



**ST.MARY'S UNIVERSITY SCHOOL OF GRADUATE
STUDIES**

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

**By
TSION ABREHAM**

**May, 2018
ADDIS ABABA, ETHIOPIA**

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**A THESIS SUBMITTED TO ST.MARY'S UNIVERSITY, SCHOOL
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**ST. MARY'S UNIVERSITY
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DECLARATION

I, the undersigned, declare that this thesis is my original work, presented under the guidance of Zenegnaw Abiy (PhD). 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 institution for the purpose of earning any degree.

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St. Mary University, Addis Ababa May, 2018

ENDORSEMENT

This thesis has been submitted to St. Mary's University, School of Graduate Studies for examination with my approval as a university advisor.

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St. Mary University, Addis Ababa May, 2018

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List of Acronyms

OECD Organization for Economic Cooperation and Development

EIRF European insurance and reinsurance federation

NBE National Bank of Ethiopia

OLS Ordinary Least Square

CLRM Classical Linear Regression Model

DW Durbin–Watson

GDP Gross Domestic product

ROA Return on asset

ROE Return on equity

TDI Time deposit investment

EI Equity investment

TBI Treasury bill investment

FAI Fixed asset investment

CAR Capital adequacy ratio

IS Insurance size

Abstract

The effect of investment has been considered to be an important issue on the financial performance of insurance companies. This study empirically examines the effect of investment on financial performance of insurance companies in Ethiopia and interprets the result by relating with the regulations. The study used balanced panel model in examining the regression model and collect data from eight insurance companies covering the period of eighteen (18) consecutive years, 2000-2017. To this end, the study employed a quantitative research approach by documentary analysis based on their audited financial statement. The study used panel data techniques specifically fixed effect model on the regression analysis and used E-view8 software. The study used two dependent variables return on asset (ROA) and return on equity (ROE), six independent variables that are time deposit investment, equity investment, Treasury bill investment, fixed asset investment, capital adequacy ratio and insurance size. The regression result show that time deposit investment, fixed asset investment, capital adequacy ratio and insurance size show positive and significant effect at 5% significance level on financial performance of insurance companies in Ethiopia, whereas, equity investment and Treasury bill investment are insignificant effect at 5% significance level on financial performance of insurance companies in Ethiopia. The research concluded that investment has significant effect on financial performance of Ethiopian insurance companies. Hence, the study recommend in support of each variables for Ethiopian insurance companies to give due attention on investment sector to enhance their financial performance significantly.

Key words: - Insurance, Investment and Financial Performance

CHAPTER ONE

INTRODUCTION

1.1. Background of the study

The term investing could be associated with the different activities, but the common target in these activities is to employ the money (funds) during the time period seeking to enhance the investor's wealth. Funds to be invested come from assets already owned, borrowed money and savings. By foregoing consumption today and investing their savings, investors expect to enhance their future consumption possibilities by increasing their wealth (Kristina, 2010).

According to Veronica (2013) point out on OECD (2013), 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. 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.

Accompanied by Muthoni (2012) cited Lee et al (2006); Hussain, (2005) and Aghion et al (2010) investments are reported at either fair value or amortized historical cost which, due to the short-term nature of the instruments, approximates fair value. On the other hand, long term investments include stocks and bonds of other companies and real estate. Given the importance of business investment as a determinant of output growth and contributor to aggregate supply, much recent work has focused on the determinants of investment. In addition, Muthoni (2012) cited Graham et al (2001), investments refer to the cost of capital invested in buying financial assets and securities. It is putting money into something with the expectation of gain that upon thorough analysis has a high degree of security for the principal amount, as well as security of return, within an expected period of time. They include the investments made in shares, bonds and equities. Most insurers do not report a separate category of short-term investments but instead include them in cash or investment in securities. Short-term investments include primarily short-term fixed income instruments such as commercial paper and T-bills.

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 (Weebly, 2013).

According Veronica (2013) cited 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, 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.

Investment plays a very significant role in the financial performance of an organization. Organizations invest their resources in order to earn returns that will enable them enhance their financial performance (Loof et al, 2008).

Financial performance refers to the processes of using various financial instruments to measure the performance or profitability of the organization. Financial performance is therefore, more interested in the profitability of the firm than any other aspect. In order to effectively measure the financial performance of an organization, proper bookkeeping is important since it determines the quality of financial statements that can be obtained based on Veronica (2013) which is cited on (CAPI, 2009). Measuring financial performance of an organization is very important since it determines whether the organization has been able to achieve its financial objectives or not. There are a variety of measures that organizations can use or adopt in measuring their financial performance (Ismailia, 2011).

To conclude, in Ethiopia the NBE had also developed a regulation on insurance company investment policy. This paper will examine the effect of insurance company investment on their level of financial performance and related result with the existing regulation set by NBE.

1.2. Statement of the problem

As institutional investitures, insurance companies are very important participants in the financial market, especially in the capital market. They have a very important role as they contribute to the strengthening of competition in the financial market, stimulate financial innovation, strengthen corporate governance, contribute to increase market integrity, pressure for modernizing market infrastructure, encourage the development of regulations, which primarily stems from their long term business horizon (Mladenka, 2012).

As explained by EIRF (2014), insurance company provide constant ability and need of insurers to invest makes them important providers of stable funding for governments, businesses and to a lesser extent, households. Insurers' provision of long-term funding through capital markets includes significant investment in government and corporate bonds, covered bonds and equity.

Hence, insurance companies play a great role on investment, these are investment area which described by Mladenka (2012), during the placement of available funds, insurance companies must seek to make a profit at least equal the average interest rate earned on the capital market. Placements of insurance companies can be implemented in one of the following categories: Real estate or the granting of mortgages and other loans, purchase of securities and deposit funds with banks and other financial institutions.

Insurance companies mobilize significant financial resources predominantly in the form of premiums on insurance policies; whereas a significant portion of these financial resources is usually invested by insurance companies in income-earning assets in order to maximize profits. Due to this fact, the NBE allows insurance companies to invest in treasury bills, time deposit investment, real estate and company shares (NBE, 2004).

As far as the researcher knowledge, there are limited studies examined on effect of investment on financial performance of insurance companies in worldwide. However, these are studies that have been conducted on this issue (Veronica (2015), Helmut (2016), Ezekiel (2008), Kathleen et al (1998), and Mathew (2016).

Thus, the following studies concluded their findings, but there are some deviation on their results, for instance the research conducts by Veronica (2015) show investment in bond (government securities) has significant and negative effect on financial performance of insurance companies. However, as per Ezekiel (2008) findings investment in bond has positive and statistically significant effect on financial performance of insurance companies. Therefore, previous empirical results conducted related with this study results indicate different findings while using the same variables to examine the effect of investment on financial performance of insurance companies.

Moreover, as far as the researcher concern, a single study corresponding with this research is conducted by Eskedar (2016) about effect of investment on financial performance commercial banks in Ethiopia. However, this research is quite different in its industry selection and incorporates additional control variables and dependent variable of insurance companies. For instance, this study used two dependent variables ROA and ROE and adds insurance size as control variables. Most of prior studies, like (Yuvaraj et al. (2013); Meaza (2014); Hadush (2015)) conducted on determinant of profitability in Ethiopian insurance companies and Daniel et al. (2013) studied on determinant performance in Ethiopia insurance companies. However, these all researches didn't mainly concentrate on the effect of investment on financial performance of insurance companies.

Thus, this study will fill the above explained gap by providing information about effect of investment on financial performance of insurance companies by examining untouched variables using all insurance companies operating in the country that have 17 years data. To this end, the study will provide insights in to the effect of investment on financial performance of insurance companies in Ethiopian.

1.3. Objective of the Study

1.3.1. General Objective

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

1.3.2. Specific Objectives

The specific objectives of the study will;

- To examine the effect of time deposit investment on financial performance of insurance companies in Ethiopia.
- To examine the effect of equity investment on financial performance of insurance companies in Ethiopia.
- To examine the effect of treasury bills investment on financial performance of insurance companies in Ethiopia.
- To examine the effect of fixed asset investment on financial performance of insurance companies in Ethiopia.

1.4. Scope of the Study

.The study will be limited on the effect of investment on financial performance of insurance companies in Ethiopia and made the analysis using secondary source of data. The study will take in to account the performance of insurance companies for the last 18 years that is from 2000 to 2017. As a result, the research included insurance companies that started operation before 2000 because almost all the sample insurance company's establishment was around 1994-1997 G.C except EIC (Ethiopian Insurance Company) and their financial performance shows progress starting from 2000. Additional, they started investment on the stated year (Audited financial statement). Hence, the study included one government owned insurance company and 7 private insurance companies in Ethiopian.

The study took the cross sections based on their total assets, profit and market share that can refer more than 70% of the total population. The study used four investment factor independent variables, i.e. time deposit investment, equity investment, treasury bills investment and fixed asset investment and two control variables (insurance size and capital adequacy ratio). In addition, two dependent variables will be used to measure financial performance using return on asset (ROA) and return on equity (ROE). As the result, these variables could explain the topic properly by referring previous empirical works.

1.5. Significant of the Study

This study will provide benefit for insurance sector on the National Bank of Ethiopia regulation limitation on the area of investments and the effect of the regulation affect their financial performance that will be earned form investment. In addition, the research will give importance points to the this 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 companies investment.

1.7. Organization of the Study

The research paper is organized in to five chapters. Chapter one is an introduction part where 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 of research to an end with summary, conclusion and possible recommendation.

CHAPTER TWO

LITERATURE REVIEW

2.1. Theoretical Literature

A comprehensive review of published and unpublished works in the areas of investment and the performance of insurance companies is made to develop and identify the problem, to develop research questions and so as to come up with appropriate research methods. It also comprises various researchers point of view on related research works from the context of various countries. Therefore, the literature review is organized and presented in two sections. The first section discusses the theoretical literature about investment and the performance of insurance companies from different perspectives and the second section presented empirical literature on studies made at similar level.

2.1.1. Definition of investment

The term investing could be associated with the different activities, but the common target in these activities is to “employ” the money (funds) during the time period seeking to enhance the investor’s wealth. Funds to be invested come from assets already owned, borrowed money and savings. By foregoing consumption today and investing their savings, investors expect to enhance their future consumption possibilities by increasing their wealth. However, it is useful to make a distinction between real and financial investments. Real investments generally involve some kind of tangible asset, such as land, machinery, factories, etc. Financial investments involve contracts in paper or electronic form such as stocks, bonds, etc (Kristina, 2010).

Also insurance defined by referring two important schools of thoughts: i) transfer school and ii) pooling school. According to transfer school, “insurance is a device for the reduction of uncertainty of one party, called the insured, through the transfer of particular risks to another party ; called the insurer, who offers a restoration, at least in part of economic losses suffered by the insured”. On the other hand, according to pooling school “the essence of insurance lies in the elimination of uncertainty or risk of loss for the individual through the combination of large number of similarly exposed individuals”. Insurance operates on the principle of pooling risks where the people contribute to a common fund in form of premiums and where the lucky ones who do not suffer loss help the unlucky ones who suffer loss during a defined insurance period (Lantz et al, 2005)

Direct versus indirect investing

Investors can use direct or indirect type of investing. *Direct investing* is realized using financial markets and *indirect investing* involves financial intermediaries. The primary difference between these two types of investing is that applying direct investing investors buy and sell financial assets and manage individual investment portfolio themselves. Consequently, investing directly through financial markets investors take all the risk and their successful investing depends on their understanding of financial markets, its fluctuations and on their abilities to analyze and to evaluate the investments and to manage their investment portfolio. Contrary, using indirect type of investing investors are buying or selling financial instruments of financial intermediaries (financial institutions) which invest large pools of funds in the financial markets and hold portfolios. Indirect investing relieves investors from making decisions about their portfolio. As shareholders with the ownership interest in the portfolios managed by financial institutions (investment companies, pension funds, insurance companies, commercial banks) the investors are entitled to their share of dividends, interest and capital gains generated and pay their share of the institution’s expenses and portfolio management fee (Kristina, 2010).

According to Eskedar (2016) as cited in Gareth (2003) describes investment process as description of the steps that an investor should take to construct and manage their portfolio. These proceed from the initial task of identifying investment objectives through to the continuing revision of the portfolio in order to best attain those objectives. The steps in this process are determined Objectives investment policy has to be guided by a set of objectives. Before investment can be undertaken, a clear idea of the purpose of the investment must be obtained. The purpose will vary between investors. Some may be concerned only with preserving their current wealth. Others may see investment as a means of enhancing wealth. What primarily drives objectives is the attitude towards taking on risk. Some investors may wish to eliminate risk as much as is possible, while others may be focused almost entirely on return and be willing to accept significant risks. Secondly choose Value the second decision concerns the amount to be invested. This decision can be considered a separate one or it can be subsumed in the allocation decision between assets (what is not invested must either be held in some other form which, by definition, is an investment in its own right or else it must be consumed).

Third conduct Security Analysis. Security analysis is the study of the returns and risks of securities. This is undertaken to determine in which classes of assets investments will be placed and to determine which particular securities should be purchased within a class. Many investors find it simpler to remain with the more basic assets such as stocks and fixed income securities rather than venture into complex instruments such as derivatives. Once the class of assets has been determined, the next step is to analyze the chosen set of securities to identify relevant characteristics of the assets such as their expected returns and risks. This information will be required for any informed attempt at portfolio construction (Eskedar, 2016).

Financial investment area

According to Kristina (2010), the main types of financial investment are: Short term investment, Fixed-income securities, Common stock and Speculative investment; Short - term investment: - are all those which have a maturity of one year or less. Short term investment vehicles often are defined as money-market instruments, because they are traded in the money market which presents the financial market for short term (up to one year of maturity) marketable financial assets. The risk as well as the return on investments of short-term investment vehicles usually is lower than for other types of investments. The main *short term investment vehicles* are: Certificates of deposit, Treasury bills, Commercial paper Bankers' acceptances and Repurchase agreements

Certificate of deposit

Certificate of deposit is debt instrument issued by bank that indicates a specified sum of money has been deposited at the issuing depository institution. Certificate of deposit 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),

Treasury bills

Treasury bills (also called T-bills) are securities representing financial obligations of the government. Treasury bills have 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. Commercial paper is a name for short-term unsecured promissory notes issued by corporation. Commercial paper is a means of short-term borrowing by large corporations. Large, well-established corporations have found that borrowing directly from investors through commercial paper is cheaper than relying solely on bank loans (Kristina, 2010).

Banker's acceptances

Banker's acceptances are the vehicles created to facilitate commercial trade transactions. These vehicles are called bankers acceptances because a bank accepts the responsibility to repay a loan to the holder of the vehicle in case the debtor fails to perform. Banker's acceptances are short-term fixed-income securities that are created by non-financial firm whose payment is guaranteed by a bank. This short-term loan contract typically has a higher interest rate than similar short-term securities to compensate for the default risk. Since bankers' acceptances are not standardized, there is no active trading of these securities (Kristina, 2010).

Repurchase agreement

Repurchase agreement (often referred to as a repo) is the sale of security with a commitment by the seller to buy the security back from the purchaser at a specified price at a designated future date. Basically, a repo is a collectivized short-term loan, where collateral is a security. The collateral in a repo may be a Treasury security, other money-market security (Kristina, 2010).

Long-term debt securities

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 (Kristina, 2010).

Preferred stocks

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 (Kristina, 2010).

Common stock

The 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 stock holders. 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. The issuers of the common stock are the companies which seek to receive funds in the market and though are going public (Kristina, 2010).

The Concept of Insurance Profitability

According to Hifza (2011) insurance plays a crucial role in fostering commercial and infrastructural businesses. From the latter perspective, it promotes financial and social stability, mobilizes and channels savings, supports trade, commerce and entrepreneurial activity and improves the quality of the lives of individuals and the overall wellbeing in a country.

Performance measures the financial soundness and health of the organization in monetary terms and thus, can be used to compare the performance of different corporations within any particular industry or between the industries. The performance of the insurance companies plays a pivotal role in the growth of the industry as a whole, which ultimately contributes to the success of an economy. The insurance companies endanger their performance by assuming different types of risks. In order to have full and fuller understanding of the impact of financial risk on the profitability of insurance companies the present study will take into consideration various ratios like solvency, liquidity, profitability (Arif, et al. 2015).

Profitability consists of two words profit and ability. It is necessary to differentiate between the term Profit and Profitability at this point. The term Profit, from accounting point of view, is arrived at by deducting from total revenue of an enterprise all amount expended in earning that income while the term Profitability is defined as the ability of a given investment to earn a return from its use Suheyli(2015).

William, et al. (2004) suggested that although there are different ways to measure profitability it is better to use ROA. In addition to this, performance of insurance companies in financial terms is normally expressed in net premium earned, profitability from underwriting activities, annual turnover, return on investment and return on equity. These measures could be classified as profit performance measures and investment performance measures. However, most researchers in the field of insurance and their profitability stated that the key indicator of a firm's performance is ROA defined as before tax profits divided by total assets.

Investment related theory

Resource Dependency Theory

As stated on veronica (2015) paper this theory was developed by Pfeffer et al. (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 (Veronica, 2015) cited on (Pfeffer et al, 1978).

The Agency Theory

Jensen et al (1976) were the first people to suggest the agency theory in a theory of the firm based upon conflicts of interest between various parties such as shareholders, corporate managers and debtors. However since then, the finance theory has developed both theoretically and empirically to allow a fuller investigation of the problems caused by divergences of interest between shareholders and corporate managers. The Agency theory indicates that agency problems arise because of the impossibility of perfectly contracting for every possible action of an agent whose decisions affect both his own welfare and the welfare of the principal.

McColgan (2001) further argues that despite its faults, with respect to agency conflicts, the modern corporation appears to be the most popular form of corporate organization. Perhaps this can largely be attributable to the evolution of governance mechanisms designed to limit the scope of these problems. Pension schemes may be considered as agents of the members. They are entrusted with money that belongs to the members for them to manage on their behalf. This theory implies that the pension schemes are only agents who need to act for the benefit of the owners who are the contributors to the pension schemes. The pension schemes may have other divergent interests to pursue but the main purpose of their existence is to create value for the contributors. The contributors have a right to decide how their savings into pension schemes are invested and accessed including early access.

Slack Resources Theory

This theory equates an organization to a living organism that struggles to survive amid turbulence from the environment within which it operates. Slack is a cushion of actual or potential resources which allow an organization to adapt successfully to internal pressures for adjustment or to external pressures for change in policy, as well as to initiate changes in strategy with respect to the external environment. The theory suggests that slack performs four main functions in an organization. The first function of slack is acts as an inducement to members. The second function of slack is to act as a resource for conflict resolution. The third is function of slack is to act as an insulation to protect the organization from environmental turbulence. Finally, slack can be a facilitator of strategic behavior, which allows the firm to experiment with new strategies such as introducing new products and entering new markets (Tan et al, 2003). Organizational slack can be split into absorbed and unabsorbed slack. The latter refers to resources that are currently not committed to any activity hence can easily be redeployed to another activity depending on the environmental requirements. This gives the management greater discretion on how to commit the resources and it can impact on the performance of an organization. The absorbed slack refers to excess costs in the organization and these are usually very difficult to redeploy (Veronica, 2013).

Investment of insurance funds regulation in Ethiopia

the General Insurance Funds of an insurance company shall be invested in the manner prescribed hereunder: in treasury bill and bank deposits not less than 65% of admitted assets; provided, however, that aggregate bank deposits (checking, saving and time deposits) held with any one bank shall not exceed 25% of total admitted assets; investments in company share 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. The long-term Insurance funds of an insurance company shall be invested in the following manner: In Treasury Bills/Bonds and bank deposits not less than, in aggregate, 50% of total admitted assets; provided, however, that aggregated deposits (checking, savings and time deposits) held with any one bank shall not exceed 25% of total admitted assets NBE SIB/25(2004).

In addition, Investments in company shares not exceeding 15% of total admitted assets; investment not exceeding 25% and 10% of total admitted assets invest in real estate and insurance company's choice respectively NBE SIB/25(2004).

2.2. Empirical review

2.2.1 Cross Country Study

Helmut (2016) made a research on the evolution of insurer portfolio investment strategies for long-term investing. Thus, this article provides an overview of the evolving investment strategies of insurers and identifies the opportunities and constraints they may face with respect to long-term investment activity. The report investigates the extent to which changes in macroeconomic conditions, market developments and insurance regulation may affect the role of insurers in long-term investment financing. It concludes that regulation should neither unduly favor nor hinder long-term investment as such, but place priority on incentivizing prudent asset and liability management with mechanisms that allow for a true and fair view of insurers' risk exposures. In risk-based solvency regulation, an asset's risk relative to liabilities is reflected in the capital requirements.

According to Kathleen et al (1998) research conducted on life insurance company investment portfolio composition and investment regulation, they raised two research questions, has the investment portfolio composition of life insurance companies shifted over time? And does regulation impose a binding constraint on portfolio investments? Hence, they employed data for 55 life insurance companies (stock, mutual, and fraternal) has been analyzed to answer these questions. The study concludes that for bonds and real estate, the investment percentage has not changed significantly over time. However, for stock, mortgages and other assets, the change has been significant. Of note, there has been a substantial increase in the use of the other asset account. Regulations focusing on permissible investment percentages do not seem to have imposed a binding constraint.

Based on Edlira et al (2016) assessed on insurance companies profitability - case of Albania to assess the impact of internal factors, growth rate, liquidity, liability, fixed assets, company size and volume of capital, on the profitability of insurance companies in Albania. The purpose of their paper was to provide a useful tool for the insurance companies operating in their country in making their decisions based on economical and statistical implications. They have taken under study 7 insurance companies during the period 2008- 2013. The methodology used to achieve the paper's objective is based on the multiple regression tools with panel data. According to the analysis result multiple regression indicated that there was a statistically significant relationship between growth rate, liquidity, liabilities and fixed assets to the profitability of insurers, while the impact of factors of company size and the volume of capital was not statistically significant.

Arif, et al. (2015) conducted a research on relationship between financial risk and financial performance in Indian insurance industry. Thus, the study employed 24 life insurance companies which are currently operating in Indian insurance market as a target population out of this eight life insurance companies have been selected all belonging to private sector. They used secondary sources of data through annual reports of the selected insurance companies. In order to determine the factors that influence the financial performance in the Indian insurance market during the interval 2005/06- 2012/13, six explanatory variables is tested: capital management risk, solvency risk, liquidity risk, underwriting risk, company size and volume of capital. As for the dependent variable, the financial performance of the insurance companies is measured through Return on Assets Ratio (ROA). Finally, The results of multiple regressions model reveal that capital management risk and solvency risk have a negative and significant relationship with financial performance, while liquidity risk, company size and volume of capital exhibit a positive and significant relationship with financial performance of life insurance companies in India, whereas underwriting risk has negative impact but doesn't have significant effect on it.

Ana-Maria, et al. (2014) performed on determinants of financial performance in the Romanian Insurance companies. Accordingly, the study used 21 companies and the interval period had started from 2008 to 2012, 13 explanatory variables were tested: insurance financial leverage, company size, number of years since the company operates in the Romanian market, growth of gross written premiums, equity, total market share, diversification, underwriting risk, investment ratio, reinsurance dependence, retained risk ratio, solvency margin and growth of GDP/capita. As for the dependent variable, the financial performance of the insurance companies is measured through the return on total assets ratio. According to the final results, gross written premiums, financial leverage and underwriting risk have a negative effect on return on total assets ratio. In addition to this, company size, retained risk ratio, solvency margin and have positive linkage on return on total assets ratio. Equity, total market share, diversification, investment ratio, number of years since the company operates and growth of real GDP/capita do not have significant linkages with the insurers' financial performance.

Another study made by Amal (2012) on factors affecting the financial performance of Jordanian Insurance Companies Listed at Amman Stock Exchange. The study consisted of all insurance companies' enlisted at Amman stock Exchange during the period (2002-2007) which count (25) insurance company. The study took all of them as a study sample and depended on secondary sources which include books Articles, relevant literature, Jordanian insurance companies' financial statement and reports, and Amman Stock Exchange in order to collect the scientific content of the theoretical framework of the study and to explain the basic concepts of the study. Company Leverage, Company liquidity, Company Age, Company Size, Company management competence index were independent variables whereas financial performance through calculating (ROA) was dependent variable. The collected data was analyzed 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 and significant statistical effect on the financial performance of Jordanian Insurance Companies but Company age has no significant statistical impact on Financial Performance of insurance companies.

2.2.2 Study Conducted in Africa

As per Veronica (2015) studied on relationship between investment and financial performance of insurance companies in Kenya which discloses relationship between investment and financial performance of insurance companies in Kenya. The study took the form of a descriptive study with a target population of 45 insurance companies in Kenya. All the 45 insurance companies were involved in the study. Secondary data was successfully collected from 32 insurance firms. Multivariate regression analysis and correlation analysis were carried out to establish the nature of the relationship between investment and financial performance. The study established insurance companies in Kenya invest their funds in three popular areas. These include investments in real estate that holds the largest funds in terms of investments; investments in deposits with other financial institutions where the firms hold certificates of deposits and investment in Government securities. These 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.

Study conducted by Eskedar (2016) on the effect of investment on banks performance in Ethiopia and interprets the result by relating with the regulations. The study used balanced panel model in examining the regression model and collect data from eight commercial banks covering the period of eleven consecutive years, 2005-2015. The study used one dependent variable ROE, four independent variables that are fixed asset investment, foreign deposit, equity investment and NBE Bill purchase and one control variable capital adequacy. The regression result show that fixed asset investment and foreign deposit had a positive and significant effect on performance of banks. On the other side NBE Bill purchase had a negative and significant effect on the performance of commerce banks. The control variable also had a negative and significant effect on the performance of commercial banks. One of the independent variable equity investments had negative and insignificant effect on banks performance. The research concluded that investment plays a significant role on the performance of Ethiopian commercial banks.

Rely on Ezekiel (2008) study on the impact of investment portfolio choice on financial performance of investment companies in Kenya; the study took a causal research design approach and 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 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.

As studied by Mathew (2016) on the effect of investment diversification on the financial performance of commercial banks in Kenya, the main purpose of this study was to investigate the effect of portfolio diversification on the financial performance of commercial banks in Kenya. The specific objectives was to: investigate the effect of insurance investment on the financial performance of commercial banks in Kenya, establish the effect of government securities on the financial performance of commercial banks in Kenya, determine the effect of real estate investment on the financial performance of commercial banks in Kenya and to establish the effect of buying shares on the financial performance of commercial banks in Kenya. This study adopted exploratory research design because it was trying to explain the cause relationship between independent variable and dependent variable. The population of interest in this study consisted of 40 commercial banks. A sample of 40 operational commercial banks in Kenya was studied. Secondary data was collected using data collection sheets as the main data collection tool and interview schedule as the primary data.

In line with the above study conducted by Mathew (2016), data collection sheets were used to collect data guided by the objectives of the study. The data collected was analyzed using explanatory and inferential statistics with help of SPSS package version 20 inferential statistics were done through ANOVA and multiple regressions. The study concluded that a majority of the banks over the years have in practice employed the use of insurance investment on the financial performance of commercial banks in Kenya. The study recommended that banks should focus its work to promote the confidence in portfolio diversification, and develop marketing policies that encourage its use.

Suheyli (2015) conducted a research on determinants of insurance companies' profitability in Ethiopia. In order to achieve this objective, the study used mixed research approach. Panel data covering eleven-year period from 2004 to 2014 were analyzed for nine insurance companies from the total population of all insurance companies registered by NBE and under operation in Ethiopia. Also in-depth interview was conducted with company managers. Underwriting risk, reinsurance dependence, solvency margin, liquidity, company size, premium growth, technical provisions, inflation and growth rate of GDP were independent variables while profitability was dependent variable. The findings of the study showed that underwriting risk, technical provision and solvency ratio have statistically significant and negative relationship with insurers' profitability. However, reinsurance dependence has negative but insignificant relationship with profitability. On the other hand, variables like liquidity, company size and premium growth have a positive and statistically significant relationship with insurers' profitability. In addition, economic growth rate has significant influence on profitability whereas inflation has insignificant influence on insurers' profitability. The study provided evidence that underwriting risk, technical provision and liquidity were the most important factors that affect profitability of insurance companies in Ethiopia.

2.3 Literature gap

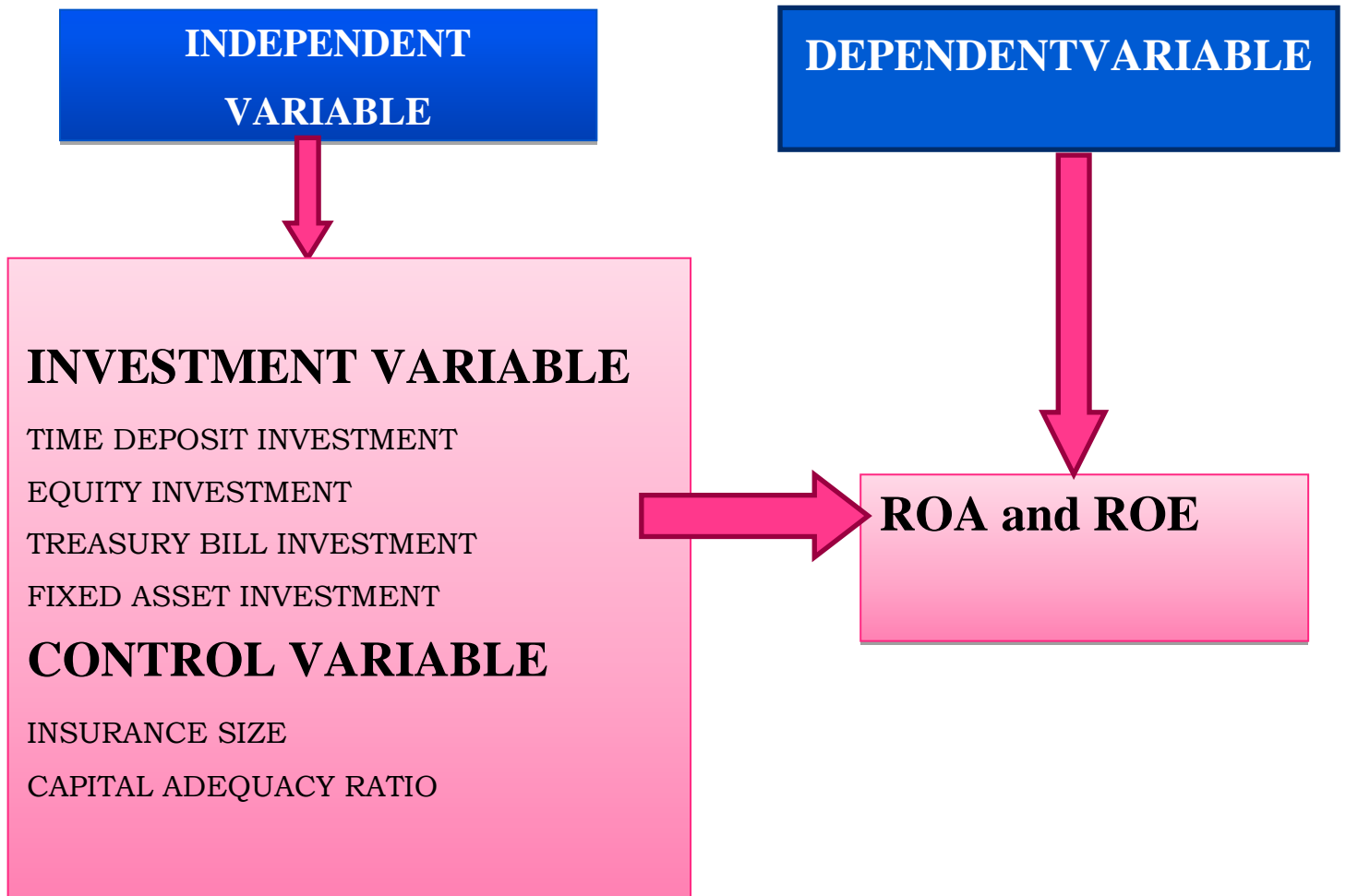
As per empirical review, there are limited studies examined on effect of investment on financial performance of insurance companies in worldwide. However, these are studies that have been conducted on this issue (Veronica (2015), Helmut (2016), Ezekiel (2008), Kathleen et al (1998), and Mathew (2016), but there are some deviation on their results, for instance the research conducts by Veronica (2015) show investment in bond (government securities) has significant and negative effect on financial performance of insurance companies. However, as per Ezekiel (2008) findings investment in bond has positive and statistically significant effect on financial performance of insurance companies. In addition to this, there are researches which is reviewed in this study related with factors affecting financial performance of insurance companies and used some variables as control variable in addition from investment factors variable, so in this regard there is also some variance on their result, for example research conduct by Arif, et al. (2015), Suheyli (2015), Ana-Maria, et al. (2014), Amal (2012) show company size has positive and significant effect on financial performance, whereas Edlira et al (2016) concluded that company size has no significant effect on financial performance insurance companies. Therefore, previous empirical results conducted related with this study results indicate different findings while using the same variables to examine the effect of investment on financial performance of insurance companies.

Thus, variable which is used to see the effect investment on financial performance insurance companies other than the control variables is different from county to country. In Ethiopia, there is no any empirical study which is conducted in insurance companies by incorporating time deposit investment, equity investment, treasury bills investment and fixed asset investment and two control variables (insurance size and capital adequacy ratio) with two dependent variable (ROA & ROE), consequently this study is conducted to fill this knowledge gap by examining the effect of investment on financial performance of insurance companies in Ethiopia.

2.4 Conceptual Frame Work

From the theoretical and empirical literature reviews, the following conceptual framework of the study is developed by the researcher.

Figure 2.1 the conceptual framework or model of the study



Source: - Compiled by the researcher mainly based on NBE (2004), Veronica (2013) and Eskedar (2016).

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter deals with research methodology used to carry out the research. The chapter organized in eight sub sections. In its first part there are a research design, then after it presented subsequently about research approach, population, sample and sampling technique, data type, sources and instruments, data analysis and model specification. The final two parts presented variables selection and hypothesis developments. Finally, operationalizations of study variables are presented.

3.1. Research design

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 used in this research because the study identified the cause and effect of investment on insurance company's financial 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 effects of investment on insurance company's financial 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 researcher generalizes or makes claims about the population (Creswell, 2009).

3.3. Population of the Study

The study populations are 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 eight insurance companies. These insurances are selected due to their market share, total assets and profit. As NBE (2014/15) annual report stated that these eight 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 eight 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 eighteen (18) years from 2000 to 2017.

Based on these reasons, it is reasonable that sample of eight insurance companies can properly refer the total number of the population. As a result, the research included insurance companies that started operation before 2000 because almost all the sample insurance company's establishment was around 1994-1997 G.C except EIC (Ethiopian Insurance Company) and their financial performance shows progress starting from 2000. Additional, they started investment on the stated year (Audited financial statement). Hence, the study included one government owned insurance company and 7 private insurance companies in Ethiopian.

Therefore, the study covered a period of eighteen (18) years from 2000-2017 and included Ethiopian insurance companies those who have eighteen (18) and above establishment year. Due to this fact, 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 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 will employ purposive sampling method to draw the sample from the population and meet the study objective. The matrix for the frame is 18*8 that includes 144 observations.

3.5. Data sources and instruments

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

3.6. Data analysis

To achieve objective of the study, the study only concentrated quantitative analysis. Hence, the researcher used econometric model to identify and measure effect of investment on insurance company's performance in Ethiopia 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 effect of investment on insurance company's financial performance in Ethiopia.

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 (eight) and the time-series element is revealed by the period of study (2000-2017). Therefore, the panel data will be 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) assumption should true.

3.7. Model specification

According to Brooks (2008), it is very easy to generalize the simple model to one with k regressors (independent variables). $Y_i = \beta_1 + \beta_2 X_{1i} + \beta_3 X_{2i} + \dots + \beta_k X_{ki} + \varepsilon_i$, $i = (1, 2, \dots, i)$. So, Where Y_i is the i^{th} observation of the dependent variable, X_{1i}, \dots, X_{ki} are the i^{th} observation of the independent variables, β_0, \dots, β_k are the regression coefficients, ε_i is the i^{th} observation of the stochastic error term. Accordingly, to test the effect of investment on insurance company's financial performance, the researcher estimated a linear regression model in the following form.

$$ROA_{it} = \beta_0 + \beta_1 TDI_{it} + \beta_2 EI_{it} + \beta_3 TBI_{it} + \beta_4 FAI_{it} + \beta_5 CAR_{it} + \beta_6 IS_{it} + \varepsilon_{it} \dots \dots \quad (\text{Model 1})$$

$$ROE_{it} = \beta_0 + \beta_1 TDI_{it} + \beta_2 EI_{it} + \beta_3 TBI_{it} + \beta_4 FAI_{it} + \beta_5 CAR_{it} + \beta_6 IS_{it} + \varepsilon_{it} \dots \dots \quad (\text{Model 2})$$

Where:

ROA= Return on asset

ROE= Return on equity

TDI= Time deposit investment

EI= Equity investment

TBI= Treasury bill investment

FAI= Fixed asset investment

CAR=Capital adequacy ratio

IS= Insurance size

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

β_0 = Constant

$\beta = 1, 2, 3, 4, 5$ & 6 are parameters to be estimate;

i = Insurance company $i = 1. . . 8$; and t = the index of time periods and $t = 1. . . 18$

3.8. Variables description

Thus, this section explained the variables used as dependent and independent (explanatory) variables in the study. The definitions and measurements that are used for these variables are described as follows. In addition to this, hypothesis is also developed derived from previous empirical evidences.

Dependent variable

Return on Asset (ROA)

The study employed return on assets to measure financial 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 will take return on asset (ROA) as one dependent variable to measure financial performance of Ethiopian insurance companies.

Return on Equity (ROE)

Based on Waqas (2014), the owners of the company supply the equity invested by the company. Return on equity is measured as the ratio of profit generated to the total investment capital provided by the owners of the company. Thus, return on equity measures the profitability with which the owner's money was managed. Since Executive Management is directly answerable to the owners, maximizing return on equity within tolerable limits of risk is a vital and proper concern of executive management. At the top level of executive management and outside the company, return on equity is the most common expression of the ROI idea applied to company performance. Hence, the study used ROE as dependent variable.

Independent Variables

This subsection will describe the independent variables that will be used in the econometric model to estimate the dependent variable. To measure the effect of investment on insurance company's financial performance in Ethiopia. Six measurements will be used as independent variables which are extracted from different studies. The variables namely time deposit investment, equity investment, Treasury bill and fixed asset and two control variables these are capital adequacy and insurance size.

Time deposit investment

Insurances are permitted to deposit their excess cash in banks in order to facilitate their services and also to generate an additional interest income. Deposit is measured by the total amount of money that the insurance deposit banks in a given time. As stated by Kristina (2010) one type of bank deposit is certificated deposit which refers about debt instrument issued by bank that indicates a specified sum of money has been deposited at the issuing depository institution. Certificate of deposit bears a maturity date and specified interest rate and can be issued in any denomination.

Equity investment

As defined by NBE (2004), it gives permission for insurance companies to invest their fund in non-insurance companies and other share companies with limited percentage. Insurance companies invest on these business in order to collect an additional income from dividend payment. Thus, relay on Eskedar (2016) equity investment was measured by the total amount of investment on insurance company share and other share companies stock. Therefore, the study also used equity investment variable as proxy total equity investment of insurance companies in Ethiopia.

Treasury bill investment

Treasury bills are securities representing financial obligations of the government. Treasury bills have 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 (Kristina, 2010).

Fixed asset investment

As explained on NBE (2004) insurance companies can invests their fund on fixed assets with limited percentage of amount, for instance general insurance funds can invest in real estate not exceeding 10% of admitted asset and for long-term insurance funds can invest in real estate not exceeding 25% of admitted asset. Relay on Eskedar (2016), fixed asset investment is measured by the total amount of investment on fixed asset.

Control Variables

Capital Adequacy Ratio

Capital is one of insurance company specific factors that influence insurance company's financial performance. Based on Vincent (2013) cited on Sangmi and Nazir (2010), capital adequacy ratio shows the internal strength of the bank to survive losses during crisis. Capital adequacy ratio is directly proportional to the flexibility of the bank to crisis situations. It has also a direct effect on the profitability of banks by determining its expansion to risky but profitable ventures or areas. According to Esedar (2016) cited on Kosmidou (2008), it is expected that the higher the Equity to Asset ratio, the lower the need for external funding and therefore the higher the profitability of the bank. Bank with higher capital to asset ratio are considered relatively safer and remained profitable even during economically difficult times. Conversely, banks with lower capital adequacy are considered riskier relative to highly capitalized banks. Therefore, considering this fact the study employed capital adequacy with capital to asset ratio as control variable to examine the effect on financial performance of insurance companies in Ethiopia

Insurance size

As explained by Daniel et al. (2013), performance is likely to increase in size, because larger firms will have better risk diversification, more economic scale advantage, and overall better cost efficiency. In addition, Amal et al (2012) cited in Majumdar (1997), the size of the firm affects its financial performance in many ways. Large firms can exploit economies of scale and scope and thus being more efficient compared to small firms. In addition, small firms may have less power than large firms; hence they may find it difficult to compete with the large firms particularly in highly competitive markets. Thus, total asset is used as a proxy for insurance Size and most of studies conclude that company size has positive and significant effect on financial performance of insurance companies like Yuvaraj et al. (2013); Meaza (2014); Suheyli (2015); Daniel et al. (2013); Amal et al (2012) and Ana-Maria, et al. (2014). Thus, the study used insurance size as control variable.

3.9 Research Hypothesis

Time Deposit investment

Certificate of deposit bears a maturity date and specified interest rate and can be issued in any denomination. As the result, relay on Veronica (2015), certificate of deposit has positive and significant impact on financial performance of insurance companies. Furthermore, finding presented by Eskedar (2016) foreign deposit has positive and significant impact on performance of commercial bank. Accordingly, the study hypothesizes time deposit investment has positive and statistically significant effect on financial performance of the insurance companies in Ethiopia.

H₁: Time deposit investment has positive and statistically significant effect on ROA off insurance companies in Ethiopia insurance.

H₂: Time deposit investment has positive and statistically significant effect on ROE off insurance companies in Ethiopia insurance.

Equity investment

Study conducted by Veronica (2015) and Ezekiel (2008) investment on equity has positive and significant effect on financial performance insurance companies. As a result, the study hypothesizes equity investment has positive and statistically significant effect on financial performance of the insurance companies in Ethiopia.

H₃: Equity investment has positive and statistically significant effect on ROA of insurance companies in Ethiopia insurance.

H₄: Equity investment has positive and statistically significant effect on ROE of insurance companies in Ethiopia insurance.

Treasury bill investment

Veronica (2015) used government securities variable invested on bond and Treasury bill and he concluded that government securities have positive and significant effect on financial performance of insurance companies. Consequently, it is measured by the total amount of investment on Treasury bill and the study hypothesizes Treasury bill investment has positive and statistically significant effect on financial performance of the insurance companies in Ethiopia.

H₅: Treasury bill investment has positive and statistically significant effect on ROA of insurance companies in Ethiopia insurance.

H₆: Treasury bill investment has positive and statistically significant effect on ROE of insurance companies in Ethiopia insurance.

Fixed Asset investment

Eskedar (2016) concluded that fixed asset investment has positive and statistically significant effect on financial performance. In addition, Edlira et al (2016) stated that fixed asset investment has significant relationship with financial performance of insurance companies. Hence, the study hypothesizes fixed asset investment has positive and statistically significant effect on financial performance of the insurance companies in Ethiopia.

H₇: Fixed asset investment has positive and statistically significant effect on ROA of insurance companies in Ethiopia insurance.

H₈: Fixed asset investment has positive and statistically significant effect on ROE of insurance companies in Ethiopia insurance.

3.9 Model Validity Test

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;

H_0 : There is no Heteroscedasticity problem in the model.

H_1 : There is Heteroscedasticity problem in the model.

$\alpha = 0.05$

Decision Rule: Reject H_0 if p-value is less than significance level. Otherwise, do not reject H_0 .

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.

H_0 : There is no autocorrelation problem in the model.

H_1 : There is autocorrelation problem in the model.

$\alpha = 0.05$

Decision Rule: Reject H_0 if p-value less than significance level. Otherwise, do not reject H_0 .

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

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:

H_0 : Error term is normally distributed

H_1 : Error term is not normally distributed

$\alpha = 0.05$

Decision Rule: Reject H_0 if p-value of JB tests less than significance level. Otherwise, do not reject H_0 .

V. 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.

3.10 Operationalization of study variables

The following table presented summary of variables, their measurement and expected sign for effect of investment on financial performance of insurance companies in Ethiopia.

Table 3.1 Description of variables and their expected relationship

	<i>Variables</i>	<i>Measure</i>	<i>Notation</i>	<i>Expected sign</i>	
<i>Dependent Variables</i>	Firm's financial performance	Net profit before tax/total assets	ROA		
		Net profit before tax/total equity	ROE		
<i>Independent Variables</i>	Time deposit Investment	Natural log total Time deposit investment	TD investment	+	
	Equity investment	Natural log total Equity investment	EI	+	
	Treasury bills investment	Natural log total Treasury bills investment	TBI	+	
	Fixed asset investment	Natural log total Fixed asset investment	FAI	+	
	<i>Control variables</i>				
	Insurance Size	Natural log Total asset	IS		
	Capital Adequacy Ratio	Equity to total Asset ratio	CAR		

Source: - Compiled by the researcher

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION

This chapter of the research paper presents the data analysis; the outcome of the results and reaches to the possible outcome in effect of investment on financial 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 2000 up to 2017 and a cross section segment which considered eight Ethiopian Insurance companies. 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

The descriptive statistics for the dependent and independent variables for eight Ethiopian Insurance companies from year 2000 to 2017 with a total of 144 observations are presented below.

Table 4.1 descriptive statistics of dependent and independent variables

	ROA	ROE	TDI	EI	TBI	FAI	IS	CAR
Mean	0.095607	0.211936	7.986876	16.72350	6.046891	18.02796	18.85581	0.396816
Median	0.080905	0.207238	0.000000	17.37518	0.000000	18.03170	18.68781	0.397756
Maximum	0.613184	0.753226	21.67021	19.50920	19.56553	20.94816	21.87222	0.665389
Minimum	-0.090015	-0.217225	0.000000	0.000000	0.000000	15.14522	16.39078	0.144143
Std. Dev.	0.089375	0.138818	9.282412	2.317048	7.532521	1.176658	1.238978	0.092808
Observations	144	144	144	144	144	144	144	144

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

As indicated in the above table, the financial performance measured (ROA) and (ROE) shows that Ethiopian insurance companies have achieved on average a positive net income over the last eighteen years. For the total sample, the mean of ROA 9.56% and ROE 21.19% with maximum of 61.31% and 75.32% respectively. And also and a minimum of -9% for ROA and -21.72% for ROE. That means most profitable insurance among the sampled earned 9.56% ROA and 21.19% ROE from investment. Regarding the standard deviation, it means the value of ROA and ROE deviate from its mean to both sides by 8.9% and 13.88% respectively which indicate there was low variation from the mean.

The outputs of descriptive statistics indicate time deposit investment of the insurance company and its relationship with financial performance, natural logarithm of total time deposit investment is used as proxy. The mean of the natural logarithm of total time deposit investment was 7.98. Time deposit investment of insurance companies was dispersed from its mean value (i.e. 7.98) with the standard deviation of 9.28. The maximum and minimum values were 21.67021 and 0.00 respectively.

The outputs of descriptive statistics indicate equity investment of the insurance company and its relationship with financial performance, natural logarithm of total equity investment is used as proxy. The mean of the natural logarithm of total equity investment was 16.72. Equity investment of insurance companies was dispersed from its mean value (i.e. 16.72) with the standard deviation of 2.31. The maximum and minimum values were 19.50 and 0.00 respectively.

The outputs of descriptive statistics indicate Treasury bill investment of the insurance company and its relationship with financial performance, natural logarithm of total Treasury bill investment is used as proxy. The mean of the natural logarithm of total Treasury bill investment was 6.04. Treasury bill investment of insurance companies was dispersed from its mean value (i.e. 6.04) with the standard deviation of 7.53. The maximum and minimum values were 19.56 and 0.00 respectively.

The outputs of descriptive statistics indicate fixed asset investment of the insurance company and its relationship with financial performance, natural logarithm of total fixed asset investment is used as proxy. The mean of the natural logarithm of total fixed asset investment was 18.02. Fixed asset investment of insurance companies was dispersed from its mean value

(i.e. 18.02) with the standard deviation of 1.176. The maximum and minimum values were 20.94 and 15.14 respectively.

The outputs of descriptive statistics indicate size of the insurance company and its relationship with financial performance, natural logarithm of total asset is used as proxy. The mean of the natural logarithm of total asset was 18.85. Total asset of insurance companies was dispersed from its mean value (i.e. 18.85) with the standard deviation of 1.23. The maximum and minimum values were 21.87 and 16.39 respectively.

Finally, the outputs of descriptive statistics indicate capital adequacy of the insurance company and its relationship with financial performance, equity to total asset is used as proxy. The mean of the equity to total asset was 14.41. Capital adequacy of insurance companies was dispersed from its mean value (i.e. 14.41) with the standard deviation of 0.09. The maximum and minimum values were 0.66 and 0.144 respectively.

4.2. Correlation Analysis

The following table shows the correlation matrix among dependent and independent variables. 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 (Brook, 2008).The table below shows the correlation matrix among dependent and independent variables.

Model 1 (ROA)

Table 4.2 Correlation Analysis of Variables

	ROA
ROA	1.000000
TDI	0.020312
EI	0.127454
TBI	0.325674
FAI	-0.080465
IS	0.146615
CAR	0.021776

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

The correlation result in Table 4.2 shows time deposit investment, equity investment, Treasury bill investment, insurance size and capital adequacy have positive correlation with return on asset for measurement of Ethiopian insurance companies' financial performance. Fixed asset investment has negative correlation with return on asset.

Model 2 (ROE)

Table 4.3 Correlation Analysis of Variables

	ROE
ROE	1.000000
TDI	0.246929
EI	0.215058
TBI	0.358196
FAI	0.102657
IS	0.400558
CAR	-0.073677

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

The correlation result in Table 4.2 shows time deposit investment, equity investment, Treasury bill investment, fixed asset investment and insurance size have positive correlation with return on equity for measurement of Ethiopian insurance companies' financial performance. Capital adequacy has negative correlation with return on asset.

4.3. Regression model tests

Model Selection (Random Effect versus Fixed Effect Models)

There are broadly two classes of panel estimator approaches that can be employed in financial research: fixed effects models (FEM) and random effects models (REM) (Brooks, 2008). 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. The following results are observed, with only the top panel that reports the Hausman test results being reported here in the following table.

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.

Model 1 (ROA) test

Table 4.4 Hausman test of Model-1 (ROA)

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	34.966638	6	0.0000

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

According to (Brook, 2008) if the p-value for the test is less than 1%, indicating that the random effects model is not appropriate and that the fixed effects specification is to be preferred. As show in the above table the result of Hausman test the p- value is less than 1%, the null hypothesis which is random effect model appropriate was rejected and the research used the fixed effect model.

Model 2 (ROE) test

Table 4.5 Hausman test of Model-2 (ROE)

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	11.477813	7	0.0191

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

As show in the above table the result of Hausman test the p- value is less than 1%, the null hypothesis which is random effect model appropriate was rejected and the research used the fixed effect model.

4.3.1. Tests for the Classical Linear Regression Model (CLRM) assumptions

Before going further in to panel data econometric measurement, the first issue is to test the assumption of classical linear regression model (CLRM). Five assumptions were made relating to the classical linear regression model (CLRM). These were required to show that estimation technique, ordinary least squares (OLS), had a number of desirable properties, and also hypothesis tests regarding the coefficient estimates could validly be conducted Brooks (2008).

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

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 (Brooks, 2008). Since, this research included a constant term (β_0) in the regression model and it passed the first assumption.

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.

H_0 : The variance of the error is homoscedasticity

H_1 : The variance of the error is heteroscedasticity

Table 4.6 Heteroskedasticity Test for ROA Model 1

Heteroskedasticity Test: White

F-statistic	0.953038	Prob. F(7,133)	0.4683
Obs*R-squared	6.734733	Prob. Chi-Square(7)	0.4570
Scaled explained SS	82.89325	Prob. Chi-Square(7)	0.3769

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

Table 4.7 Heteroskedasticity Test for ROE Model 2

Heteroskedasticity Test: White

F-statistic	1.872423	Prob. F(7,135)	0.0788
Obs*R-squared	12.65501	Prob. Chi-Square(7)	0.0810
Scaled explained SS	42.95399	Prob. Chi-Square(7)	0.0758

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

As shown in table 4.6 & 4.7, both the F-statistic and Chi-Square versions of the test statistic gave the same conclusion that there is no proof for the presence of heteroscedasticity. In this study for both models developed the p-values were significantly in excess of 0.05. The third version of the test statistic, Scaled explained SS also gave the same conclusion that there is no evidence for the presence of heteroscedasticity problem, since the p-value was considerably in excess of 0.05. Therefore, the null hypothesis that the variance of the errors is constant (homoscedasticity) should not be rejected.

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). Brooks (2008) noted that the test for the existence of autocorrelation is made using the Durbin-Watson (DW) test and Breusch-Godfrey test.

The lagged value of a variable is used in this research in order to adjust the autocorrelation. Lagged the value is simply the value that the variable took during a previous period Brooks(2008). Accordingly, from the regression result DW for model 1 ROA and model 2 ROE are 2.235700 and 1.866361 respectively they are closed to two. Another test for the existence of autocorrelation is by using Breusch-Godfrey test.

Table 4.8 Breusch-Godfrey Serial Correlation LM Test for ROA Model 1

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.516981	Prob. F(2,131)	0.2232
Obs*R-squared	3.191645	Prob. Chi-Square(2)	0.2027

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

Table 4.9 Breusch-Godfrey Serial Correlation LM Test for ROE Model 2

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.361124	Prob. F(2,133)	0.2599
Obs*R-squared	2.868221	Prob. Chi-Square(2)	0.2383

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

Both versions of the test; F- statistic and R-squared version of the test indicate that the two model ROA & ROE are 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.

IV. Test of normality

A normal distribution is not skewed and is defined to have a coefficient of kurtosis ≈ 3 . Jarque Bera formalizes this by testing the residuals for normality and testing whether the coefficient of skeweness and kurtosis are ≈ 0 and ≈ 3 respectively. Normality assumption of the regression model can be tested with the Jarque- Bera measure. If the Jarque Bera value is greater than 0.05, it's an indicator for the presence of normality (Brook, 2008).In addition, it is quite often the case that one or two very extreme residuals cause a rejection of the normality assumption.

Such observations would appear in the tails of the distribution, which enters into the definition of kurtosis, to be very large. Such observations that do not fit in with the pattern of the remainder of the data are known as outliers. If this is the case, one way to improve the chances of error normality is to use dummy variables Brooks (2008). The table below shows the result of normality by including dummy variable (DUM413, DUM415 and DUM417 for ROA model 1 and DUM413, DUM704 and DUM304 for ROE model 2).

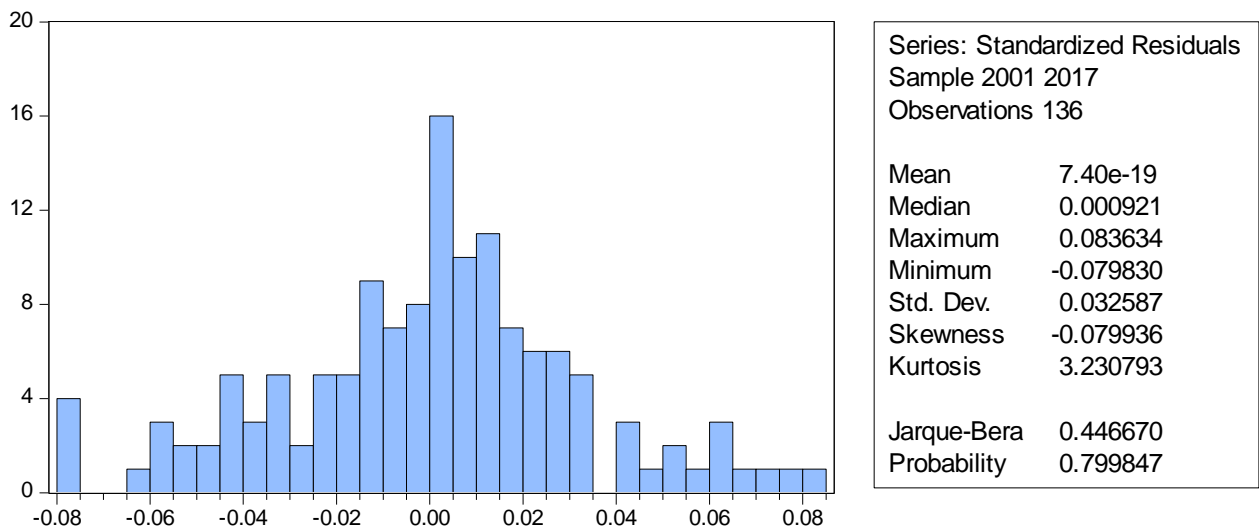
The hypothesis for the normality test was formulated as follow:

H0: Error term is normally distributed

H1: Error term is not normally distributed

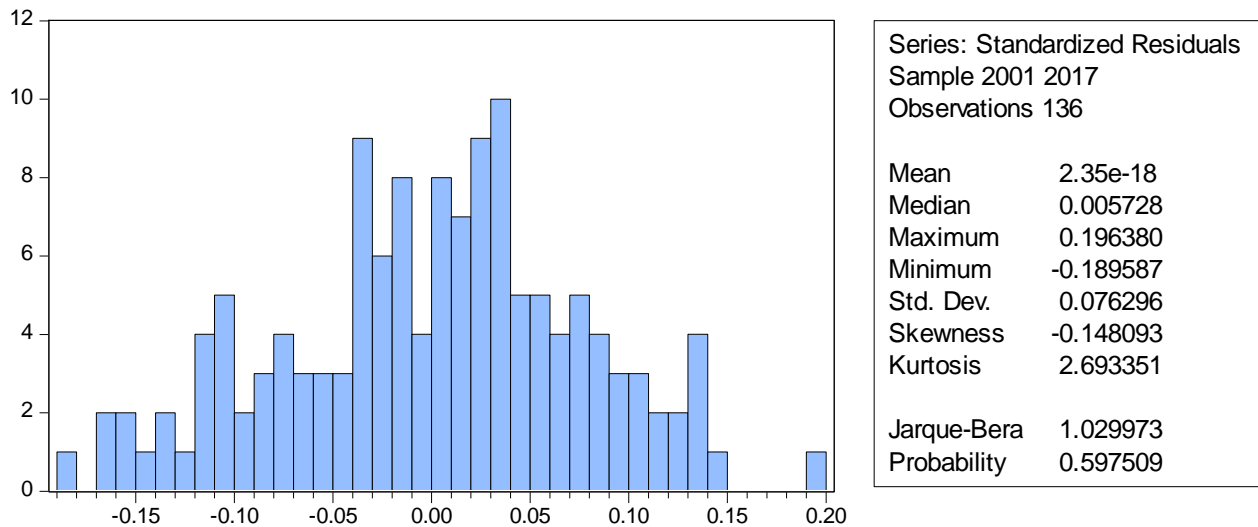
The table below shows the result of normality by including dummy variables.

Figure 4.1 Normality Test Result for ROA Model 1



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

Figure 4.2 Normality Test Result for ROE Model 2



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

As shown in the figure on 4.1 & 4.2, the coefficient kurtosis for ROA model is (3.23) & ROE model is (2.69) with a P-value of 0.79 for ROA & 0.59 for ROE respectively. Therefore, we can conclude that there was no evidence for the presence of abnormality in the data since the p-value is greater than 0.05. Thus, the null hypothesis that the data is normally distributed should not be rejected since the p-value was considerably in excess of 0.05 and the coefficient of kurtosis closer to 3.

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 4.10 Test of Multicollinearity

	TDI	EI	TBI	FAI	IS	CAR
TDI	1.000000					
EI	0.261212	1.000000				
TBI	0.153756	0.274412	1.000000			
FAI	0.341737	0.008355	-0.086118	1.000000		
IS	0.362316	0.483024	0.291453	0.297563	1.000000	
CAR	-0.191819	-0.444550	-0.029970	-0.209360	-0.479535	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 4.10 above. All correlation results are below 0.75, which indicates that multicollinearity is not a problem for this study.

4.4. Analysis of regression

This section presents the empirical findings from the econometric output on effect of investment on financial performance of insurance companies in Ethiopia. Table 4.11 below reports regression results between the dependent variable (ROA) and explanatory variables. Under the following regression outputs the beta coefficient may be negative or positive; beta indicates that each variable's level of influence on the dependent variable.

Regression result

Empirical model: the empirical model used in the study in order to examine the effect of investment on financial performance of insurance companies in Ethiopia.

4.4.1 Regression analysis between ROA and explanatory variables

$$ROA_{it} = \beta_0 + \beta_1 TDI_{it} + \beta_2 EI_{it} + \beta_3 TBI_{it} + \beta_4 FAI_{it} + \beta_5 CAR_{it} + \beta_6 ISI_{it} + \varepsilon_{it} \dots \dots \text{ (Model 1)}$$

Table 4. 11 Regression result ROA model 1

Dependent Variable: ROA
 Method: Panel Least Squares
 Date: 05/28/18 Time: 08:33
 Sample (adjusted): 2001 2017
 Periods included: 17
 Cross-sections included: 8
 Total panel (balanced) observations: 136

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.166543	0.105510	-1.578457	0.1171
TDI	0.001109	0.000547	2.028377	0.0448
EI	-0.000264	0.003155	-0.083565	0.9335
TBI	-0.000229	0.000512	-0.447559	0.6553
FAI	0.007125	0.003258	-2.186994	0.0307
IS	0.014135	0.004385	3.223833	0.0016
CAR	0.124593	0.055727	2.235773	0.0272
ROA(-1)	0.744421	0.047710	15.60311	0.0000
DUM413	0.424250	0.036557	11.60519	0.0000
DUM417	0.050568	0.039264	1.287888	0.2003
DUM415	-0.095029	0.041877	-2.269236	0.0251
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.870121	Mean dependent var		0.096062
Adjusted R-squared	0.851410	S.D. dependent var		0.090423
S.E. of regression	0.034856	Akaike info criterion		-3.752454
Sum squared resid	0.143362	Schwarz criterion		-3.366955
Log likelihood	273.1668	Hannan-Quinn criter.		-3.595797
F-statistic	46.50234	Durbin-Watson stat		2.235700
Prob(F-statistic)	0.000000			

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

Thus, based on the result in above Table, the following model was developed to examine the effect of investment on financial performance of insurance companies in Ethiopia.

$$ROA = -0.166543 + 0.001109TDI - 0.000264EI - 0.000229TBI + 0.007125FAI + 0.014135IS + 0.124593CAR + \varepsilon$$

This section discusses in detail the analysis of the results for each explanatory variable and effect of investment on financial performance of insurance companies in Ethiopia. Furthermore, the discussion analyzed the statistical findings of the study in relation to the previous empirical evidences. Hence, the following discussions present the interpretation on the fixed effects model regression results.

P-value indicates at what percentage or precession level of each variable is significant. The R-squared value measures how well the regression model explains the actual variations in the dependent variable (Brooks, 2008). R-squared statistics and the adjusted- R squared statistics of the model was 87.01% and 85.14% respectively. The adjusted R^2 value 85.14% indicates the total variability of examine the effect of investment on financial performance of insurance companies in Ethiopia was explained by the variables in the model. Thus these variables collectively, are good explanatory variables to identify examine the effect of investment on financial performance of insurance companies in Ethiopia. The regression F-statistic (46.50234) and the p-value of zero attached to the test statistic reveal that the null hypothesis that all of the coefficients are jointly zero should be rejected. Thus, it implies that the independent variables in the model were able to explain variations in the dependent variable.

The coefficient for TDI is 0.001109 on ROA which indicates that the time deposit investment of the insurances had positive relationship with ROA and also the relationship is significant at 5% level of significant. And also, the coefficient for EI is -0.000264 on ROA which refers that equity investment had negative and insignificant relation with ROA at 5% level of significant. In addition to this, Treasury bill investment had negative and insignificant relation with ROA at 5% level of significant with coefficient of 0.000229 and fixed asset investment with coefficient of 0.007125 had positive and significant at 5% level of significant. Finally, control variable of insurance size and capital adequacy ratio with coefficient of 0.014135 and 0.124593 had positive and significant relation with ROA at 5% level of significant respectively.

The negative relationships indicate that there is an inverse relationship between the two independent variables and ROA. Thus, increasing of those variables will lead to a decrease in ROA of Ethiopian insurance companies. On the other hand the positive relationships indicate that there is a direct relationship between the remaining four independent variables and ROA

The negative relationships indicate that there is an inverse relationship between one independent variables and ROE. Thus, increasing of those variables will lead to a decrease in ROE of Ethiopian insurance companies. On the other hand the positive relationships indicate that there is a direct relationship between the remaining five independent variables and ROE.

4.4.2. Discussion of Regression result

Time deposit investment

H₁: Time deposit investment has positive and statistically significant effect on ROA off insurance companies in Ethiopia insurance.

According to the regression result of time deposit investment (TDI) has a positive relationship with Ethiopian insurance companies' financial performance by a coefficient estimate of 0.001109. This means that holding other independent variables constant and when one percent increases in time deposit investment, consequently it increases return on asset (ROA) of Ethiopian insurance companies by 0.1109% and the p value of time deposit investment (TDI) is 0.0448 reveals that it is statistically significant at 5% level of significance. Accordingly, the result supports the working hypothesis that time deposit investment has positive and statistically significant effect on financial performance (ROA) of insurance companies in Ethiopia for the period of 2000 to 2017. Thus, this outcome is consistent with prior study of Veronica (2015) that time deposit investment has positive and statistically significant effect on financial performance (ROA) of insurance companies in Ethiopia.

Hence, the study finding implies that an increase in time deposit investment, definitely lead to increase in financial performance (ROA) of Ethiopian insurance companies. It refers that insurance companies invest on time deposit there excess cash, that do not affect their liquidity on cash in order to earn an additional interest income. This implies that insurance companies with more time deposit might have earning much more interest income. Due to this fact, insurance companies can enhance their other income through collecting time deposit interest income.

Equity investment

H2: Equity investment has positive and statistically significant effect on ROA off insurance companies in Ethiopia insurance.

According to the regression result of equity investment (EI) has a negative relationship with Ethiopian insurance companies' financial performance by a coefficient estimate of -0.000264 . This means that holding other independent variables constant and when one percent increases in equity investment, consequently it reduces return on asset (ROA) of Ethiopian insurance companies by 0.0264% and the p value of equity investment (EI) is 0.9335 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 financial performance (ROA) of insurance companies in Ethiopia for the period of 2000 to 2017. Thus, this outcome is consistent with prior study of Eskedar (2016) that equity investment has statistically insignificant effect on financial performance. However, it contradicts with result of Veronica (2015) and Ezekiel (2008) that equity investment has statistically significant effect on financial performance insurance companies.

Hence, the study finding implies that an increase in equity investment, definitely lead not to have significant impact on financial performance (ROA) of Ethiopian insurance companies. It refers that NBE regulation highly restricts insurance in involving of investment in other companies stock. Insurances are allowed only to invest 15% of their admitted asset (SIB 25/2004). Due to this regulation insurance cannot exercise investment in other non-insurance businesses.

Treasury bill investment

H₃: Treasury bill investment has positive and statistically significant effect on ROA off insurance companies in Ethiopia insurance.

According to the regression result of Treasury bill investment (TBI) has a negative relationship with Ethiopian insurance companies' financial performance by a coefficient estimate of -0.000229. This means that holding other independent variables constant and when one percent increases in Treasury bill investment, consequently it reduces return on asset (ROA) of Ethiopian insurance companies by 0.0229% and the p value of Treasury bill investment (TBI) is 0.6553 reveals that it is statistically insignificant at 5% level of significance. Accordingly, the result didn't support the working hypothesis that Treasury bill investment has positive and statistically significant effect on financial performance (ROA) of insurance companies in Ethiopia for the period of 2000 to 2017. Thus, this outcome is not consistent with prior study of Veronica (2015). This implies investing in Treasury bill does not have significant impact on financial performance. The possible reason is Ethiopian insurance companies don't aggressively invest in this area based on their financial position data indicated.

Fixed asset investment

H₄: Fixed asset investment has positive and statistically significant effect on ROA off insurance companies in Ethiopia insurance.

According to the regression result of fixed asset investment (FAI) has a positive relationship with Ethiopian insurance companies' financial performance by a coefficient estimate of 0.007125. This means that holding other independent variables constant and when one percent increases in fixed asset investment, consequently it increases return on asset (ROA) of Ethiopian insurance companies by 0.71% and the p value of fixed asset investment (FAI) is 0.0307 reveals that it is statistically significant at 5% level of significance. Accordingly, the result supports the working hypothesis that fixed asset investment has positive and statistically significant effect on financial performance (ROA) of insurance companies in Ethiopia for the period of 2000 to 2017.

Thus, this outcome is consistent with prior study of Edlira et al (2016) and Esedar (2016) that fixed asset investment (FAI) has a positive and statistically significant relationship with financial performance. This implies that insurance company's financial performance will increase when their fixed asset investment is high.

The national bank of Ethiopia has a directive on the investment of fixed asset like building and real estate. No insurance shall invest more than 10% of their admitted asset in real estate acquisition for general insurance fund and they can invest 25% their admitted asset for long term insurance fund (NBE directive No. SBB/25/2004. But the national banks do not restrict insurance to invest in a fixed asset for own business use like investment in building of their own office and investment on IT. Thus, investing in fixed asset, it can enhance insurance company's financial performance.

Control variable

Insurance size

According to the regression result of insurance size (IS) has a positive relationship with Ethiopian insurance companies' financial performance by a coefficient estimate of 0.014135. This means that holding other independent variables constant and when one percent increases in total asset, consequently it increases return on asset (ROA) of Ethiopian insurance companies by 1.14% and the p value of total asset (IS) is 0.0016 reveals that it is statistically significant at 5% level of significance. Thus, this outcome is consistent with prior study of like Yuvaraj et al. (2013); Meaza (2014); Suheyli (2015); Daniel et al. (2013); Amal et al (2012) and Ana-Maria, et al. (2014). Hence, the study finding implies that an increase in insurance size, definitely lead to increase in financial performance of Ethiopian insurance companies. It refers that large corporate size enables to effectively diversify their assumed risks and respond more quickly to changes in market conditions. An increase in total assets such as the establishment of more branches and the adoption of new technologies enables an insurer to underwrite more policies which may increase the underwriting profit and the total net profit.

Capital adequacy ratio

According to the regression result of capital adequacy ratio (CAR) has a positive relationship with Ethiopian insurance companies' financial performance by a coefficient estimate of 0.124593. This means that holding other independent variables constant and when one percent increases in capital adequacy ratio, consequently it increases return on asset (ROA) of Ethiopian insurance companies by 12.45% and the p value of total asset (IS) is 0.00272 reveals that it is statistically significant at 5% level of significance. Thus, this outcome is consistent with prior study of Eskedar (2016), which indicates that the higher the Equity to Asset ratio, the lower the need for external funding and therefore the higher the profitability of the insurance companies. Insurance companies with higher capital to asset ratio are considered relatively safer and remained profitable even during economically difficult times.

4.4.3. Regression analysis between ROE and explanatory variables

$$ROE_{it} = \beta_0 + \beta_1 TDI_{it} + \beta_2 EI_{it} + \beta_3 TBI_{it} + \beta_4 FAI_{it} + \beta_5 CAR_{it} + \beta_6 IS_{it} + \varepsilon_{it} \dots \dots \text{ (Model 2)}$$

Table 4. 12 Regression result ROE model 2

Dependent Variable: ROE
 Method: Panel Least Squares
 Date: 05/28/18 Time: 09:58
 Sample (adjusted): 2001 2017
 Periods included: 17
 Cross-sections included: 8
 Total panel (balanced) observations: 136

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.363874	0.249775	-1.456808	0.1478
CAR	0.440402	0.130218	3.382028	0.0010
EI	-0.003727	0.007512	-0.496140	0.6207
FAI	0.015737	0.007505	-2.096862	0.0381
IS	0.034351	0.009939	3.456164	0.0008
TBI	0.000121	0.001186	0.101949	0.9190
TDI	0.002260	0.001250	1.808298	0.0431
ROE(-1)	0.355501	0.066101	5.378174	0.0000
DUM413	0.554372	0.085595	6.476717	0.0000
DUM704	-0.287630	0.084964	-3.385325	0.0010
DUM304	-0.247460	0.087417	-2.830807	0.0055
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.614821	Mean dependent var	0.202938	
Adjusted R-squared	0.559329	S.D. dependent var	0.122934	
S.E. of regression	0.081607	Akaike info criterion	-2.051067	
Sum squared resid	0.785845	Schwarz criterion	-1.665569	
Log likelihood	157.4726	Hannan-Quinn criter.	-1.894411	
F-statistic	11.07948	Durbin-Watson stat	1.866361	
Prob(F-statistic)	0.000000			

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

Thus, based on the result in above Table, the following model was developed to examine the effect of investment on financial performance of insurance companies in Ethiopia.

$$ROE = -0.363874 + 0.002260TDI - 0.003727EI + 0.000121TBI + 0.015737FAI + 0.034351IS + 0.440402CAR + \varepsilon$$

This section discusses in detail the analysis of the results for each explanatory variable and effect of investment on financial performance of insurance companies in Ethiopia. Furthermore, the discussion analyzed the statistical findings of the study in relation to the previous empirical evidences. Hence, the following discussions present the interpretation on the fixed effects model regression results.

P-value indicates at what percentage or precession level of each variable is significant. The R-squared value measures how well the regression model explains the actual variations in the dependent variable (Brooks, 2008). R-squared statistics and the adjusted- R squared statistics of the model was 61.48% and 55.93% respectively. The adjusted R^2 value 55.93% indicates the total variability of examine the effect of investment on financial performance of insurance companies in Ethiopia was explained by the variables in the model. Thus these variables collectively, are good explanatory variables to examine the effect of investment on financial performance of insurance companies in Ethiopia. The regression F-statistic (11.07948) and the p-value of zero attached to the test statistic reveal that the null hypothesis that all of the coefficients are jointly zero should be rejected. Thus, it implies that the independent variables in the model were able to explain variations in the dependent variable. The coefficient for TDI is 0.002260 on ROE which indicates that the time deposit investment of the insurances had positive relationship with ROE and also the relationship is significant at 5% level of significant. And also, the coefficient for EI is -0.003727 on ROE which refers that equity investment had negative and insignificant relation with ROE at 5% level of significant. In addition to this, Treasury bill investment had positive and insignificant relation with ROE at 5% level of significant with coefficient of 0.000121 and fixed asset investment with coefficient of 0.015737 had positive and significant at 5% level of significant. Finally, control variable of insurance size and capital adequacy ratio with coefficient of 0.034351 and 0.440402 had positive and significant relation with ROE at 5% level of significant respectively.

The negative relationships indicate that there is an inverse relationship between one independent variables and ROE. Thus, increasing of these variables will lead to a decrease in ROE of Ethiopian insurance companies. On the other hand the positive relationships indicate that there is a direct relationship between the remaining five independent variables and ROE.

4.4.4. Discussion of Regression result

Time deposit investment

H₅: Time deposit investment has positive and statistically significant effect on ROE of insurance companies in Ethiopia insurance.

According to the regression result of time deposit investment (TDI) has a positive relationship with Ethiopian insurance companies' financial performance by a coefficient estimate of 0.002260. This means that holding other independent variables constant and when one percent increases in time deposit investment, consequently it increases return on equity (ROE) of Ethiopian insurance companies by 0.226% and the p value of time deposit investment (TDI) is 0.0431 reveals that it is statistically significant at 5% level of significance. Accordingly, the result supports the working hypothesis that time deposit investment has positive and statistically significant effect on financial performance (ROE) of insurance companies in Ethiopia for the period of 2000 to 2017. Thus, this outcome is consistent with prior study of Veronica (2015) that time deposit investment has positive and statistically significant effect on financial performance (ROA) of insurance companies in Ethiopia.

Hence, the study finding implies that an increase in time deposit investment, definitely lead to increase in financial performance (ROE) of Ethiopian insurance companies. It refers that insurance companies invest on time deposit there excess cash, that do not affect their liquidity on cash in order to earn an additional interest income. This implies that insurance companies with more time deposit might have earning much more interest income. Due to this fact, insurance companies can enhance their other income through collecting time deposit interest income.

Equity investment

H₆: Equity investment has positive and statistically significant effect on ROE of insurance companies in Ethiopia insurance.

According to the regression result of equity investment (EI) has a negative and insignificant relationship with Ethiopian insurance companies' financial performance by a coefficient estimate of -0.003727 . This means that holding other independent variables constant and when one percent increases in equity investment, consequently it reduces return on equity (ROE) of Ethiopian insurance companies by 0.3727% and the p value of equity investment (EI) is 0.6207 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 financial performance (ROE) of insurance companies in Ethiopia for the period of 2000 to 2017.

Thus, this outcome is consistent with prior study of Eskedar (2016) that equity investment has statistically insignificant effect on financial performance. However, it contradicts with result of Veronica (2015) and Ezekiel (2008) that equity investment has statistically significant effect on financial performance insurance companies. Hence, the study finding implies that an increase in equity investment, definitely lead not to have significant impact on financial performance (ROA) of Ethiopian insurance companies. It refers that NBE regulation highly restricts insurance in involving of investment in other companies stock. Insurances are allowed only to invest 15% of their admitted asset (SIB 25/2004). Due to this regulation insurance cannot exercise investment in other non-insurance businesses.

Treasury bill investment

H₇: Treasury bill investment has positive and statistically significant effect on ROA of insurance companies in Ethiopia insurance.

According to the regression result of Treasury bill investment (TBI) has a negative relationship with Ethiopian insurance companies' financial performance by a coefficient estimate of -0.000229. This means that holding other independent variables constant and when one percent increases in Treasury bill investment, consequently it reduces return on asset (ROA) of Ethiopian insurance companies by 0.0229% and the p value of Treasury bill investment (TBI) is 0.6553 reveals that it is statistically insignificant at 5% level of significance. Accordingly, the result didn't support the working hypothesis that Treasury bill investment has positive and statistically significant effect on financial performance (ROA) of insurance companies in Ethiopia for the period of 2000 to 2017. Thus, this outcome is not consistent with prior study of Veronica (2015). This implies investing in Treasury bill does not have significant impact on financial performance. The possible reason is Ethiopian insurance companies don't aggressively invest in this area based on their financial position data indicated.

Fixed asset investment

H₈: Fixed asset investment has positive and statistically significant effect on ROA of insurance companies in Ethiopia insurance.

According to the regression result of fixed asset investment (FAI) has a positive relationship with Ethiopian insurance companies' financial performance by a coefficient estimate of 0.015737. This means that holding other independent variables constant and when one percent increases in fixed asset investment, consequently it increases return on equity (ROE) of Ethiopian insurance companies by 1.57% and the p value of fixed asset investment (FAI) is 0.0381 reveals that it is statistically significant at 5% level of significance. Accordingly, the result supports the working hypothesis that fixed asset investment has positive and statistically significant effect on financial performance (ROE) of insurance companies in Ethiopia for the period of 2000 to 2017.

Thus, this outcome is consistent with prior study of Edlira et al (2016) and Esedar (2016) that fixed asset investment (FAI) has a positive and statistically significant relationship with financial performance. This implies that insurance company's financial performance will increase when their fixed asset investment is high.

The national bank of Ethiopia has a directive on the investment of fixed asset like building and real estate. No insurance shall invest more than 10% of their admitted asset in real estate acquisition for general insurance fund and they can invest 25% their admitted asset for long term insurance fund (NBE directive No. SBB/25/2004. But the national banks do not restrict insurance to invest in a fixed asset for own business use like investment in building of their own office and investment on IT. Thus, investing in fixed asset, it can enhance insurance company's financial performance.

Control variable

Insurance size

According to the regression result of insurance size (IS) has a positive relationship with Ethiopian insurance companies' financial performance by a coefficient estimate of 0.034351. This means that holding other independent variables constant and when one percent increases in total asset, consequently it increases return on equity (ROE) of Ethiopian insurance companies by 3.4% and the p value of total asset (IS) is 0.0008 reveals that it is statistically significant at 5% level of significance. Thus, this outcome is consistent with prior study of like Yuvaraj et al. (2013); Meaza (2014); Suheyli (2015); Daniel et al. (2013); Amal et al (2012) and Ana-Maria, et al. (2014). Hence, the study finding implies that an increase in insurance size, definitely lead to increase in financial performance of Ethiopian insurance companies. It refers that large corporate size enables to effectively diversify their assumed risks and respond more quickly to changes in market conditions. An increase in total assets such as the establishment of more branches and the adoption of new technologies enables an insurer to underwrite more policies which may increase the underwriting profit and the total net profit.

Capital adequacy ratio

According to the regression result of capital adequacy ratio (CAR) has a positive relationship with Ethiopian insurance companies' financial performance by a coefficient estimate of 0.440402. This means that holding other independent variables constant and when one percent increases in capital adequacy ratio, consequently it increases return on equity (ROE) of Ethiopian insurance companies by 44.04% and the p value of total asset (CAR) is 0.0010 reveals that it is statistically significant at 5% level of significance.

Thus, this outcome is consistent with prior study of Esedar (2016), which indicates that the higher the Equity to Asset ratio, the lower the need for external funding and therefore the higher the profitability of the insurance companies. Bank with higher capital to asset ratio are considered relatively safer and remained profitable even during economically difficult times.

Table 4.13 Comparison of test result with expectation

Independent Variables	Expected Relationships with ROA	Actual result	Expected Relationships with ROE	Actual result	Statistical Significance test	Hypothesis Status
Time deposit investment	+	+	+	+	significant at 5%	Failed to Reject
Equity investment	+	-	+	-	Insignificant at 1%	Reject
Treasury bill investment	+	-	+	+	Insignificant at 5%	Reject
Fixed asset investment	+	+	+	+	significant at 5%	Failed to Reject
Control variable						
Insurance size				+	Significant at 5%	
Capital adequacy ratio				+	Significant at 5%	

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

The preceding chapter presented the results and discussion, while this chapter deals with summary, conclusion and recommendations based on the findings of the study. Accordingly this, chapter is organized into three subsections.

5.1 Summary of findings

The research general objective is to examine the effect investment on financial performance of insurance companies in Ethiopia. The study used eighteen (18) years period of time from 2000-2017 data from eight (8) selected insurance companies in Ethiopia. It carried out by constructing a balanced panel regression model using OLS and fixed effect model was adopted for secondary data obtained from audited annual report.

The overall result obtained from the regression model indicates that both investment factor variable and control variables have effect on financial performance of insurance companies in Ethiopia. The dependent variable used to measure insurance financial performance was return on asset and return equity and independent variables these are time deposit investment, equity investment, Treasury bill investment, fixed asset investment, insurance size and capital adequacy ratio in order to attain the objective of the study.

From the regression result, time deposit investment, fixed asset investment, insurance size and capital adequacy ratio have significant effect on Ethiopian insurers' financial performance whereas, equity investment and Treasury bill investment have no significant effect on financial performance of Ethiopian insurance companies.

5.2 Conclusions

The study specifically examines effect of investment on financial performance of insurance companies in Ethiopia.

- Time deposit investment has positive and significant association with financial Performance of Ethiopian insurance companies. This implies that an increase in time deposits investment definitely lead to increase in financial performance of Ethiopian insurance companies.
- Equity investment has negative and insignificant association with financial Performance of Ethiopian insurance companies. This implies that an increase in Equity investment, certainly not lead to decrease or increase significantly in financial performance of Ethiopian insurance companies.
- Treasury bill investment has positive and insignificant association with financial Performance of Ethiopian insurance companies. This implies that an increase in Treasury bill investment, certainly not lead to decrease or increase significantly in financial performance of Ethiopian insurance companies.
- Fixed asset investment has positive and significant association with financial Performance of Ethiopian insurance companies. This implies that an increase in fixed asset investment definitely lead to increase in financial performance of Ethiopian insurance companies.
- Insurance size has positive and significant association with financial Performance of Ethiopian insurance companies. This implies that an increase in insurance size, definitely lead to increase in financial performance of Ethiopian insurance companies.
- Capital adequacy ratio has positive and significant association with financial Performance of Ethiopian insurance companies. This implies that an increase in capital adequacy, definitely lead to increase in financial performance of Ethiopian insurance companies.

5.3 Recommendation

The findings of the study showed that time deposit investment, fixed asset investment, insurance size and capital adequacy ratio have significant effect on Ethiopian insurers' financial performance whereas, equity investment and Treasury bill investment have no significant effect on financial performance of Ethiopian insurance companies.

- The study examined that time deposit investment has positive and significant association with financial Performance of Ethiopian insurance companies. For this reason, Ethiopian insurance companies should invest on time deposit investment area as per NBE directive (SIB25/2004) to generate additional income and enhance their financial performance.
- Investment in fixed asset yields a significant effect on financial performance of Ethiopian insurance companies. Hence, Ethiopian insurance companies should increase the amount of investment on fixed asset and have proper management of those asset in order to enhance their financial performance.
- The paper examined that insurance size has positive and significant association with financial Performance of Ethiopian insurance companies. For this reason, Ethiopian insurance companies should maximize their total asset by investing on fixed asset and current asset which is indicated on NBE directive (SIB/25/2004) about investment sectors allowed to insurance companies in order to invest on those businesses. Thus, Ethiopian insurance companies should employ this directive properly to enhance their total asset.
- The result examined that capital adequacy ratio has positive and significant association with financial Performance of Ethiopian insurance companies. For this reason, Ethiopian insurance companies should work to have high capital adequacy ratio to minimize the need for external funding by maximize their net asset, for instance selling additional stock for the existing as well as new shareholders.

- The finding indicated that equity investment has no significant effect on financial performance of Ethiopian insurance companies. This is due to NBE regulation highly restricts insurance in involving of investment in other companies stock, accordingly National bank of Ethiopia should consider the capital of the insurance companies and permits an additional percentage in order to involve banks in other investment. Also insurance companies should analyze their portfolio and look for additional opportunity with minimum risk to increase their performance.
- The result examined that Treasury bill investment has no significant association with financial Performance of Ethiopian insurance companies, because Ethiopian insurance companies didn't mainly invest in this sector. For this reason, Ethiopian insurance companies should aggressively invest their excess fund on Treasury bill investment so as to enhance their profit.

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APPENDICES

Appendix 1:-Descriptive Analysis

	ROA	ROE	TDI	EI	TBI	FAI	IS	CAR
Mean	0.095607	0.211936	7.986876	16.72350	6.046891	18.02796	18.85581	0.396816
Median	0.080905	0.207238	0.000000	17.37518	0.000000	18.03170	18.68781	0.397756
Maximum	0.613184	0.753226	21.67021	19.50920	19.56553	20.94816	21.87222	0.665389
Minimum	-0.090015	-0.217225	0.000000	0.000000	0.000000	15.14522	16.39078	0.144143
Std. Dev.	0.089375	0.138818	9.282412	2.317048	7.532521	1.176658	1.238978	0.092808
Skewness	3.135447	0.394655	0.322097	-3.218975	0.527793	-0.147297	0.112861	0.572167
Kurtosis	17.22566	6.031664	1.157046	20.63972	1.430774	2.985382	2.655818	3.945657
Jarque-Bera	1450.161	58.88396	22.86879	2115.641	21.46038	0.521995	1.016471	13.22262
Probability	0.000000	0.000000	0.000011	0.000000	0.000022	0.770283	0.601556	0.001345
Sum	13.76735	30.51876	1150.110	2408.184	870.7522	2596.026	2715.236	57.14157
Sum Sq. Dev.	1.142270	2.755667	12321.33	767.7257	8113.658	197.9868	219.5145	1.231709
Observations	144	144	144	144	144	144	144	144

Appendix 1 Correlation analysis

	ROA	ROE	TBI	TDI	FAI	IS	CAR	EI
ROA	1.000000	0.635313	0.325674	0.020312	-0.080465	0.146615	0.021776	0.127454
ROE	0.635313	1.000000	0.358196	0.246929	0.102657	0.400558	-0.073677	0.215058
TBI	0.325674	0.358196	1.000000	0.153756	-0.086118	0.291453	-0.029970	0.274412
TDI	0.020312	0.246929	0.153756	1.000000	0.341737	0.362316	-0.191819	0.261212
FAI	-0.080465	0.102657	-0.086118	0.341737	1.000000	0.297563	-0.209360	0.008355
IS	0.146615	0.400558	0.291453	0.362316	0.297563	1.000000	-0.479535	0.483024
CAR	0.021776	-0.073677	-0.029970	-0.191819	-0.209360	-0.479535	1.000000	-0.444550
EI	0.127454	0.215058	0.274412	0.261212	0.008355	0.483024	-0.444550	1.000000

Appendix 2:-Hausman Test Model 1 ROA

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	34.966638	6	0.0000

** WARNING: estimated cross-section random effects variance is zero.

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
TDI	0.001558	-0.000383	0.000001	0.0145
EI	0.001203	0.001614	0.000010	0.8972
TBI	0.001344	0.003367	0.000000	0.0000
FAI	-0.007676	-0.004536	0.000010	0.3257
IS	0.039099	0.008401	0.000035	0.0000
CAR	0.330611	0.081456	0.006662	0.0023

Cross-section random effects test equation:

Dependent Variable: ROA
Method: Panel Least Squares
Date: 05/29/18 Time: 02:01
Sample: 2000 2017
Periods included: 18
Cross-sections included: 8
Total panel (balanced) observations: 144

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.675124	0.217373	-3.105832	0.0023
TDI	0.001558	0.001123	1.387923	0.1675
EI	0.001203	0.004724	0.254616	0.7994
TBI	0.001344	0.001061	1.267542	0.2072
FAI	-0.007676	0.007040	-1.090393	0.2776
IS	0.039099	0.009153	4.271914	0.0000
CAR	0.330611	0.117945	2.803083	0.0058

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.310444	Mean dependent var	0.095607
Adjusted R-squared	0.241489	S.D. dependent var	0.089375
S.E. of regression	0.077839	Akaike info criterion	-2.176182
Sum squared resid	0.787659	Schwarz criterion	-1.887450
Log likelihood	170.6851	Hannan-Quinn criter.	-2.058858
F-statistic	4.502094	Durbin-Watson stat	0.744189
Prob(F-statistic)	0.000003		

Appendix 3:-Hausman Test Model 2 ROE

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	11.477813	7	0.0191

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
CAR	0.450121	0.246682	0.011784	0.0609
EI	0.000727	0.001714	0.000050	0.8887
FAI	-0.019390	-0.011777	0.000017	0.0616
IS	0.041391	0.026419	0.000058	0.0498
TBI	0.000864	0.002128	0.000000	0.0583
TDI	0.002020	0.001707	0.000001	0.7811

Cross-section random effects test equation:

Dependent Variable: ROE

Method: Panel Least Squares

Date: 05/29/18 Time: 02:06

Sample (adjusted): 2001 2017

Periods included: 17

Cross-sections included: 8

Total panel (balanced) observations: 136

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.501582	0.300334	-1.670081	0.0975
CAR	0.450121	0.157781	2.852828	0.0051
EI	0.000727	0.009071	0.080124	0.9363
FAI	-0.019390	0.008830	-2.195978	0.0300
IS	0.041391	0.012012	3.445864	0.0008
TBI	0.000864	0.001435	0.602408	0.5480
TDI	0.002020	0.001517	1.331375	0.1856

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.416446	Mean dependent var	0.202938
Adjusted R-squared	0.348927	S.D. dependent var	0.122934
S.E. of regression	0.099194	Akaike info criterion	-1.679755
Sum squared resid	1.190573	Schwarz criterion	-1.358507
Log likelihood	129.2234	Hannan-Quinn criter.	-1.549208
F-statistic	6.167857	Durbin-Watson stat	2.044470
Prob(F-statistic)	0.000000		

Appendix: 4-Test of Heteroskedasticity Model 1 ROA

Heteroskedasticity Test: White

F-statistic	0.953038	Prob. F(7,133)	0.4683
Obs*R-squared	6.734733	Prob. Chi-Square(7)	0.4570
Scaled explained SS	82.89325	Prob. Chi-Square(7)	0.3769

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 05/29/18 Time: 02:11

Sample: 2 144

Included observations: 141

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.025376	0.020389	1.244575	0.2155
CAR^2	-0.027000	0.022921	-1.177968	0.2409
EI^2	-9.08E-06	3.08E-05	-0.294525	0.7688
FAI^2	-1.27E-05	4.05E-05	-0.314648	0.7535
IS^2	-3.37E-05	4.52E-05	-0.744701	0.4578
TBI^2	2.14E-05	1.41E-05	1.509406	0.1336
TDI^2	-8.32E-06	9.92E-06	-0.838572	0.4032
ROA(-1)^2	0.033561	0.033284	1.008343	0.3151

R-squared	0.047764	Mean dependent var	0.003377
Adjusted R-squared	-0.002354	S.D. dependent var	0.017827
S.E. of regression	0.017848	Akaike info criterion	-5.158820
Sum squared resid	0.042366	Schwarz criterion	-4.991514
Log likelihood	371.6968	Hannan-Quinn criter.	-5.090833
F-statistic	0.953038	Durbin-Watson stat	2.153459
Prob(F-statistic)	0.468335		

Appendix: 5-Test of Heteroskedasticity Model 2 ROE

Heteroskedasticity Test: White

F-statistic	1.872423	Prob. F(7,135)	0.0788
Obs*R-squared	12.65501	Prob. Chi-Square(7)	0.0810
Scaled explained SS	42.95399	Prob. Chi-Square(7)	0.0758

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 05/29/18 Time: 02:16

Sample: 2 144

Included observations: 143

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.077536	0.037638	2.060062	0.0413
TDI^2	-1.69E-05	1.83E-05	-0.925141	0.3565
EI^2	-6.88E-05	5.68E-05	-1.212357	0.2275
TBI^2	6.70E-05	2.66E-05	2.522937	0.0128
FAI^2	1.81E-05	7.51E-05	0.241215	0.8098
IS^2	-9.89E-05	8.24E-05	-1.200713	0.2320
CAR^2	-0.114809	0.042301	-2.714132	0.0075
ROE(-1)^2	-0.014282	0.038432	-0.371610	0.7108

R-squared	0.088497	Mean dependent var	0.012239
Adjusted R-squared	0.041233	S.D. dependent var	0.033898
S.E. of regression	0.033192	Akaike info criterion	-3.918720
Sum squared resid	0.148727	Schwarz criterion	-3.752966
Log likelihood	288.1885	Hannan-Quinn criter.	-3.851365
F-statistic	1.872423	Durbin-Watson stat	1.813923
Prob(F-statistic)	0.078763		

Appendix 6: - Test of autocorrelation Model 1 ROA

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.516981	Prob. F(2,131)	0.2232
Obs*R-squared	3.191645	Prob. Chi-Square(2)	0.2027

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 05/29/18 Time: 02:20

Sample: 2 144

Included observations: 141

Presample and interior missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.005378	0.132724	-0.040518	0.9677
CAR	-0.006091	0.066609	-0.091445	0.9273
EI	-0.000247	0.002718	-0.090726	0.9278
FAI	0.000423	0.004871	0.086746	0.9310
IS	2.19E-05	0.005550	0.003940	0.9969
TBI	1.03E-06	0.000779	0.001325	0.9989
TDI	-0.000103	0.000633	-0.163022	0.8708
ROA(-1)	0.049200	0.103239	0.476570	0.6345
RESID(-1)	0.022254	0.131712	0.168957	0.8661
RESID(-2)	-0.169464	0.116998	-1.448435	0.1499

R-squared	0.022636	Mean dependent var	-3.28E-17
Adjusted R-squared	-0.044511	S.D. dependent var	0.058320
S.E. of regression	0.059604	Akaike info criterion	-2.733912
Sum squared resid	0.465393	Schwarz criterion	-2.524780
Log likelihood	202.7408	Hannan-Quinn criter.	-2.648928
F-statistic	0.337107	Durbin-Watson stat	1.962832
Prob(F-statistic)	0.961089		

Appendix 7: - Test of autocorrelation Model 2 ROE

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.361124	Prob. F(2,133)	0.2599
Obs*R-squared	2.868221	Prob. Chi-Square(2)	0.2383

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 05/29/18 Time: 02:22

Sample: 2 144

Included observations: 143

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.015657	0.271952	0.057574	0.9542
TDI	-0.000570	0.001299	-0.439103	0.6613
EI	0.000111	0.005123	0.021760	0.9827
TBI	-0.000393	0.001577	-0.249243	0.8036
FAI	0.000826	0.009224	0.089524	0.9288
IS	-0.002498	0.011650	-0.214377	0.8306
CAR	-0.016863	0.130354	-0.129364	0.8973
ROE(-1)	0.133264	0.211276	0.630757	0.5293
RESID(-1)	-0.095854	0.220036	-0.435628	0.6638
RESID(-2)	-0.184398	0.123144	-1.497415	0.1367

R-squared	0.020057	Mean dependent var	2.62E-17
Adjusted R-squared	-0.046254	S.D. dependent var	0.111021
S.E. of regression	0.113559	Akaike info criterion	-1.445618
Sum squared resid	1.715131	Schwarz criterion	-1.238426
Log likelihood	113.3617	Hannan-Quinn criter.	-1.361425
F-statistic	0.302472	Durbin-Watson stat	2.010644
Prob(F-statistic)	0.972885		

Appendix 8:- Insurance Companies in Ethiopia

<i>S/N</i>	<i>Name</i>	<i>Established Date</i>	<i>Type(life & 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>	>>	<i>Exclude</i>
10	<i>Lion Insurance Company S.C</i>	01/07/2007	<i>non-life insurance</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 & 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>

