696912	7.900825
NIISC	2015	0.085108	0	0	1.153412	8.76	7.790449	7.929809
NIISC	2016	0.030749	9.439463	0	0.848161	8.81	8	8.217161
NICE	2006	0.062004	0	0	0.732121	7	6.844132	6.872947
NICE	2007	0.084913	6.510037	0	0.948988	8	6.656881	6.906463
NICE	2008	0.057178	6.579405	0	0.931492	8	6.838871	6.904325
NICE	2009	0.046253	0	0	0.811235	8	7.108146	6.909632
NICE	2010	0.058833	0	0	0.992054	8	6.951767	6.902503
NICE	2011	0.002904	7.038252	0	1.120589	7.94	NA	6.890157
NICE	2012	0.174276	0	8.16956	1.052505	9.44	7.218558	6.966751
NICE	2013	0.139289	0	0	1.202347	8.29	7.251075	6.990468
NICE	2014	0.069469	0	0	1.12319	8.41	7.408767	7.040445
NICE	2015	0.393986	9.7038	0	1.208026	9.45	7.433652	6.129658
NICE	2016	0.067779	8.182809	0	1.073893	8.53	7.662405	7.259418
AISC	2006	0.073247	0	0	1.161011	8	7.22417	6.904604
AISC	2007	0.020372	0	0	1.083347	8	7.351274	6.829741
AISC	2008	0.037314	0	0	0.999047	8	7.490225	7.039262
AISC	2009	0.047778	0	0	0.936147	8	7.490225	7.4336
AISC	2010	0.05794	0	0	0.889047	9	7.490225	7.771827
AISC	2011	0.052964	0	0	0.827141	8.63	7.63725	7.956515
AISC	2012	0.053241	0	0	0.671739	8.7	7.724489	8.185582
AISC	2013	0.061893	0	7.176091	0.543082	8.7	7.752509	8.312033
AISC	2014	0.080398	0	0	0.631722	8.74	7.768453	8.296424
AISC	2015	0.072025	0	8.208874	0.364597	8.78	7.794976	8.289974
AISC	2016	0.063905	0	8.268107	0.262554	8.81	7.969975	8.346915
NIC	2006	0.046689	7.079544	0	1.004971	8	7.287455	6.960593
NIC	2007	0.075693	7.306092	0	1.054088	8	7.369364	6.928273



NIC	2008	0.112181	7.42788	0	0.857272	8	7.441404	7.253023
NIC	2009	0.095178	7.688762	0	0.942595	8	7.530419	7.326591
NIC	2010	0.094022	7.885403	0	0.979704	8	7.538193	7.435838
NIC	2011	0.068823	0	0	0.999923	8.49	7.598989	7.539241
NIC	2012	0.075197	0	0	0.969346	8.68	7.719806	7.639799
NIC	2013	0.111177	8.413517	6.954243	1.05178	8.71	7.703181	7.676124
NIC	2014	0.112712	0	0	1.107935	8.81	7.792951	7.766408
NIC	2015	0.075571	0	0	1.099381	8.87	7.84648	8.023626
NIC	2016	0.055997	0	0	1.055975	8.91	8.043905	8.075483
NISCO	2006	0.09449	7	0	1.195607	8	NA	7.531609
NISCO	2007	0.097171	7.342423	0	1.077106	8	7	7.513883
NISCO	2008	0.055724	7.447158	0	0.972081	8	7.146128	7.559445
NISCO	2009	0.134033	7.380392	0	0.906284	8	7.350248	7.665894
NISCO	2010	0.137718	7.281261	0	0.982316	8	7.414706	7.671036
NISCO	2011	0.159094	0	0	1.01763	8.33	7.461108	7.744402
NISCO	2012	0.182026	0	0	1.099539	8.49	7.528158	7.763846
NISCO	2013	0.164699	0	7	1.142285	8.63	7.559799	7.872113
NISCO	2014	0.143369	0	7	1.217589	8.73	7.712894	7.892259
NISCO	2015	0.122722	8.463856	7.021189	1.244564	8.74	7.779012	7.895634
NISCO	2016	0.1099	0	6.60206	1.17449	8.94	8.000772	7.899123
UNIC	2006	0.092162	0	0	1.236161	8	7.138303	7.118581
UNIC	2007	0.100176	0	0	1.111463	8	7.272277	7.196426
UNIC	2008	0.166788	0	0	1.106784	9.9	7.391376	7.272507
UNIC	2009	0.047218	0	0	1.026818	8	7.391376	7.324882
UNIC	2010	0.148699	0	0	1.169456	8	7.391376	7.325049
UNIC	2011	0.087412	0	0	1.189297	8.41	7.476034	7.340548
UNIC	2012	0.121934	0	6.69897	1.245395	8.55	7.476034	7.385904
UNIC	2013	0.173187	0	6.69897	1.268424	8.64	7.546234	7.59927
UNIC	2014	0.141249	0	0	0.911182	8.71	7.751609	8.229043
UNIC	2015	0.130647	0	0	0.72863	8.66	7.715526	8.400892
UNIC	2016	0.083017	8.305077	0	0.718558	8.83	7.85231	8.347631