ST.MARY'S UNIVERSITY SCHOOL OF GRADUATE STUDIES

FACTORS AFFECTING FINANCIAL PERFORMANCE OF ETHIOPIAN INSURANCE COMPANIES

By
LEUL LEALEM

DECEMBER, 2020
ADDIS ABABA, ETHIOPIA

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A THESIS SUBMITTED TO ST.MARY'S UNIVERSITY, SCHOOL OF GRADUATE STUDIES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION

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APPROVED BY BOARD OF EXAMINERS

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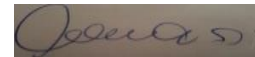Dean, Graduate Studies   Signature

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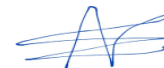

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DECLARATION

I, the undersigned, declare that this thesis is my original work, presented under the guidance of Simon Tarekegn (Asst.Prof.). 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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      Name
      Signature

St. Mary University, Addis Ababa December, 2020

ENDORSEMENT

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

Simon Tarekegn (Asst.Prof.)

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Advisor Signature

St. Mary University, Addis Ababa December, 2020

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My deepest and heartfelt thank goes to the Almighty God and his mother St. Marry, who follow me in all aspect of my life.

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List of Acronyms

ARCH   Autoregressive Conditional Heteroscedasticity

CLRM   Classical Linear Regression Model

CR   Credit risk

DW   Durbin–Watson

GDP   Gross Domestic product

INF   Inflation

IR   Interest Rate

JB   Jarque Bera

LR   Liquidity risk

NBE   National Bank of Ethiopia

OLS   Ordinary Least Square

RMPs   Risks management programs

ROA   Return on Assets Ratio

SR   Solvency risk

TPR   Technical provision risk

UR   Underwriting risk

Abstract

Factors' affecting financial performance of Ethiopian insurance companies has been considered to be an important issue on financial performance of Ethiopian insurance companies. The study used balanced panel data model and collect data from Seven insurance companies covering the period of ten (10)consecutive years, 2010-2019.To this end, the study employed quantitative research approach and explanatory research design. The study used panel data techniques specifically fixed effect model on the regression analysis and used E-view10 software. The study used one dependent variable return on asset (ROA), seven independent variables that are Credit risk, liquidity ratio, company size, technical provisions risk, underwriting risk, inflation rate and deposit interest rate. The regression result show that credit risk, liquidity ratio, and technical provisions risk show negative and significant effect at 5% significance level and underwriting risk Negative at 1 % Significant level on financial performance of insurance companies in Ethiopia, In addition company size and deposit interest rate have positive and significant effect at 5% significance level on financial performance of insurance companies in Ethiopia, Where as inflation has insignificant effect at 5% significance level on performance of insurance companies. The study concluded that factors affecting on the performance of Ethiopian insurance companies has significant effect on the performance of Ethiopian insurance companies. Based on this finding, the study suggests that, the management bodies of the insurance companies should give high attention on firm and industry related variables, particularly by adopting better risk management strategies and better internal control to achieve superior profitability.

Key words: Ethiopian Insurance Companies, Financial Performance, ROA

CHAPTER ONE

1   INTRODUCTION

1.1   Background of the study

Financial institutions play a crucial role in an economy. On one hand, they are highly depending on public confidence and on the other hand, they are highly exposed to a number of risks. The efficiency of financial intermediation and transfer of risk can affect economic growth while at the same time institutional insolvencies can result in systemic crises which have unfavorable consequences for the economy as a whole (Naveed, 2008). The core function of the financial system is to facilitate the allocation and deployment of economic resources, both spatially and across time, in an uncertain environment.

The insurance sector plays important role in the financial services industry in almost developed and developing countries, contributing to economic growth, efficient resource allocation, reduction of transaction costs, creation of liquidity, facilitation of economics of scale in investment, and spread of financial losses (Haiss et al., 2008).

Insurance is a form of risk management in which the insured transfers the cost of potential loss to another entity in exchange for monetary compensation known as the premium. Insurance allows individuals, businesses and other entities to protect themselves against significant potential losses and financial hardship at a reasonably affordable rate. We say "significant" because if the potential loss is small, then it doesn't make sense to pay a premium to protect against the loss. (Cathy Pareto, 2013).

According to Hifza (2011), profitability is one of the most important objectives of financial management since one goal of financial management is to maximize the owners' wealth, and profitability is very important determinant of performance. A business that is not profitable cannot survive. Conversely, a business that is highly profitable has the ability to reward its owners with a large return on their investment.

The performance of any business firm not only plays the role to increase the market value of that specific firm but also leads towards the growth of the whole sector which ultimately

leads towards the overall prosperity of the economy. Assessing the determinants of performance of Insurers has gained the importance in the corporate finance literature because as intermediaries, these companies are not only providing the mechanism of risk transfer, but also helps to channelize the funds in an appropriate way to support the business activities in the economy. However, it has received little attention particularly in developing economies (Ahmed et al., 2011).

Every firm is most concerned with its profitability. Profitability indicates how well management of an enterprise generates earnings by using the resources at its disposal. In the other words the ability to earn profit.

Generally, company operations are prone to risks and if the risks are not managed the firm's financial performance will be at stake. Firms with efficient risk management structures outperform their peers as they are well prepared for periods after the occurrence of the related risks. Thus, the major concern of this study is to examine the effect of financial risk on performance of insurance companies in Ethiopia.

1.2   Evolution of Insurance Companies in Ethiopia

The history of insurance service is as far back as modern form of banking service in Ethiopia which was introduced in 1905. At the time, an agreement was reached between Emperor Menelik II and a representative of the British owned National Bank of Egypt to open a new bank in Ethiopia. Similarly, modern insurance service, which were introduced in Ethiopia by foreigners, mark out their origin as far back as 1905 when the bank of Abyssinia began to transact fire and marine insurance as an agent of a foreign insurance company. According to a survey made in 1954, there were nine insurance companies that were providing insurance service in the country. With the exception of Imperial Insurance Company that was established in 1951, all the remaining of the insurance companies were either branches or agents of foreign companies. In 1960, the number of insurance companies increased considerably and reached 33. At that time insurance business like any business undertaking was classified as trade and was administered by the provisions of the commercial code.(Dr.Yuvaraj & Abate,2014)

According to Hailu Zeleke (2007), the first significant event that the Ethiopian insurance market observation was the issuance of proclamation No. 281/1970 and this proclamation was issued to provide for the control & regulation of insurance business in Ethiopia. Consequently, it created

an insurance council and an insurance controller's office, its strange impact in the sector. The controller of insurance licensed 15 domestic insurance companies, 36 agents, 7 brokers, 3 actuaries & 11 assessors in accordance with the provisions of the proclamation immediately in the year after the issuance of the law.

After four years that is after the enactment of the proclamation, the military government that came to power in 1974 put an end to all private enterprises. Then all insurance companies operating were nationalized and from January 1, 1975 onwards the government took over the ownership and control of these companies & merged them into a single unit called Ethiopian Insurance Corporation. In the years following nationalization, Ethiopian Insurance Corporation became the sole operator. After the change in the political environment in 1991, the proclamation for the licensing and supervision of insurance business heralded the beginning of a new era. Immediately after the enactment of the proclamation in the 1994, private insurance companies began to increase.

Immediately after the enactment of the proclamation private insurance companies began to flourish. According to the directive of ISB/34/2014, any insurance company required to be a domestic company whose share capital (fully subscribed) to be not less than Ethiopian Birr 60m for a general insurance business and Ethiopian Birr 15m in the case of long term (life) insurance business and Ethiopian Birr 75m to do both long term & general insurance business. Today the total number of insurance companies, branches and their capital increased significantly. At 2016/17, there are seventeen insurance companies in operation. Ethiopian Insurance Corporation (EIC) is state owned while the rest are private. (NBE, annual report 2016/17)

1.3   Statement of the Problem

Insurance plays a significant role in a country's economic growth and offers financial protection to an individual or firm against monetary losses suffered from unforeseen circumstances (Kihara, 2012).Due to the unique accounting system used by insurance companies, profitability of the industry has always been difficult to measure as compared with other financial institutions or corporations. Different scholars using empirical investigation are resulted different conclusions. For insurers', profitability is affected by a host of factors including actual mortality experience, investment earning, capital gains or losses, the scale of policyholder dividends, and federal and state taxes (Wright 1992).

According to Swiss (2008), insurers' profitability is determined first by underwriting performance (losses and expenses, which are affected by product pricing, risk selection, claims management, and marketing and administrative expenses); and second, by investment performance, which is a function of asset allocation and asset management as well as asset leverage.

Measurement of profitability is to some extent, like beauty; in the eye of the holder. The connotation of the word profitability is highly dependent upon who is assessing profitability and to what purpose. To investors and insurers, profitability has a gold earring to it. To policyholders of a stock insurer it sounds like markup, while to those insured by a mutual company it is neutral. (Charles L. McClenahan, 2004).

Different empirical investigations on the title of factors affecting insurance profitability are fall in different conclusion. Previous Empirical results in different hemisphere of the world indicate various out comes while using the same variables to examine the effect of factor affecting financial performance of insurance companies. Risk management is one of the most important practices to be used especially in insurance companies in order to get higher returns (Gabriel et al., 2008). Managing financial risk involves setting appropriate risk environment, identifying and measuring the insurances risk exposure, mitigating risk exposure, monitoring risk and constructing controls for protecting the insurance companies from financial risk (Tcankova, 2002). As identified by NBE (2010), credit risk, liquidity risk, reinsurance risk, technical provisions risk and underwriting risk are major risks that can affect Ethiopian insurance companies' performance

A study of Ahmed (2008) examined the determinants of insurers' profitability indicated that size, volume of capital, leverage & loss ratio are significant determinants of profitability. Khan (2013) revealed that size, earnings volatility and age of the firm are significant determinants of financial performance while growth opportunities and liquidity are not significant determinants of financial performance. Other studies conducted in the area of insurance profitability Curak, (2012); Shiu Maria (2014); and Ghiorghe, (2014) verified that there is a direct association between profitability of insurance companies and it's both internal and external determinants. Lee(2014) and Shiu (2014) also revealed that not only internal factors external factors like gross domestic products, Inflation are potentially accountable for determinant of insurers profitability.

Arifet al. (2015) and Amal (2012) imply that liquidity ratio had a positive and significant impact on performance of insurance companies. However, Adrian (2014) result showed that liquidity ratio negatively affected the performance of insurance companies. In contrary, Mirie (2015) investigated that liquidity ratio had no significant effect on performance of insurance companies.

Large body of research on financial institutions financial performance has been undertaken in the insurance industry in Ethiopia, to the researcher's best knowledge; the studies conducted in the areas of insurance did not give such an emphasis on the factors considered to be determinants of financial performance of insurance industry in Ethiopia. Abate (2012); Yuvarajet al. (2013); Meaza (2014); Mistre (2015); Suheyli (2015) and Hadush (2015) conducted on determinant of profitability in Ethiopian insurance companies. NBE (2010) has also given a due emphasis and stressed to track credit risk, liquidity risk, reinsurance risk, technical provisions risk and underwriting risk as they are pointed out to affect performance of Ethiopian insurance companies. However, these studies did not examine the effect of *credit risk(company specific factor)* and *deposit interest rate (macroeconomic factor)* variable on financial performance of insurance companies in Ethiopia.

As stated by Anthony et al. (1997) it is the risk that a borrower will not perform in accordance with its obligations. Credit risk may arise from either an inability or unwillingness on the part of the borrower to perform in the pre -committed contracted manner. For most companies, extending credit through investment and lending activities comprises an important portion of their business.

Thus, due to the necessity of credit risk and deposit interest rate and not conclusive of empirical studies on Ethiopia insurance companies is what motivated the researcher to examine how Ethiopian insurance companies' performance has been affected.

1.4   Research question

Based on the above statement of the problem the researcher developed the following research question.

 ➢ What are the factors that affect the performance of Ethiopian insurance companies?

1.5 Objective of the Study

1.5.1 General Objective

The general objective of the study is to investigate factors that affect the financial performance of insurance companies in Ethiopia.

1.5.2 Specific Objectives

The specific objectives of the study are:-

- To examine the company specific factor effect credit risk on performance of insurance companies in Ethiopia.
- To examine the effect of deposit interest rate on performance of insurance companies in Ethiopia.
- To identify the effect underwriting risk on performance of insurance companies in Ethiopia.
- To determine the effect of liquidity ratio on performance of insurance companies in Ethiopia.
- To identify the effect of company size on performance of insurance companies in Ethiopia.
- To investigate the effect of technical provisions risk on performance of insurance companies in Ethiopia.
- To examine the effect of inflation rate on performance of insurance companies in Ethiopia.

1.6 Scope of the Study

The study is limited to examine the factors affecting financial performance of insurance companies in Ethiopia using secondary source of data. The horizon of the study confined merely on the quantitative measure of determinates of insurance companies profitability (financial performance) in Ethiopia. And also the study has taken the cross sections based on their total

assets, profit and market share that can refer more than 65% of the total population. The study took in to account the performance of insurance companies for the last 10 years that is from 2010 to 2019. As a result, the research included insurance companies that started operation before 2000, which include one governmental and six private insurance companies. The study used seven variables factors that affect the performance of Ethiopian insurance companies i.e. credit risk, deposit interest rate, underwriting risk, liquidity ratio, company size, technical provisions risk and inflation rate. As the result, these variables explained the topic properly by referring previous empirical works.

1.7   Limitation of the Study

The study is focused on the factors mentioned in the scope of the study section however; there are other variables that have been used in literatures as determinant of insurance Financial Performance like, earning volatility, tangibility, age, retention ratio, expense ratio, asset quality and so on. The study also limited to some of the macroeconomic variable like, inflation and interest rate, where as there are other macro variables that affect profitability such GDP, as money supply, unemployment rate etc. Even if it is very useful to study all the above factors of profitability, due to time constraint and the availability of the necessary data it is very difficult to include all factors in the study.

1.8   Significance of the Study

This study is expected to provide empirical evidence on the profitability (financial performance) of insurance companies in Ethiopia. Furthermore, many parties would benefit from the results of the study:

- **Government**: interested in knowing which companies operate successfully or failed to take the necessary measures to avoid crises of the bankruptcy in these companies.
- **Investors**: Investors interested in such studies in order to protect their investment, and directing it to the best investment.
- It will help the management of the insurance companies in Ethiopia to take corrective measures to in the recommended areas.
- It will help in filling the existing gaps in knowledge regarding factors affecting financial performance of insurance companies in Ethiopia.

- It will serve as a secondary material for further researchers for those who have an interest in relation to this area.

1.9   Structure of the study

The research paper was organized in to five chapters. Chapter one is introduction where overview of the insurance industry in Ethiopia, statement of the problem, objectives of the study, scope and limitation, and significance of the study presented. Chapter two is review of literature in which theories, empirical evidence and conceptual frame work are identified. Chapter three is research methodology. Chapter four is results and discussion in which the finding results are interpreted. Finally, Chapter five brings to an end the research with conclusion and possible recommendation.

2   LITERATURE REVIEW

2.1   Theoretical review

This chapter comprises theoretical and empirical literatures evidences focusing on the insurance sector, insurer's profitability and its determinants. Hence, section 2.1.1 presents the role of insurance in the economy.   Then, section 2.1.2 presents concepts of insurers' profitability. Finally, section 2.1.3 presents the theories related to insurer's profitability.

2.1.1   Definition of Insurance

Insurance encourage investment and innovation by creating an environment of greater security so as to economic growth. Availability of funds could result from creating pooling and transferring risk through developing kinds of insurance products by which insurance companies provide protection from credit risk to other financial intermediaries in that way financial intermediaries are more willing to lend funds for financing real investments that encourage economic growth.(Kahase, 2018)

Insurance may be defined in various ways. Firstly, from the point view of an individual it may be defined as a risk transfer mechanism or an economic device whereby a person, called the insured/assured transfers a risk of a possible financial loss resulting from unforeseeable events affecting property, life or body to a person called the insurer for consideration. For instance, let us take a case of an owner of a motor vehicle, who always runs the risk of suffering a financial loss resulting from the loss or destruction of his property because of unforeseeable events such as fire, collision, overturning or even theft. Therefore, if the person purchases a motor insurance policy covering these risks from an insurer, it means that he transferred this possible financial loss to the insurer.

Secondly, from the point of view of the insurer, insurance may be defined as a mechanism through which a risk is distributed among the group of persons who are exposed to the same type

of risk, i.e., persons who bear the risk of suffering a financial loss as a result of events affecting property, life or body. (Fasil & Mehretab, 2009)

Insurance is a contract in which the insured transfers risk of potential loss to the insurer who promises to compensate the former upon suffering loss. The insured then pays an agreed fee called a premium in consideration for this promise. The promisor is called the insurer and the promise is called the insured (Lowe, 1999). Insurance premium is the monetary consideration paid by the insured to the insurer for the cover granted by the insurance policy. The Insurer takes on a number of clients (Insured) who pay small premiums that form an aggregate fund called the premium fund (Norman, 2000). The likelihood of an event or loss may be mathematically calculated or it may be based on the statistical results of past experience in order to determine the amount of premiums that would be required to accumulate a common fund or pool, to meet the losses upon their arising (Grose, 1992).

Insurance can be classified in many ways, but the following four classifications provide a useful framework: Social versus Private, Life versus Non-life, Retail versus Corporate and Direct insurance versus reinsurance. The insurance business has historically divided itself between companies that sell insurance on the person, known as life insurance (or personal insurance), and those that sell insurance to protect property, referred to as nonlife insurance. This classification is not completely satisfactory, as overlaps exist. The non-life branch often referred to as property/causality insurance in united states and general insurance in the United Kingdom-includes insurance that be covers (1) property losses(damage to or destruction of homes, automobiles, business, aircrafts, etc.); liability losses (payments due to professional negligence, product defects, negligent automobile operation, etc.); and, in some countries, workers' compensation (and health insurance payments). The life branch includes insurance that pays benefits on a person's (1) death (usually called life insurance or assurance), (2) living a certain period (endowments, annuities, and pensions), (3) disability (disability insurance), and (4) injury or incurring a disease (health insurance).In many countries ,notably in Europe, health insurance is classified as non-life (Skipper,2001).

2.2   Theories of insurer's profitability

There is no general theory that provides a unifying framework for the study determinant of the insurer's profitability. Because of this, this study tries to view some theories which are nearer to the concept of insurance profitability and its determinants.

Modern Portfolio: Theory Modern portfolio theory was developed by Harry Markowitz in 1952. The theory suggests that investors can improve the performance of their portfolios by allocating their investments into different classes of financial securities and industrial sectors that are not expected to react similarly if new information emerges. It assists in selecting the most efficient investments by analyzing various possible portfolios of the given securities.

Arbitrage Pricing: Theory Arbitrage Pricing Theory (APT) was proposed by Stephen Ross in 1976. Insurance companies are corporations and insurance policies can be interpreted as specific types of financial instrument or contingent claim thus it is natural to apply financial models to insurance pricing. The models are designed to estimate the insurance prices that would pertain in a competitive market. Charging a price at least as high as the competitive price (reservation price) increases the market value of the company. Charging a lower price would reduce the company's market value. Thus, financial models and financial prices are among the key items of information that insurers should have at their disposal when making financial decisions about tariff schedules, reinsurance contract terms, etc (Cummins, 1994)

Black Swan Theory: The concept of black swan events was popularized by Nassim Nicholas Taleb in 2008. It states that the world is severely affected by events that are rare and difficult to predict, events of low probability but high impact. Davidson (2010) states that since probabilistic risks can be quantified by human computing power, the future is insurable against risky probabilistic occurrences. The cost of such insurance, or self-insurance, will take into account all entrepreneurial marginal cost calculations (or by contingency contracts in a complete general equilibrium system). This insurance process permits entrepreneurs to make profit maximizing rational production and investment choices even in the short run when dealing with risky known processes.

2.3   Factors affecting insurance companies' performance

2.3.1   Credit Risk

As Ralph (2000) defined risk as the existence of uncertainty about future outcomes. Risk is a key factor in economic life because people and firms make irrevocable investments in research and product development, plant and equipment, inventory, and human capital, without knowing whether the future cash flows from these investments will be sufficient to compensate both debt and equity holders. If such real investments do not generate their required returns, then the financial claims on these returns will decline in value.

As per NBE (2010) risk management guide line credit risk is the risk of financial loss, despite realization of collateral security or property, resulting from the failure of a debtor to honor its obligations to the company. The area of credit risk includes default risks related to an insurer's portfolio of bonds (credit through investment) and other fixed income investments, counter party risk on derivative contracts and the risk of default on loans or insured debts and trade debtors. The major risk that arises from a weakening of the credit portfolio is the impairment of capital or liquidity. For most companies, extending credit through investment and lending activities comprises an important portion of their business. Therefore, the quality of an institution's credit portfolio contributes to the risks borne by policyholders (liquidity) and shareholders (capital impairment).

Credit risk is the risk that a borrower will not perform in accordance with its obligations. Credit risk may arise from either an inability or unwillingness on the part of the borrower to perform in the pre-committed contracted manner Anthony et al. (1997). In addition, Gerald et al. (2001) mentioned that credit risk basically means the risks that counterparty cannot meet its liabilities. Even if counterparty does manage to meet its liabilities, the value of a given item may decline if its rating is downgraded. Consequently, the insurance company will be subject to credit risk whenever changes in the economic policy framework entail adverse changes in the creditworthiness of invested assets. Mortgages as well are subject to credit risk, which must be adequately assessed by means of internal ratings. When managing credit risk, insurance companies must primarily look to avoid concentration risk (e.g. concentration of investments in a

Particular investment category, low degree of portfolio diversification) and strive to achieve as much diversification in their investments as possible.

Credit risk can also be described as the risk of loss a firm is exposed to if a counterparty fails to perform its contractual obligations (including failure to perform them in a timely manner) including losses from downgrades and other adverse changes to the likelihood of counterparty failure (Kelliher & Wilmot, 2011).

2.3.1.1 Typical areas of concentration for credit risk

These are the following points that NBE (2010) risk management guide line has located the areas which focus on credit risk.

Investing/lending activities: Where credit is extended, almost always with collateral (e.g. Bond). Of course when making investments in any bonds, debentures or other evidences of indebtedness, the insurer is taking on a credit risk. Clearly, such investment area is a major source of credit risk for insurers.

Trade debtors/Financing of premiums: There is the credit risk arising from the fact that policyholders may not remit premiums on a timely basis, whether or not there is a premium financing program in place and whether or not the business is written through an intermediary.

Reinsurance: Insurers, especially general insurers, often rely heavily on their reinsurers for claim reimbursement. The credit risk arising in the reinsurance area can be very significant, making it critically important for insurers to establish formal policies with regard to the selection

2.3.1.1.1 Credit risk management

According to (NBE risk management guidline,2010) Credit risk management is the process of controlling the impact of credit risk-related events on the company. This management involves identification, understanding, and quantification of the degree of risk of loss and the consequent taking of appropriate measures.

A) Risk philosophy

Risk management practices involve systematic handling of the risks contained in the products offered to customers through various techniques to protect against insurance risk.

- Policies and procedures for prudently managing the risk/reward relationship across a variety of dimensions, such as quality, concentration, currency, maturity, collateral security or property and type of credit facility.
- Although credit risk management will differ among companies, a comprehensive credit risk management program requires:
  - ❖ Identifying existing or potential credit risks to which the company is exposed, on or off balance sheet, in conducting its investment and lending activities and developing and implementing sound and prudent credit policies to effectively manage and control these risks;
  - ❖ Developing and implementing effective credit granting, documentation and collection procedures;
  - ❖ Developing and implementing procedures to effectively monitor and control the nature, characteristics, and quality of the credit portfolio; and
  - ❖ Developing processes for managing problem accounts.

b) Credit Risk Philosophy

The credit risk philosophy is a statement of principles and objectives that outlines the institution's willingness to assume credit risk and will vary with the nature and complexity of its business, the extent of other risks assumed, its ability to absorb losses and the minimum expected return acceptable for a specific level of risk. (Saunders, 2002)

- The foundation of an effective credit risk management program is the establishment of a credit risk philosophy. Accredit risk philosophy is a statement of principles and objectives that outlines:
  - ❖ A company's tolerance of credit risk and will vary with the nature and complexity of its business,
  - ❖ The extent of other risks assumed, its ability to absorb losses and the minimum expected return acceptable for a specific level of risk.

c) Credit Risk Management Policies

The process of credit risk management begins with accurately assessing the credit-worthiness of the customer base and his/her business viability. This is done by looking in to loan applications carefully which is part of the loan process. (Hable, 2018)

- An effective credit risk management program requires:
  - ❖ The identification and quantification of the risks inherent in a company's investment and lending activities, the development and implementation of clearly defined policies.
  - ❖ These policies should be formally established in writing and set out the parameters under which credit risk is to be controlled.

d) Credit Risk Measurement

Credit risk management is the part of the comprehensive management and also the part of the control system. Credit risk can be considered as one of the major risk because it is associated with every active trade. Banks generally handled risk management strategy that incorporates the principles of risk management processes including risk identification, monitoring and measurement. The aim of the credit risk management is to maintain the efficiency of the business activities and the continuity of the business. (Adamko, 2015)

- Measuring the risks attached to each credit activity permits the determination of aggregate exposures to counter parties for control and reporting purposes, concentration limits and risk/reward returns.
- The establishment of a system for the rating of credit forms a fundamental part of the measurement process.
- In developing a credit risk management program:
  - ❖ The company should consider the extent to which credit risk in any part of a company's operations could impact the company as a whole.
  - ❖ Credit policies establish the framework for the making of investment and lending decisions and reflect a company's tolerance for credit risk.
  - ❖ To be effective, policies (as revised from time to time in light of changing circumstances) should be communicated in a timely fashion, and should be implemented through all levels of the organization by appropriate procedures.

e) Credit Policies Need to Contain:

- a description of general areas of credit-related activities;

- Clearly defined and appropriate levels of delegation of decision-making approval authority and

- Portfolio concentration limits. These policies need to be developed and implemented within the context of credit risk management procedures that ensure all credit dealings are conducted in accordance with prudent business practices.

2.3.2 Underwrite Risk

Insurance underwriting is defined as the process of choosing who and what the insurance company decides to insure. This is based on a risk assessment. It is pretty much the "behind the scenes" work in an insurance company where they determine who is insured and how much in insurance premiums they will charge the insured person. Insurance underwriting also involves choosing who the insurance company will not insure. (Macedo, 2009)

Underwriting risk is the risk that the premiums collected will not be sufficient to cover the cost of coverage. Insurance prices are established based on estimates of expected claim costs and the costs to issue and administer the policy. The estimates and assumptions used to develop policy pricing may prove to ultimately be inaccurate. This may be due to poor assumptions, changing legal environments, increased longevity, higher than expected weather catastrophes (Ernst, et al. 2010).

As stated by Adams, et al. (2003) underwriting risk emphasizes the efficiency of the insurers underwriting activity and is measured through the loss ratio, which is computed as a ratio of gross claims to gross written premium. Underwriting risk reflects the adequacy or otherwise of insurers' underwriting performance.

Huge fluctuations in net premiums written indicate a lack of stability in underwriting operation of an insurance company. An unusual increase in net premiums written might indicate that the company is engaging in the so-called "cash-flow underwriting" to attempt to survive its financial difficulty. However, this is not necessarily the case. An unusual increase in net premiums written could indicate favorable business expansion if it is accompanied by adequate reserving, profitable operations, and stable products mix (NAIC, 2001).

Underwriting risk refers to the chance of loss on a risk evaluation activity whereby policy premiums do not adequately cover claims. It is the ratio of net benefits (claims) paid to net premiums earned (i.e. loss ratio).The underwriting risk is an important element that every risk management unit carefully has to assess and monitor. Underwriting risk refers to the chance of loss on a risk evaluation activity whereby policy premiums do not adequately cover claims. (Adams & Buckle, 2000). Claims paid represent all costs related to payment to claimants during the period, irrespective of when the loss occurred. Underwriting risk can take the form of underestimated liabilities from unpaid (expired) past policies or underpriced current business. It could arise from incorrect or inaccurate underwriting, wrong or inaccurate assumptions on the frequency and severity of losses or from factors wholly beyond the underwriter's control. It could also be due to much of the total written premiums remaining outstanding for long periods and turns out to be uncollectible (Shiu, 2004).While it is not realistic to eliminate it completely, underwriting risk is at the centre of key risk management efforts of an insurer and mitigation of this risk is therefore very vital for the long term profitability of the firm (Yusuf & Dansu, 2012).

2.3.3   Liquidity Ratio

Liquidity is having enough money in the form of cash, or near-cash assets, to meet the financial obligations. In business, cash is king, particularly during tough economic times or when the markets are turbulent. Without cash, company cannot pay its bills nor carry out growth plans, and it may find it difficult to get credit or take advantage of business opportunities. A company that cannot pay its creditors on time and continue not to honor its obligations to the suppliers of credit, services, and goods can be declared a sick company or bankrupt company. (Ngwili, 2013) it measures the capacity of the company to honor its obligations on short term from the current assets and to compare all the potential liquidities associated to the current assets with all the debts due to be paid in less than one year.(Ciprian & Alexandru, 2009).

Good liquidity helps an insurance company to meet policyholder's obligations promptly. An insurer's liquidity depends upon the degree to which it can satisfy its financial obligations by holding cash and investments that are sound, diversified and liquid or through operating cash flows. A high degree of liquidity enables an insurer to meet the unexpected cash requirements without untimely sale of investments, which may result in substantial realized losses due to

temporary market conditions and/or tax consequences. Liquidity management is an important tool for the management of organizations; it reflects the organization's ability to repay short-term liabilities, which include operating expenses and financial expenses resulting within the organization in the short term. As well as part of long-term debt during the financial year or the operating cycle, whichever is longer? There are many liquidity ratios used by organizations to manage their liquidity such as (current ratio, quick ratio, cash ratio, defensive interval ratio) which can greatly affect the financial performance of companies (Robinson et al., 2015).

According to Stolowy & Lebas (2009), Liquidity ratio is a measure of assets that can be easily converted in to cash. And it focuses on the availability of cash to manage the day to day operations of the company. Cheng and Wong (2004) found that liquidity is one of the important determinants of financial health of insurance companies. Companies with more liquid assets are less likely to fail because they can realize cash even in difficulty situations. The liquidity ratio of a company gives us a quick way to look at its current assets and current liabilities. They should be nearly equal to one another.

According to Credit Analysis & Research Ltd (2016) Good liquidity helps an insurance company to meet policyholder's obligations promptly. An insurer's liquidity depends upon the degree to which it can satisfy its financial obligations by holding cash and investments that are sound, diversified and liquid or through operating cash flows. A high degree of liquidity enables an insurer to meet the unexpected cash requirements without untimely sale of investments, which may result in substantial realized losses due to temporary market conditions and/or tax consequences.

2.3.4   Company Size

The size of a company is the amount and variety of production capacity and ability a company possesses or the amount and variety of services a company can provide concurrently to its customers (Jonsson, 2007). The increase in firm size is aimed at gaining from economies of scale. Economies of scale exist when a given proportionate increase in inputs results in a larger than proportionate increase in output. Reinhard's (1983) oligopoly model suggests that size is positively related to a firm's ability to produce technologically complicated products which in turn leads to concentration.

Such markets are supplied by few competitors and are therefore, more profitable. Thus, larger firms have access to the most profitable market segments.

Size is an important determinant of profitability. The size of a company is the amount and variety of production capacity and ability a company possesses or the amount and variety of services a company can provide concurrently to its customers (Jonsson, 2007). The increase in firm size is aimed at gaining from economies of scale. Economies of scale exist when a given proportionate increase in inputs results in a larger than proportionate increase in output. Reinhard's (1983) oligopoly model suggests that size is positively related to a firm's ability to produce technologically complicated products which in turn leads to concentration. Such markets are supplied by few competitors and are therefore, more profitable. Thus, larger firms have access to the most profitable market segments.

Firm size represents a contingent factor that falls into the category of organization characteristics. According to Woodward (1965), the best indication of ''bigness'' is the size of the management group. Firm size is commonly measured by gross sales or gross value of assets number of employees and sales turnover.

Larger firms are able to produce the same Service or goods more cheaply because they have achieved more learning and greater cumulative experience and they are able to spread their fixed costs over a greater amount of production. Similar to the argument advanced by-Bowman suggested that quality management is able to achieve the dual goals of higher market share and higher profitability (Abreu & Mendes, 2001).

Firm size is one of the most influential characteristics in organizational studies. Chen and Hambrick (1995), and Mintzberg (1979) provide a summary and overview of the importance of firm size. Firm size has also been shown to be related to industry- sunk costs, concentration, vertical integration and overall industry profitability (Dean et al., 1998).

Size of a firm as the quantity and array of production capability and potential a firm possesses or the quantity and diversity of services a firm can make available concurrently to its clients. The size of a firm is very essential in today's world due to the phenomenon of economies of scale. Bigger firms can manufacture items on much lower costs in contrast to smaller firms. Firms of the modern era look to increase their size so as to get a competitive edge on their competitors by lowering production

costs and increasing their market share. Shaheen and Malik (2012). Abdurahman, Awad, Erik and Jeffrey (2003) observed that the nature of the relationship that exists between firm size and profitability is an essential matter that may shed some light on the factors that enhance profits.

2.3.5 Inflation

Inflation is an important determinant of insurance performance. In general, high inflation rates are associated with high loan interest rates and high income. Perry (1992),

Inflation is a natural economic progression that has been occurring globally and therefore it is prudent to incorporate inflation into financial planning for any organization. (Slawson, 2015) According to Cairo University International Conference Research, the increase in inflation rate combined with lower increase in income push the policy holder to increase percentage of consumption on his essential needs especially if inflation rate for these essential needs are higher than the other needs. the increase in inflation rate will increase the value of property to be insured, claims cost and administration expenses of the insurance company which will lead to increase in insurance premium. This will help in further decrease the demand for insurance.

- **Inflation risk and claims**:

  The inflation rate has direct effect insurance claim process by increasing the severity of insurance claim. Also, the inflation rate means an increase in the price of an average group of goods and services increases over certain period of time. These goods and services include processes related to handling and settlement of insurance claims. The change in prices of performing claim processes affects level of the claims costs which called social inflation (or superimposed inflation).

2.3.6 Technical provisions risk

As referred by Jasmina (2003) it is a risk of holding insufficient technical provisions or holding unjustifiably excessive provisions, where provisions are set at a lower level than actually required then this could present the company's financial position in a better light than it actually is. This could result in inappropriate underwriting decisions being made. For example, more risky policies may be underwritten on the basis that more capital is available to support this than is actually the case, or higher levels of business may be written. In addition, Technical provisions

affect the assessment of insurer solvency. Technical provisions are a prerequisite for an adequate assessment of the amount the insurer's liabilities, the insurer's solvency and capital adequacy. In order that level of technical reserves is adequately assessed, but the experienced actuary, it is necessary to choose an appropriate method as input to the valuation.

Insurance companies collect premiums in advance and keep them in reserve accounts for future claim settlements. For instance, most premiums collected by insurance companies are kept in outstanding claims and unearned premiums reserves which are two main accounts in the liability side of the balance sheet. Outstanding claims reserve is considered riskier than ordinary long-term corporate debt since neither the magnitude nor the timing of the cash flows is known Shiu, (2004).

Giovanni (2001) mentioned that a technical risk for the solvency of insurance companies is certainly that of underestimating technical provisions. This risk concerns the impossibility on the part of the companies to meet their commitments towards the insured and the claimants due to insufficient technical provisions. The risk of insufficient technical provisions should therefore be forestalled both by companies by adopting prudential (this term is to be interpreted in relation to the specific and precise methodologies for calculating technical provisions described in the report) calculation procedures and methodologies when setting up the provisions, and by supervisory authorities. If the possession of sufficient technical provisions is an indispensable requisite for the company's solvency, the level of harmonization among the methodologies adopted in the various countries is equally important.

Technical reserves of insurance companies represent the amount of money that will be a guarantee that all obligations of insurers will be reconciled. Technical provisions are formed from the payment of premium of the insured. Premiums paid by the insured are calculated to provide risk insurance coverage. Of each premium paid, insurer is mandatory that part of the money set aside as funds of the technical provisions Jasmina (2003).

According to NBE (2010) technical provision risk is that the company's liability to policyholders could be understated. Clearly from the perspective of financial safety and soundness, the concern is with possible understatement of liability because any such understatement can result in the

insurer being unable to discharge all of its obligations to the public. Thus, focus will be given on controlling the risk of liability understatement.

2.3.7   Deposit interest rate

Interest rate risk is the risk to an institution's net interest margin. The net interest margin is the difference between the amount of interest earned on assets (i.e., interest income from lending activity) and the amount of interest paid on liabilities (i.e., interest expenses paid on deposits and borrowings). An interest rate is the cost of borrowing money (Hoyt, 1994). Since insurance companies make their promises or commitments to the insured at the time of the sale of policies to the latter, they are not free to adjust the rates fixed or agreed in the sale subsequently depending on circumstance. This feature of insurance exposes them directly to the risks associated with changes in interest rates. Insurance companies invest much of the collected premiums, so the income generated through investing activities is highly dependent on interest rates. Declining interest rates usually equate to slower investment income growth impacting on the insurance

2.4   Financial Performance Measurement

Performance is the function of the ability of an organization to gain and manage the resources in several ways to develop competitive advantage (Iswatia, &Anshoria, 2007). Wellalage et al, (2012) showed that performance is the result of the fulfillment of the tasks assigned.

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.

Profitability is the amount of money a company can engender with whatever resources the company has. The goal of companies is maximization of profit. Profit maximization is a good thing for a company, but can be a bad thing for consumers if the company starts to offer substandard services or charge higher prices for the services (Ongore & Kusa, 2013).

Financial performance of an insurance company can be measured by profitability. Based on Codjia (2010), financial performance was looked at the statement of an accounting summary that details a business organization's revenues, expenses and net income. A corporation may prepare a statement of financial performance on a monthly, quarterly or annual basis (Codjia, 2010).

The profitability performance can be measured using ROA. The higher the ROA ratio, the better companies profits (Rasiah, 2010). According to Rushdi & Tennant (2003), profitability can be measured in a number of ways including return on assets, return on equity (ROE) or profit margins. In addition, ROA and Return on Asset (ROE) are the indicators of measuring managerial efficiency (Samad, 2000).

2.5   Empirical literature review

Several empirical studies have linked diverse factors with financial performance. Makadok (2001) emphasizes that holding appropriate resources in an organization can help enhance organizational performance. The resource based view has been a common interest for management researchers and numerous writings explain its ability to deliver sustainable competitive advantage when resources are managed to ensure their outcomes cannot be imitated by competitors, hence a competitive barrier for the firm (Mahoney and Pandian 1992).

Studies by Chen and Wong (2004) revealed that size, investment and liquidity are significant determinants of the profitability of insurers. However, Ahmed (2011) studied the insurance industry, and noted that liquidity is not a significant determinant of insurers' profitability. They posited that, whereas size and risk (loss ratio) are significant and positively related to the profitability of insurance firms, leverage is negative and hence decreases the profitability of insurers significantly.

Malik (2011) look into the determinants of the financial performance of insurance companies covering the period of 2005 to 2009. Although his study covers both sectors of the insurance business, much of his findings confirmed those of Ahmed (2011). Malik found that whereas size and capital have strong positive association with insurers' profitability, loss ratio and leverage have strong inverse relationship with profitability.

Adams and Buckle (2003) studied the insurance industry and noted that highly geared and low liquid insurers perform better and that their underwriting risk is directly related to a resilient financial performance. This suggests that actuarial risk and operational risks are well managed by insurers. They further postulated that insurers' size and scope of business do not have significant influence on financial performance. The findings by Adams and Buckle concurred with the results of an earlier study by Adams (1996) about the New Zealand insurance market. Adams (1996) established that firm-specific factors such as leverage and underwriting risk were positive and significantly related to investment earnings of life insurers.

However, studies by Charumathi (2012) in the Indian life insurance sector contradicted Adams & Buckle (2003) and Adams (1996). In his study, Charumathi (2012) claims that the profitability of insurance is positive and significantly influenced by the size of an insurer as measured by net premiums. He further advanced that leverage, premium growth and equity capital have strong inverse relationship with insurers' profitability.

Mwangi (2013) conducted an investigative study, through a descriptive survey, on the factors that influence the financial performance of insurance companies in Kenya. He sought to establish some of the key factors that determine financial performance and the extent to which they influence financial performance of insurance companies. He used profitability as a financial performance indicator. He noted that interest rate fluctuations, liquidity, and competition are the key factors that influence financial performance of Kenyan insurance companies, but he did not state their relationship.

Wabita (2013) conducted a descriptive research design to establish the determinants of financial performance of insurance companies in Kenya. He established the three factors that majorly influenced financial performance of Kenyan Insurance companies as follows; growth of the

insurance industry positively affects financial performance, leverage of the insurance industry negatively affects financial performance, and the amount of tangible assets held by the industry positively affects financial performance. The three factors that his study found to majorly influence financial performance were quite different from those found by Mwangi (2013).

Mutugi (2012) sampled 23 insurance companies and applied a descriptive study design, and used both primary and secondary data to establish the determinants of the financial performance of life assurance companies in Kenya. His findings varied slightly from the results of the two immediate former researchers above in that he concluded that capital structure, innovation and ownership structure are determinants of financial performance. Again, he did not indicate the kind of a relationship between the independent variables and financial performance - dependent variable

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 had 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.

Mistre (2015) made a research on determinants of profitability on insurance Sector: Evidence from Insurance Companies in Ethiopia. In order to carry out the study, secondary data of nine insurance companies over the period of 2003-2014 was obtained on the financial performance

from the annual reports and audited financial statements. Age of company, size of company, leverage, tangibility of Assets, liquidity, premium growth, loss ratio, reinsurance dependence, solvency margin and growth in gross domestic product were independent variables while profitability measured by ROA(return on assets was dependent variable. The result of the study illustrated that insurers' size and solvency margin were positively related to insurance performance, while loss ratio and leverage ratio were negatively related to profitability (ROA). Whereas, premium growth, growth in gross domestic product, age of insurance companies and liquidity had insignificant impact on profitability of insurance companies in Ethiopia and determinates such as tangibility of asset and reinsurance dependency had insignificant impact on profitability of insurance companies.

Meaza (2014) studied on determinants of insurance companies' profitability in Ethiopia by examining the effects of firm specific and macroeconomic factors on profit. For this reason, the study included ten insurance companies for six years (2008-2013). Secondary data obtained from the financial statements (Balance sheet and Profit/Loss account) of insurance companies, and financial publications of MOFED were analyzed. Profitability peroxide by ROA was dependent variables while size of companies, leverage, tangibility of assets, liquidity, loss ratio, firm growth, managerial efficiency, inflation rate and economic growth were independent variables. All model assumptions test had been done and from regression result; size, leverage, tangibility of asset, loss ratio/ risk, firm growth and managerial efficiency were identified as significant determinants of profitability hence firm size, tangibility of asset, firm growth and, managerial efficiency were positively related. In contrast, leverage and loss ratio/ risk were negatively but significantly related with profitability. Liquidity, inflation and economic growth were not significant determinants of profitability.

Hadush (2015) studied on determinants of profitability in Ethiopia insurance Companies. For this purpose, the study took all Ethiopian insurance companies as targeted population then performed for a panel of nine Ethiopian general insurance companies for the study period of 2005-2014. The study has used secondary data or quantitative nature of data obtained from the annual audited financial statements (balance sheet and profit/loss account, and revenue account) of insurance companies, financial publications of NBE by applying a statistical package data called Eviews 7 only. Profitability is dependent variable while liquidity, tangibility, volume of

capital, premium growth, claim ratio, real GDP and inflation) are independent variables. He used a quantitative tool of analysis and made a model assumptions test for the model assumptions. Regression result shows that tangibility, volume of capital, premium growth, claim ratio, and real GDP are identified as most important determinants of profitability hence tangibility, volume of capital, premium growth are significant and positively related. In contrast, claim ratio and real GDP are negatively but significantly related with profitability. However, liquidity and inflation are not significantly related with profitability.

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 had 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 also provided evidence that, technical provision and liquidity both have negative effect on the profitability of Ethiopian insurance companies.

2.6   Summary and Literature gap

The Review of the literature showed that the researches on the determinants of profitability had been comprehensively studied around the world. Besides, in Ethiopia most of the researches focused on banks and other non-financial sectors rather than insurance companies. Different scholars using empirical investigation on the insurance companies' performance are resulting in dissimilar conclusions. The review of the literatures correspondingly revealed the existence of gap, and shown that a factors affecting financial performance of Ethiopian insurance companies are issue that requires further investigation.

Empirical studies were conducted on relationship between factors affecting and financial performance by Arif et al. (2015) and Adrian (2014). However, Arif et al. (2015) studied in India on life insurance companies the study characteristic was different from developing countries regarding their government regulation, culture of the business, people attitude and economic growth. In addition to this, didn't include non-life insurance companies and had taken only India life insurance companies. With respect to Adrian (2014), the study had only made test of significance and overlooked proving of other model assumptions.

Ijaz (2015) made a research on effect of macro economy factor on profitability of insurance companies, Hifza (2011) and Emine (2015) had also conducted a study on determent of profitability in insurance companies and another study made by Amal (2012) on determinant of financial performance in insurance companies. However, the study feature is diverse from developing countries due to the characteristics of government regulation, culture of the business, people attitude and economic growth. Thus, the researcher has taken the above gaps in to account for the study and this study might be differ with above other countries empirical studies due to the above mentioned reasons.

Prior studies, like (Abate (2012); Yuvaraj et al. (2013); Meaza (2014); Mistre (2015); Suheyli (2015) and 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 studies didn't examine the effect of credit risk (company specific Factor) and deposit interest rate (macroeconomic factor) variable on financial performance of insurance companies in Ethiopia. However, previous studies conducted in Ethiopia insurance companies not incorporate this variable on their research work. Thus, this study would fill some of the above stated gaps by taking evidences from Ethiopian insurance companies.

2.7   Conceptual Framework

A conceptual framework is a visual representation that helps to illustrate the expected relationship between cause and effect in a financial context. Different variables and the assumed relationships between those variables are included in the model and reflect the expectation.

It is a tool that is used before to study. This makes a conceptual framework an analytical tool. It is used to make conceptual distinctions and bring together different ideas. Strong conceptual framework leads to actual realization of the intended objectives. The conceptual framework of the research is presented below (figure 2.1)

2.7.1 The conceptual framework or model of the study

Figure 2.1 conceptual framework of the Study
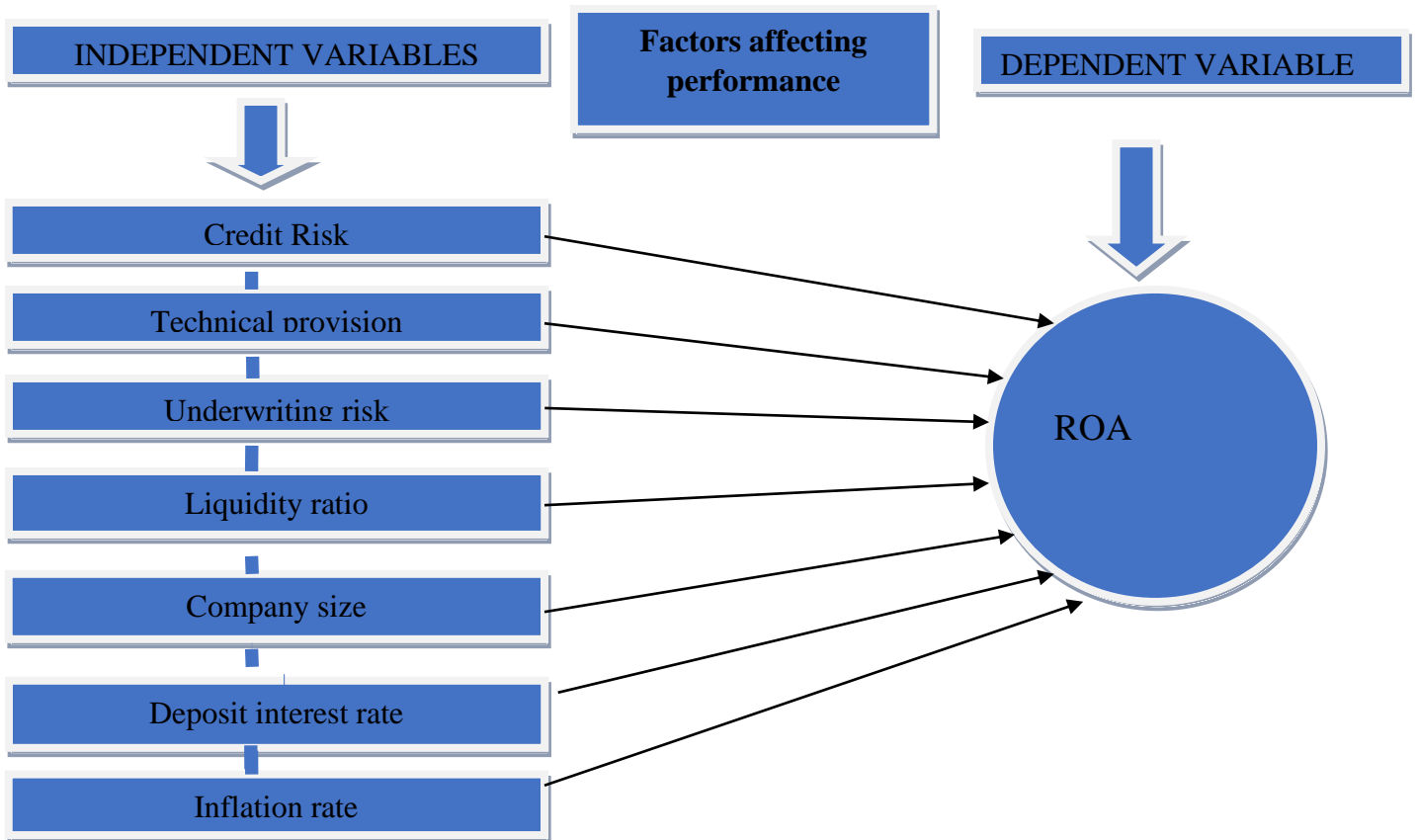
Source: Researcher design based on theories and empirical literature review

CHAPTER THREE

3   RESEARCH METHODOLOGY

This chapter deals with the research design that is adopted, the study population, the sampling, and the methods of collecting data, the research procedures, method of analyzing and presenting data.

3.1   Research Design

Research design constitutes the blue print for collection, measurement, and analysis of data (Cooper and Schindler, 2001).Leedy (1997) defines research design as a plan for a study, providing the overall framework for collecting data. (Durrheim, 2004). Explanatory research design used in this research because the study identifies the cause and effect of factor affecting of insurance companies" performance which is be appropriate for the objective of the study. Explanatory studies unlike descriptive studies, go beyond observing and describing the condition and tries to explain the reasons of the phenomenon.(Cooperet al. 2003)

3.2   Research Approach

From the other research approaches the researcher used quantitative research approach. Quantitative research methods are research methods dealing with numbers and anything that is measurable in a systematic way of investigation of phenomena. It is used to answer questions on relationships within measurable variables with an intention to explain, predict and control phenomena (Leedy 1993).

3.3   Population of the study

Cooper and Schindler (2001), define a population as the total collection of elements about which we wish to make some inferences. The study populations are Ethiopian insurance companies. 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 Technique

Data gathering is crucial in research, as the data is meant to contribute to a better understanding of a theoretical framework. The purposive sampling technique, also called judgment sampling, is the deliberate choice of a participant due to the qualities the participant possesses. It is a nonrandom technique that does not need underlying theories or a set number of participants. Simply put, the researcher decides what needs to be known and sets out to find people who can and are willing to provide the information by virtue of knowledge or experience. IlkerItikan (2015), thus the researcher used purposive sampling technique and select seven insurance companies purposively based on their market share, total assets and profit. From their annual report stated that these seven insurance companies together hold about 65% of the market share (by their number of branches and capital) and beside that by their asset and profit they hold 75% &80% of the total population. Based on these the researcher believes it can be suitable to take these seven insurance companies as a sample. Due to this fact, the samples 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, and United insurance S.C

Therefore, the study covered a period of Ten (10) years Financial Statement From 2010-2019 According to Suheyli (2015) as cited in Singh (2006) when the subjects used in the sample is homogeneous, using purposive sampling technique is appropriate. Hence, the researcher employed purposive sampling method to draw the sample from the population and meet the study objective. The matrix for the frame is 10*7 that includes 70 observations.

3.5 Data sources and instruments

This study obtains the necessary data through secondary data. Secondary data on sample of seven insurance companies obtained from insurance companies' audited financial statements and

annual reports filed with NBE through document review. Furthermore, secondary data collected from books, journals and websites.

3.6   Data analysis

To achieve objective of the study, the study concentrated on quantitative analysis. Hence, the researcher used econometric model to identify and measure factors affecting of insurance companies' performance in Ethiopia and used Ordinary Least Square (OLS) method using Eviews-10 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 factors affecting of insurance companies' 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 (seven) and the time-series element is revealed by the period of study (2010-2019). Therefore, the panel data analyzed using descriptive statistics, correlations and multiple linear regression analysis. The rational for choosing Ordinary Least Square (OLS) is that, if the Classical Linear Regression Model (CLRM) assumption should true, then the estimators determined by OLS 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(ut) = 0)

II. Variance of the errors is constant (Var(ut) = σ2 <∞)

III. Covariance between the error terms over time is zero (cov(ui, uj) = 0 for i ≠ j

IV. Test for Normality (ut~N(0, σ2)

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(ut) = 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 (Var(ut) = σ2 <∞) (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 H0 if p-value is less than significance level. Otherwise, do not reject H0.

iii. Covariance between the error terms over time is zero (cov(ui, uj)) = 0 for i ≠ 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 H0 if p-value less than significance level. Otherwise, do not reject H0.

iv. Normality (ut~N(0, σ2))

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

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.

3.7   Model Specification Test

According to Brooks (2008), Specification error occurs when omitting a relevant independent variable, including unnecessary variable or choosing the wrong functional form, so that regression model will be wrongly predicted. If the omitted variable is correlated with the included variable, the estimators are biased and inconsistent. If the omitted variable is not correlated with the included variable, the estimators are unbiased and consistent.

H0: the model is correctly specified

H1: the model is not correctly specified

α = 0.05

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

Model specification

According to Brooks (2008), it is very easy to generalize the simple model to one with k regressors (independent variables). $Y_i = \beta_1 + \beta_2 x_{1i} + \beta_3 x_{2i} + \cdots + \beta_k x_{ki} + \varepsilon_i$, i= (1, 2, . . . ,i).So, Where Y_i is the ith observation of the dependent variable, $X_{1i},\ldots,X_{ki}$ are the ith observation of the independent variables, $\beta_0,\ldots,\beta_k$ are the regression coefficients, ε_i is the ith observation of the stochastic error term.

Accordingly, to test factors affecting on insurance companies' performance, the researcher estimated a linear regression model in the following form.

ROAit= β₀ + β₁CRit+ β₂CSit +β₃INFit + β₄IRit+β₅LRit+ β₆TPRit + β₇URit +ε

Where:

ROA= Return on asset;

CR= Credit ratio

CS= Company size

INF = Inflation rate

IR= Interest rate

LR= Liquidity ratio

TPR= Technical provision risk

UR = Underwriting risk

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

β_0= Constant

β= 1, 2, 3…7 are parameters to be estimate;

i = Insurance company i = 1. . . 7; and t = the index of time periods and t = 1. . . 10

Variable Selection and Hypothesis development

This section explains the variables used as dependent and independent variables in the study. The definitions and measurements that is used for these variables are described. And based on review of relevant and related literatures, it is hypothesized that credit risk, deposit interest rate, underwriting risk, liquidity ratio, company size, technical provision and inflation are independent variables and expected to influence firm's financial performance as measured by ROA The dependent variable. Accordingly, the following hypotheses are tested by the study:

Dependent variable

The variable, value of which may change due to change in the value of other variable is called dependent variable. In other words, such characteristic is called dependent variable for which different values can be obtained in the context of change in independent variable. In this way, we can say that value of dependent variable may change due to change in the value of independent variable.(Shukla, 2018).

Return on Asset (ROA)

There are many different ways to measure financial performance, as shown in previous studies. In this study net income before tax to total assets (ROA) is used to measure financial performance, because most of the studies regarding the subject used this ratio to determine the financial performance of insurance companies. 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. Thus, the study has taken return on asset (ROA) as dependent variable to measure performance of Ethiopian insurance companies.

Independent variables

One of the major aims of research is to understand the causes of phenomena. The presumed cause in a cause-effect relationship is called the independent variable, (Polit et al., 2001; Vogt, 1993).Seven measurements will be used as independent variables which are extracted from different studies. The variables namely; credit risk, underwriting risk, liquidity ratio, company size, technical provision risk, and two macroeconomics variables (Inflation and deposit interest rate).

Credit risk

Gerald et al. (2001) mentioned that credit risk basically means the risks that counterparty cannot meet its liabilities. In addition, as stated by Anthonyet al. (1997) it is the risk that a borrower will not perform in accordance with its obligations. It is measured using the ratio of premium debtors plus due from reinsurer and other receivable to net asset of insurance company (premium debtors + due from reinsurer + other receivable / net asset).

H₁: Credit risk has negative and statistically significant effect on Ethiopia insurance companies' performance

Underwriting risk

According to Andreas et al. (2014), underwriting risk may be primarily generated from the inadequacy of the premiums in the form of underestimation of the premiums or insufficient diversification of insurance portfolio. It is measured through the losses (claims) incurred divided by premium earned and indicates that underwriting risk emphasizes the efficiency of the insurers underwriting activity and also reflects the adequacy or otherwise of insurers' underwriting performance (Adams, et al. 2003).

H₂: Underwriting risk has negative and statistically significant effect on Ethiopia insurance companies' performance

Liquidity Ratio

According to Anasetal, **(2014)** Current ratio may be defined as the relationship between current assets and current liabilities. This ratio is also known as "working capital ratio". It is a measure of general liquidity and is most widely used to make the analysis for short term financial position or liquidity of a firm. It is calculated by dividing the total of the current assets by total of the current liabilities. Liquidity Ratio = Current Assets / Current Liabilities. In connection with this, previous researcher has used liquidity ratio variable for their study (Arifet al., 2015; Amal, 2012 and Suheyli, 2015). As indentified by (Adrian (2014); Eneyew (2013); Abate (2012) and Emine (2015)), the researcher hypothesizes liquidity ratio as negative and statistically significant effect on performance.

H₃: Liquidity ratio has negative and statistically significant effect on Ethiopia insurance companies' performance.

Company size

It has been suggested that company size is positively related to profitability. The main reasons behind this can be summarized as follows. First, large insurance companies normally have greater capacity for dealing with adverse market fluctuations than small insurance companies. Second, large insurance companies usually can relatively easily recruit able employees with professional knowledge compared with small insurance companies. Third, large insurance companies have economies of scale in terms of the labor cost, which is the most significant production factor for delivering insurance services (Shiu, 2014). Company size is computed as decimal logarithm of total assets of the insurance company.

A positive linkage between company size and its profitability is expected, since larger firms have more resources, a better risk diversification, complex information systems and a better expenses management. Relay on empirical evidences, the study hypothesizes company size has positive and statistically significant effect on performance.

H₄: Company size has positive and statistically significant effect on Ethiopia insurance companies' performance.

Technical provisions risk

As referred by Jasmina (2003) it is a risk of holding insufficient technical provisions or holding unjustifiably excessive provisions, where provisions are set at a lower level than actually required then this could present the company's financial position in a better light than it actually is. This could result in inappropriate underwriting decisions being made. Giovanni (2001) mentioned that a technical risk for the solvency of insurance companies is certainly that of underestimating technical provisions.

Giovanni (2001) explanation, technical provision risk concerns the impossibility on the part of the companies to meet their commitments towards the insured and the claimants due to insufficient technical provisions. It is measured by safety ratio (claims outstanding to equity ratio) and defined as a risk of holding insufficient technical provisions or holding unjustifiably excessive provisions. Technical provision risk is that the company's liability to policyholders could be understated. Clearly from the perspective of financial safety and soundness, the concern

is with possible understatement of liability because any such understatement can result in the insurer being unable to discharge all of its obligations to the public (NBE, 2010).

As a result, the researcher also applied this variable with it and hypothesizes technical provision risk as negative and statistically significant effect on performance.

H₅: Technical provision risk has negative and statistically significant effect on Ethiopia insurance companies' performance.

Macroeconomics variables (External Factor)

I. Inflation

Inflation certainly plays a role in insurance and has adverse impact on many aspects of insurance operations, such as claims, expenses and technical provisions (Daykin, Pentikäinen & Pesonen, 1994). Expected inflation is taken into account when actuaries set actuarially fair premiums, inflation itself is unlikely to seriously impact on the performance of insurance companies. Nevertheless, if inflation is significantly greater than expected, it could cause insurance companies financial difficulty. For instance, unexpected inflation makes real returns on fixed-rate bonds lower than expected. As a consequence, profit margins of insurance companies are compressed and financial performance is accordingly impaired (Browne, Carson & Hoyt, 1999).

The inflation could affect insurance companies' performance influencing both their liabilities and assets. In expectation of inflation claim payments increases as well as reserves that are required in anticipation of the higher claims, consequently reducing technical result and profitability. Taking into consideration that inflation affects assets side of the balance sheet, as the bond markets adjust to the higher level of inflation, interest rates begin to rise. This result in bond prices fall, negatively affecting value of investment portfolio. Given the negative Relationship between inflation and returns on both fixed-income securities and equities, it is expected that the relationship between performance and inflation will be negative. Hence, the study hypothesizes inflation has negative and statistically significant effect on performance.

H₆: Inflation has negative and statistically significant effect on Ethiopia insurance companies' performance.

II. Deposit Interest rate

It is argued that a continuing decline in market interest rates tends to make it more difficult for insurance companies to provide high interest rates for their customers or the insured and-as a result-to maintain hence high levels of profitability. This proposition was tested in Taiwan over a period of declining market interest rates for insurance companies. Flannery's (1981) model (quoted in Yang, 2007) was used to examine the relations between changes in market interest rate and the profitability of 12 domestic insurance companies. The results suggest that the effects of changes in interest rates on insurance company profitability depend on how profits are measured, that it differs depending on the profit indicator that is employed. Relay on these empirical evidences, the study hypothesizes interest rate has positive and statistically significant effect on performance of insurance companies.

H7: Deposit interest rate has Positive and statistically significant effect on Ethiopia insurance companies' performance.

3.8   Summary of variable and measurements

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

Table 3.1 Description of variables and their expected relationship

	Variables	Variable Measure	Notation	Expected sign
Dependent Variable	Firms' performance	Net profit before tax/total assets	ROA	
Independent Variables	Credit risk	Premium debtors + Due from reinsurer + Other receivable / Net asset	CR	**-**
	Underwriting risk	Current Assets / Current Liabilities	UR	**-**
	Liquidity ratio	Loss or Claim incurred / Premium earned	LR	**-**
	Company size	Natural logarithm of total assets	CS	+
	Technical provisions risk	Claims outstanding / Total equity	TPR	**-**
	Inflation rate	Annual inflation rate	IFN	**-**
	Deposit Interest rate	Ordinary interest rate	IR	+

4 Data Analysis and Interpretation

This chapter deals with the results and analysis of the findings and it contains three sections. The first section presented descriptive and correlation analysis on variables of the study; the second section presented fulfillment of the classical linear regression model (CLRM) assumptions; the third section laid down the results of regression that constitute the main findings of this study.

4.1 Descriptive statistics

Table 4.1 provides a summary of the descriptive statistics of the dependent and independent variables for seven insurance companies from the year 2010 to 2019 with a total of 70 observations, with key figures includes, the mean, minimum, maximum, standard deviation and number of observations for the dependent variable firms' performance (ROA) and independent variables (credit risk, underwriting risk, liquidity risk, company size, technical provision risk, inflation, and deposit interest rate).

Table 4.1. Descriptive statistics

	ROA	CR	CS	INF	IR	LR	TPR	UR
Mean	0.125350	0.464653	19.28549	0.135306	0.050459	1.127039	0.953735	0.691801
Median	0.110072	0.384185	19.32751	0.088000	0.050000	1.150314	0.630334	0.690710
Maximum	0.613184	1.728290	21.87222	0.380000	0.070000	2.523190	4.039900	0.959780
Minimum	0.002904	0.059450	16.39078	0.073000	0.040000	0.396680	0.120000	0.409370
Std. Dev.	0.092535	0.315875	1.125515	0.091624	0.005985	0.327580	0.856764	0.123073
Observations	70	70	70	70	70	70	70	70

Source: - E-views 10 output

As indicated in the above table, the profitability measures (ROA) shows that Ethiopian insurance company achieved on average a positive before tax profit over the last ten years. For the total

sample, the mean of ROA was 12% with a maximum of 61% and a minimum of 0.29%. That means the most profitable insurance company among the sampled earned 61cents of profit before tax for a single birr invested in the assets of the firm. On the other hand, the least profitable insurance company of the sampled earned0.29 cents of profit before tax for each birr invested in the assets of the firm. This clearly illustrates the disparity of rates of return earned by insurance companies'. Regarding the standard deviation, it means the value of ROA deviate from its mean to both sides by 9.2% which indicate there was low variation from the mean. The study finding is consistent with previous studies of Ana-Maria et al. (2014); Ijaz (2015); Hifza (2011); Emine (2015); Daniel et al. (2013); Hadush (2015); Meaza (2014); Mistre (2015), Suheyli (2015) and Daniel (2016).

The average value for credit risk as measured by ratio premium debtors plus due from reinsurer and other receivable to net asset of insurance company was 46.46% with a maximum of 172.82.% and a minimum of 5.94%. It means that the average rate of credit risk was 46.46% which is less than the standard rate of national bank of Ethiopia NBE (2010) which is 50%. It implies that there is less amount of uncollectable balance which tends to have default risk. In addition, sampled of Ethiopian insurance companies who have less uncollected amount has 5.94 cents from the total receivable birr (1.00) in the firm which is below the standard rate. On the other hand, sampled of Ethiopian insurance companies who have excess uncollected amount has 1 birr and 0.72 cents from the total receivable birr (1.00) which is above the standard rate and the value of credit risk deviate from its mean by 31.58%.

The outputs of descriptive statistics indicate size of the insurance company in relation to the average amount 19.28 which implies control variable measured by natural log of total asset which indicates very important for a company to be large in order to have superior performance. A maximum and a minimum value of size is 21.87 and 16.39 respectively. The standard deviation indicates that for the sample of Ethiopian insurance companies 1.12 suggests that there is moderate dispersion in the mean value of sample Ethiopian insurance companies. The result is consistent with prior studies of Ana-Maria et al. (2014), Amal (2012), Hifza (2011), Emine (2015), Yuvarajet al. (2013), Danielet al. (2013), Abate (2012), Meaza (2014) Mistre (2015) and Suheyli (2015).

Related with inflation had rate (i.e. 13.53%) of the country on average over the past ten years. The maximum inflation is 38% and the minimum 7.3%. The rate of inflation was highly

dispersed over the periods under study towards its mean with standard deviation of 9.1 %. This implies that inflation rate in Ethiopia during the study period was somewhat unstable.

Related with deposit interest rate of the country on average over the past ten years was 5.04%. The maximum deposit interest rate was 7% and the minimum was 4%. The rate of deposit interest was slowly dispersed over the periods under study towards its mean with standard deviation of 0.59%. This implies that deposit interest rate in Ethiopia during the study period was somewhat stable.

Liquidity measures the ability of insurance companies to fund increases in assets and meet obligations as they come due, without incurring unacceptable losses. The average value of the liquidity measured by current ratio was 112.70% that was far below the NBE requirement of 150% which showed the sector was operating at a low current ratio position during the study period. The average value 112.70% indicates that for each one birr current liability there was 1.12 cents current asset to meet obligation. The maximum value and the minimum value was 252% and 39.6% respectively for the study period. And the value of liquidity deviates from its mean by 32.75%.It means that the most liquid Ethiopian insurance company has 2.5birr to meet obligation. However, Ethiopian insurance companies who have less liquid have 0.39 cents to meet its obligation.

The average value of technical provision as measured by the ratio of reserve for claims outstanding to equity was 0.95 This implies that on average, reserve for claims outstanding was 0.95times equity or It refers that there is 1 birr of net asset to meet 95.37 cents of claims outstanding. The highest claim outstanding to equity for a company in a particular year was 4.03 and the minimum ratio was 0.12 times. Prior Studies Suheyli (2015) and Daniel (2016) results are near to this output. It indicates that the highest claim outstanding to equity for a company in a particular year was 185.4%. With regard to the standard deviation, the value of technical provisions risk deviate from its mean by 85.67%.

Concerning the underwriting risk variable, as proxies by losses incurred divided by annual premium earned; the mean of incurred claims to earned premium ratio was 69 percent. This implies that on average, most insurance companies from the sample paid 69 percent loss incurred out of the total premium earned per year which was favorable as compared with acceptable standard of around 70%. The highest ratio of losses incurred to earned premium value was 95

percent which is above the maximum standard of 70%, but the minimum value for a company in a particular year was 40 percent which is far below the maximum standard of 70 percent. This indicates that there is high variation in underwriting performance in insurance industry in Ethiopia during the study period.

4.2 Correlation Analysis

Correlation test is common carrying out in research that relate with regression was determine whether collinearity exist among the independent variable employed in the work or not, because it is capable of distorting the true picture of the relationship of dependent variable and independent variable. Correlation is a way to index the degree to which two or more variables are associated with or related to each other. It also defined as dependence of one variable upon another (Getahun, 2014).

The following table shows the correlation matrix among dependent and independent variables.

Table 4.2Correlation Analysis of variables

	ROA
ROA	1.000000
CR	-0.276265
CS	0.081097
INF	-0.240655
IR	0.008974
LR	-0.020772
TPR	-0.120005
UR	-0.283246

Source:Eviews 10 output

The correlation result in Table 4.2 shows credit risk, underwriting risk, liquidity ratio, technical provisions risk, and inflation have negative correlation with return on asset for measurement of Ethiopian insurance companies" financial performance. It refers that when these variables increase, financial performance of Ethiopian insurance companies will be go down. However, company size and deposit interest rate have positive correlation with return on asset which indicates that while these variables increase, at the same time financial performance of Ethiopian insurance companies will be increased.

The coefficient estimates of correlation in the above table shows -0.276265, -0.020772,-0.12005, -0.283246 and -0.24065 for credit risk, liquidity ratio, technical provisions risk, underwriting risk and inflation rate respectively. This implies that credit risk, liquidity ratio, technical provisions risk and underwriting risk are negatively correlated with return on asset. However, company size and deposit interest rate have 0.081097, and0.008974 coefficient number respectively which is indicates that company size and deposit interest rate are positively correlated with return on asset

4.3 Regression model tests

This section presents the empirical findings from the econometric output on determinants of insurance companies' profitability in Ethiopia. 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. Hence, the number of coefficients (seven variables) and number of cross sections (seven insurance companies) are equal in this study, so that the researcher cannot test Hausman test.

If the number of time series data is larger than the cross-sectional unite, it could have difference value estimated by fixed effect and random effect model. The choice here is based on computational convenience. For this case fixed effect model is favored (Gujarati, 2003). Fixed effect model is more reasonable when the entities in the sample effectively represent the entire population. Thus, the sample for this study was not selected randomly instead it selected rationally that can effectively represent the total number of population, due to this it is appropriate for *fixed effect model* selection.(Brooks, 2008)

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

This section presents the test for the assumptions of classical linear regression model (CLRM) Before going further in to panel data econometric measurement, the first issue is to test the assumption of classical linear regression model namely the error have zero mean, hetroscedasity, autocorrelation, normality and multicollinearity.(Brooks, 2008)

The errors have zero mean: According to Brooks (2008), if a constant term is included in the regression equation, this assumption will never be violated. Thus, since the regression model used in this study included a constant term, this assumption was not violated.

Heteroscedasticity test: 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 white test was used to test for existence of heteroscedasticity across the range of explanatory variables.

Table 4.3 Heteroscedasticity Test:

F-statistic	0.420151	Prob. F(9,133)	0.8941
Obs*R-squared	4.253476	Prob. Chi-Square(9)	0.8514
Scaled explained SS	20.13521	Prob. Chi-Square(9)	0.5217

Source: Eview-10 output

The result shown in table 4.1, both the F-statistic, R-squared and scaled explained SS of the test gave the same conclusion by showing the amount which is in excess of 0.05 suggests that there no evidence for the presence of Heteroscedasticity problem.

Autocorrelation test: The third assumption that is made of the classical linear regression model's disturbance terms is that the covariance between the error terms over time or cross-sectionally, 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 autocorrelated or serially correlated. The simplest test for autocorrelation is Breusch-Godfrey test. (Brooks, 2008).

H_0: The errors are uncorrelated with one another

H_1: The errors are correlated with one another

Table 4.4.*Breusch-Godfrey Serial Correlation LM Test*

Breusch-Godfrey Test:

F-statistic	0.851297	Prob. F(2,131)	0.3985
Obs*R-squared	1.834711	Prob. Chi-Square(2)	0.2949

Source: - E-views 10 output

Both versions of the test; F- statistic and R-squared version of the test indicate that the null hypothesis of no autocorrelation should not be rejected, since the p-values are considerably in excess of 0.05. The conclusion from the test described that the null hypothesis of no autocorrelation is not rejected.

Normality of Data: According to Gujarati (1995) before running regression analysis there should be normality of data. Therefore, normality test becomes relevant. Chris Brooks (2008) also noted that in order to conduct hypothesis test about the model parameter, the normality assumption must be fulfilled.

According to Brooks (2008), if the residuals are normally distributed, the Bera-Jarque statistic would not be significant. This means that the p-value given at the bottom of the normality test should be greater than 0.05 to support the null hypothesis of presence of normal distribution at the 5 percent level.

The hypothesis for the normality test was formulated as follow:

H0: Error term is normally distributed

H1: Error term is not normally distributed

Figure 4.1 Normality Test

Series: Standardized Residuals	
Sample 2010 2019	
Observations 70	
Mean	0.000354
Median	0.000921
Maximum	0.083634
Minimum	-0.079830
Std. Dev.	0.032587
Skewness	-0.079936
Kurtosis	3.230793
Jarque-Bera	0.446670
Probability	0.799847
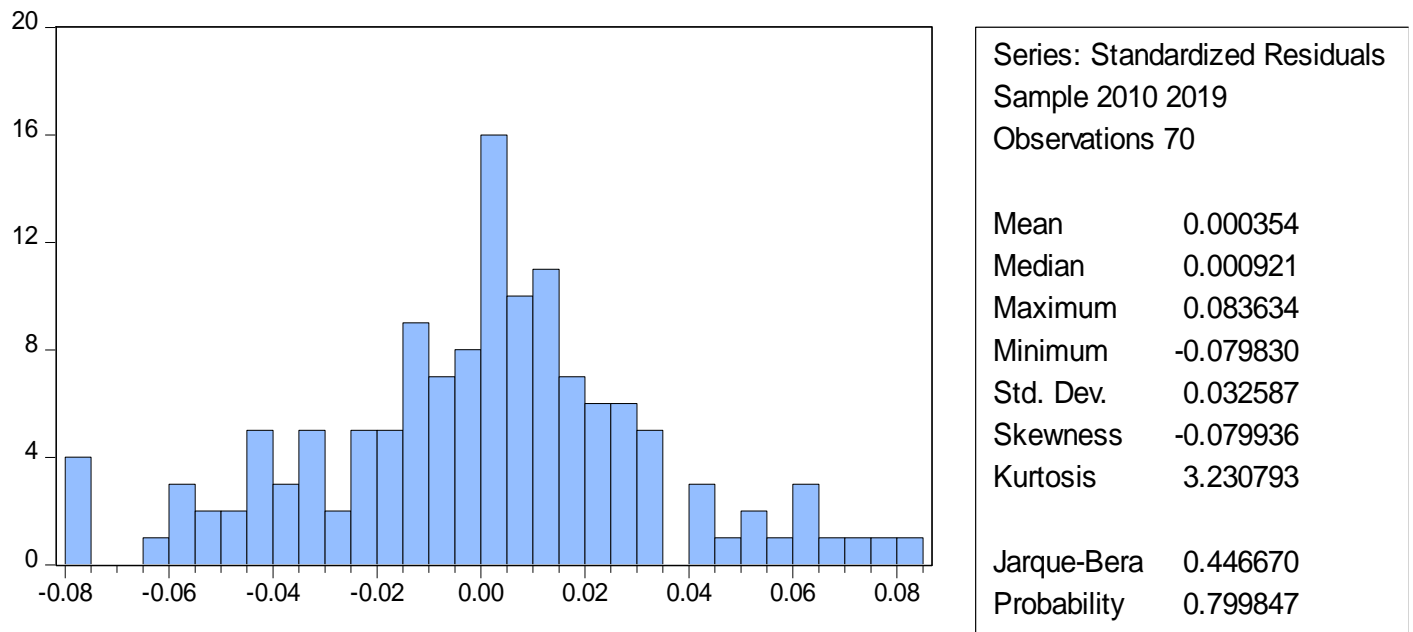
Source: - E-views 10 output

From figure 4.1 it can be noted that the distribution is normal, indicating that the data confirms to the normality assumption. The coefficient of kurtosis was close to 3, and P-value of 0.79 implying that the data were consistent with a normal distribution assumption. Based on the result, the study failed to reject the null hypothesis of normality at the 5% significance level.

Multicollinearity Test: An implicit assumption when using the OLS estimation method is that the explanatory variables are not correlated with one another. If there was no relationship between the explanatory variables, they would be said to be orthogonal to one another. If the explanatory variables were orthogonal, adding or removing a variable from a regression equation would not cause the values of the coefficients on the other variables to change. In any practical context, the correlation between explanatory variables will be non-zero, although this will generally be relatively benign in the sense that a small degree of association will not cause too much loss of precision. However, a problem occurs when the explanatory variables are very highly correlated with each other and this problem is known as multicollinearity. (Anderson et al., 2008).Brooks (2008) mentioned that if the correlation coefficient along with the independent variables is 0.8 and above, multicollinearity problems will be existed.

Table 4.5 Correlation between independent variable

	CR	CZ	INF	IR	LR	TPR	UR
CR	1.000000						
CZ	-0.043102	1.000000					
INF	0.410972	0.115147	1.000000				
IR	-0.246952	-0.21007	0.008460	1.000000			
LR	-0.27465	0.037635	-0.16683	0.065832	1.000000		
TPR	0.236411	0.068742	-0.11045	0.019093	-0.42661	1.000000	
UR	0.379207	-0.15274	0.172897	0.297571	-0.19051	0.545931	1.000000

Source: E-views 10 output

Regarding multicollinearity, the result for the independent variables included in the regression model are all lower than 0.8, According to Gujarati (2004), variables can be regarded as highly collinear if the value of explanatory variables exceeds 0.8. Based on this rule-of-thumb, it seems that problems associated with multicollinearity are unlikely in this model.

4.4 Regression Results and Discussion

The regression analysis is used to examine factors affecting of insurance companies' performance in Ethiopia and explanatory variables. Regression is basically a statistical technique that predicts the value of dependent variable and independent variables. From the finding beta indicates that each variable's level of influence on the dependent variable. (Chattha, 2013).And 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).

Cross-section fixed

R-squared	0.805214	Mean dependent var	0.089841
Adjusted R-squared	0.794531	S.D. dependent var	0.068504
S.E. of regression	0.054972	Akaike info criterion	-3.645821
Sum squared resid	0.175237	Schwarz criterion	-3.189652
Log likelihood	300.4195	Hannan-Quinn criter.	-3.485962
F-statistic	25.05456	Durbin-Watson stat	1.986521
Prob(F-statistic)	0.000000		

Source: Eview-10 output

R-squared statistics and the adjusted-R squared statistics of the model was 80% and 79% respectively. The adjusted *R*- Square value 79% indicates the total variability of determinant of insurance companies' profitability was explained by the variables in the model. Thus these variables collectively, are good explanatory variables to identify the determinant of insurance companies' profitability in Ethiopia. The regression F-statistic (25.4) 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.

For the following table empirical model is used in order to identify factors affecting of insurance companies" performance in Ethiopia.

$$ROA_{it} = \beta_0 + \beta_1 CR_{it} + \beta_2 CS_{it} + \beta_3 INF_{it} + \beta_4 IR_{it} + \beta_5 LR_{it} + \beta_6 TPR_{it} + \beta_7 UR_{it} + \varepsilon$$

Table 4.6Regression result

Dependent Variable: ROA
Method: Panel Least Squares
Date: 27/12/20   Time: 10:20
Sample: 2010 2019
Periods included: 10
Cross-sections included: 7
Total panel (balanced) observations:70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.307964	0.051211	4.331558	0.0000
CR	-0.057139	0.022956	-1.564133	0.0370
CS	0.072876	0.058313	1.611618	0.0447
INF	-0.073754	0.033717	-3.742240	0.2241
IR	0.059414	0.047454	11.20768	0.0418
LR	-0.033183	0.417159	5.853157	0.0398
TPR	-0.127517	0.055834	-2.476891	0.0127
UR	-0.277081	0.006305	-3.386892	0.0007

Source: Eview-10 output

Table 4.6 above shows that the analysis of the results for each explanatory variable and factors affecting of insurance companies" performance in Ethiopia and significant impact on profitability. Among the significant variables, credit risk, company size, deposit interest rate, liquidity, technical provision ratio (claims outstanding to equity), were significant at 5% significance level. Whereas variables like underwriting risk were significant at 1% significance level respectively since the p-value for the variable is 0.007.However, the coefficient and p-value of inflation implies that inflation had negative and insignificant relation with ROA at 5% level of significant. Therefore, from the above table result, the following model was developed to examine the effect of factor affecting financial performance of insurance companies.

ROA=0.307964-0.057139CR+0.072876CS-0.073754INF+0.059414IR-0.033183LR-0.127517TPR
-0.277081UR+ε

This model can be explained as: an increase in credit risk by 1% can reduce the performance of Ethiopian insurance companies (ROA) by 5.7%. Similarly, inflation, liquidity ratio, technical provision and underwriting risk can reduce the performance of Ethiopian insurance companies by 7.3%, 3.3%, 12.7% and 27.7% respectively. On the other hand, increase company size and

deposit interest rates by 1% will respectively leads to the performance increased by 7.2%, and 5.9%.

4.4.1 Discussion of the Result

In this section the effect of each variable tested under this study is discussed and analyzed based on the theoretical predictions, prior empirical studies and hypothesis formulated for this study.

Credit risk

H_1: Credit risk has negative and statistically significant effect on Ethiopia insurance companies' performance.

As presented in the above table, the regression results show a negative and significant impact on profitability of Ethiopian insurance industry with a regression coefficient of -0.057139, and, P-value of 0.0370 that it is statistically significant at 5% level of significance. These results can be interpreted in this way that increase credit risk in Ethiopian insurance companies would lead to low performance. In other words, as the sale on credit of the premium increase their profitability decline significantly.

Thus, the result supports the working hypothesis that credit risk has negative and statistically significant effect on financial performance of insurance companies in Ethiopia Thus; this outcome is consistent with prior study of Daniel (2017) and Jamal et al**.** (2014).

Underwriting risk

H_2: Underwriting risk has negative and statistically significant effect on Ethiopia insurance companies' performance.

As we have seen from the analysis this study confirms that underwriting risk has negative impact on performance of Ethiopian insurance companies. The regression result shows significant negative relationship between underwriting risk of sampled Ethiopian insurance with a regression coefficient of -0.277081, and p-value of 0.0007.By considering other variables constant ROA decline by 27.70% for every 1% increase in underwriting risk, and the p value of UR is 0.0007 reveals that it is statistically significant at 1% level of significance. The study finding is consistent with previous studies of (Ana-Maria et al. (2014); Ijaz (2015); Hifza (2011); Emine (2015); Daniel et al. (2013); Hadush (2015); Meaza (2014); Mistre (2015) and Suheyli (2015). However, Mirie (2015) and Arif et al. (2015)) andsupported the working hypothesis that

underwriting risk has negative and statistically significant effect on performance of insurance companies in Ethiopia.

Liquidity ratio

H₃: Liquidity ratio has negative and statistically significant effect on Ethiopia insurance companies' performance.

Return on asset is negatively related to liquidity ratio with coefficient of -0.033183.The coefficient determination of -0.033183 implies that the model developed can explain up to 3.31% of changes in return on asset of Ethiopian insurance companies'. And P value of LR is 0.0398 shows that it is statistically significant at 5% level of significance. Accordingly, the result supported the working hypothesis that liquidity ratio has negative and statistically significant effect on financial performance of insurance companies in Ethiopia.

The regression results by different researchers indicated that there exists a negative relationship liquidity ratio and performance of Ethiopian insurance companies. Adrian (2014) indicated that liquidity ratio has negative impact on ROA. In addition, Abate (2012) and Daniel (2017) found negative and statistical significant relation between liquidity ratio and profitability.

Company size

H₄: Company size has positive and statistically significant effect on Ethiopia insurance companies' performance.

The regression results concerning company size show that significant positive effect between company size and profitability of insurance companies in Ethiopia by a coefficient estimate of 0.072876 this means, for every 1% increase in company size there is 7.2% change on ROA of Ethiopian insurance companies 'and the p value of CS is 0.0447 reveals that it is statistically significant at 5% significance level and the result supported the workable hypothesis that company size has positive and statistically significant effect on financial performance of insurance companies in Ethiopia.

Empirical evidences by Shen and Rin(2012), in their study also found that firm size has a positive relationship with performance, implying that bigger firms are expected to achieve better

performance. Similarly, Borghesi et al. (2014) and Boone et al. (2007) indicated that bigger firms are incapable of quick response to any changes in the environment and enjoy their profit. However, it is in conflict with the findings of Bentzen*et al.* (2012); Ijaz (2015), Mirie (2015) and Joseph (2011).

Technical provision risk

H₅: Technical provision risk has negative and statistically significant effect on Ethiopia insurance companies' financial performance.

The regression result of this study shows that the coefficient of technical provision which is measured by outstanding claim to equity was negative coefficient -0.127517 which implies that if technical provision increases by 1 unit, ROA will also decrease by 0.127517 units assuming that the remaining independent variables are unchanged. The result of p-value is 0.0127 was statistically significant at 5% significance level. The result supported the working hypothesis that technical provision has negative and statistically significant effect on performance of insurance companies in Ethiopia. The finding is consistent with earlier result of Suheyli (2015);Daniel (2016); and (Bikker and Hu, 2002).

Inflation

H₆: Inflation has negative and statistically significant effect on Ethiopia insurance companies' financial performance.

The regression result in this study indicates that the relationship between inflation and financial performance is negative coefficient -0.073754 this shows when inflation goes up by 1 unit, on averagely return on asset will goes down by 7.3%, provided that other independent variables are constant. And the p value of INF is 0.2241 reveals that it is statistically insignificant at 5% level of significance. Accordingly, the result doesn't support the working hypothesis that inflation has negative and statistically significant effect on financial performance of insurance companies in Ethiopia. On the other hand, the study finding implies that an increase in inflation, certainly not lead to a decrease in performance of Ethiopian insurance companies.

The study finding is consistent with previous studies of Hadush (2015), Meaza (2014) and Suheyli (2015) result showed that inflation had insignificant effect on insurance companies" financial performance. Due to these reason, inflation doesn't surface to cause a significant effect on Ethiopian insurance companies' performance.

Deposit interest rate

H₄: deposit interest rate has positive and statistically significant effect on Ethiopia insurance companies' performance

In line with regression result of IR, it has a positive relationship with Ethiopian insurance companies' performance by a coefficient estimate of 0.059414. This means that holding other independent variables constant at their average value and when one percent increases in IR, as a result it increases return on asset (ROA) of Ethiopian insurance companies by 10.9% and the p value of IR is 0.0418 reveals that it is statistically significant at 5% level of significance.

Consequently, the result supported the working hypothesis that IR has positive and statistically significant effect on performance of insurance companies in Ethiopia. and empirical evidence by Flaminiet al., (2009);Isaac (2012) and Yuqi (2008) Support the working hypothesis

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CHAPTER FIVE

5. Summary, Conclusions and Recommendation

This chapter presents a conclusion of the study by summarizing the study's findings, discussing and their implications, and providing suggestions for future research. Based on the data analyzed and interpretation in chapter four of the study, the following conclusions and recommendations are made.

5.1 Summary of main findings

Empirical results provide detailed discussions on sample descriptive statistics and mean comparison between ROA and independent variables (credit risk, liquidity ratio, company size, technical size, underwriting risk, inflation and deposit interest rate) followed by correlation analysis to determine the relationship between dependent variable and towards independent variables. Regression analysis is also used to describe the profitability among insurance companies.

Generally this chapter presented the results of the structured record reviews and discussed the analysis of these results. From the data analysis, Ethiopian insurance companies' profitability is affected by all variables included in this study except inflation. The findings of the study showed that credit risk, liquidity ratio, technical provision, and underwriting risk, have statistically significant and negative relationship with insurers' profitability. However, inflation has negative but insignificant relationship with profitability. On the other hand, variables like, company size and interest rate have a positive and statistically significant relationship with insurers' profitability.

5.2 Conclusions

The study specifically examines factors affecting financial performance of insurance companies in Ethiopia, On the basis of the findings of this study; the researcher has drawn the following recommendations:

➢ The finding demonstrated that there is negative and significant relationship between credit risk and Ethiopian insurance companies' financial performance. This negative

impact means as minimizing credit risk will certainly improve the financial performance of the insurance companies.

➢ Liquidity ratio is negatively and significantly related with the performance of the insurance companies. A negatively significant relationship of liquidity ratio implies, a good liquidity position increases insurance companies' ability to pay claims incurred and will have positive impact on insurers' profitability. It also confirms having excess cash and not investing on the available investment (Ethiopian insurance companies encourage to invest in bonds,) lead to the consequence of losing an opportunity of making additional revenue.

➢ The logarithm of total assets (Company size) has a positive and significant association with Performance of Ethiopian insurance companies. This indicates that as larger insurance companies of the country experience more significant increases in financial performance of Ethiopian insurance companies. As firms grow in size they will gain advantage increase market share, reduce risk (can be reduced through diversification, that means if one product fails, success in other can keep Ethiopian insurance companies performance).

➢ The finding also indicates that there is negative and statistically significant relationship between technical provision ratio and Ethiopian insurance companies' financial performance. This implies holding of inadequate provision decrease insurance companies' ability to discharge the entire outstanding claims to be insured.

➢ The results of the regression analysis showed negative relationship between the ratio of underwriting risk (claims incurred to earned premium) and ROA with statistical significance. This implies that an increase in underwriting risk, certainly lead to a decrease in financial performance of Ethiopian insurance companies. This shows that firm's premier earned is lower than the claims and costs, the insurer could not raise adequate amount of revenue to cover those claims.

➢ The analysis of the linkage between the inflation rate and Ethiopian insurance companies' financial performance confirmed negative and insignificant impact. This implies that an

increase in inflation rate, certainly not lead to decrease or increase significantly in financial performance of Ethiopian insurance companies.

➢ Deposit interest rate has positive and significant association with financial Performance of Ethiopian insurance companies. This implies that an increase in deposit interest rate, definitely lead to increase in financial performance of Ethiopian insurance companies. It refers that insurance companies invest on bank deposit much of the collected premiums, so the income generated through investing activities is highly dependent on interest rates.

5.3 Recommendations

Based on the conclusions drawn out of the findings, the following points are forwarded as recommendations so that Ethiopian insurance companies boost the level of their performance.

➢ The study demonstrates credit risk had negative and significant effect on Ethiopian insurance companies' financial performance. Thus Ethiopian insurance companies should identify existing or potential credit risk by developing and implementing effective credit granting, documenting, and collection procedure to monitor and control the nature, characteristics, and quality of the credit portfolio. Beside that Ethiopian insurance companies have to manage their credit risk by avoiding concentration risk (concentration of investment in a particular investment category) and strive to achieve as much diversification.

➢ The finding shows that liquidity ratio have negative and significant effect on Ethiopian insurance companies' financial performance. Therefore, the study recommends that insurance companies should invest their idle cash in liquid assets that improve liquidity of the company to ensure that it is able to meet its short run financial obligation. The study also recommends Ethiopian insurance companies should invest in liquid assets that are diversified and readily marketable or convertible into cash.

➢ The study examined that company size has positive and significant association with financial performance of Ethiopian insurance companies. Thus, Ethiopian insurance companies should maximize their total asset. Aligning with NBE directive (SIB/25/2004) Ethiopian insurance companies should invest on fixed and current asset.

- Technical provision risk had negatively significant effect on Ethiopian insurance companies. Accordingly, the researcher recommends Ethiopian insurance companies to hold sufficient provision for its outstanding claim by doing assessment on their liabilities and also referring their past experience to develop comprehensive procedure to effectively monitor and control their outstanding claims. Therefore, Ethiopian insurance companies should take into account these points to reduce the effect of technical provision risk for their performance.

- The result disclosed that underwriting risk had negative and significant effect on Ethiopian insurance companies' financial performance. Since underwriting is basic activity for insurance industry in Ethiopia, the insurers should reduce the impact of underwriting risk by improving their underwriting performance through techniques like product selections, increase claims handling practice and gathering sufficient information or detail about subject matter of insurance before agreement with the insured to provide sufficient premium price for insurance policies. Thus Ethiopian insurance companies should give due attention on these areas to reduce the effect of underwriting risk for their performance.

- The study examined that deposit interest rate has positive and significant association with financial Performance of Ethiopian insurance companies. For this reason, Ethiopian insurance companies should invest their collected premiums on bank deposit as per NBE directive (SIB/25/2004) indicated about short term invest on saving and time deposit account. Accordingly, Ethiopian insurance companies can improve their profit significantly generated from short term investment return (interest income).

5.4 Direction for Future Research

The study sought to investigate the determinant of insurers' profitability in Ethiopia. However, the variables used in the statistical analysis did not include all factors that can affect Ethiopian insurers' performance. Thus, future research shall conduct research on other financial determinant of insurance profitability.

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APPENDICES

Appendix 1 Descriptive statistics

	ROA	CR	CS	INF	IR	LR	TPR	UR
Mean	0.125350	0.464653	19.28549	0.135306	0.050459	1.127039	0.953735	0.691801
Median	0.110072	0.384185	19.32751	0.088000	0.050000	1.150314	0.630334	0.690710
Maximum	0.613184	1.728290	21.87222	0.380000	0.070000	2.523190	4.039900	0.959780
Minimum	0.002904	0.059450	16.39078	0.073000	0.040000	0.396680	0.120000	0.409370
Std. Dev.	0.092535	0.315875	1.125515	0.091624	0.005985	0.327580	0.856764	0.123073
Skewness	2.344881	0.755907	0.355398	1.290425	3.072728	-0.257931	2.733670	0.369404
Kurtosis	16.37150	3.549492	2.168557	5.411954	17.19501	4.068009	10.54091	3.901038
Jarque-Bera	1204.746	15.52513	7.179167	74.86986	1435.591	8.440544	520.5429	8.146247
Probability	0.000000	0.000425	0.027610	0.000000	0.000000	0.014695	0.000000	0.017024
Sum	12.61166	95.69609	6.320000	172.4280	19.87680	88.75504	112.0313	95.51370
Sum Sq. Dev.	0.581253	18.80696	0.021022	26.92703	0.786796	1.206558	78.09095	3.484694
Observations	70	70	70	70	70	70	70	70

Appendix 2 Correlation Analysis of variables

	ROA
ROA	1.000000
CR	-0.276265
CS	0.081097
INF	-0.240655
IR	0.008974
LR	-0.020772
TPR	-0.120005
UR	-0.283246

Appendix 3 Heteroscedasticity Test:

F-statistic	0.420151	Prob. F(9,133)	0.8941
Obs*R-squared	4.253476	Prob. Chi-Square(9)	0.8514
Scaled explained SS	20.13521	Prob. Chi-Square(9)	0.5217

Appendix 4 Autocorrelation test

Breusch-Godfrey Test:

F-statistic	0.851297	Prob. F(2,131)	0.3985
Obs*R-squared	1.834711	Prob. Chi-Square(2)	0.2949

Appendix 5 Normality Test
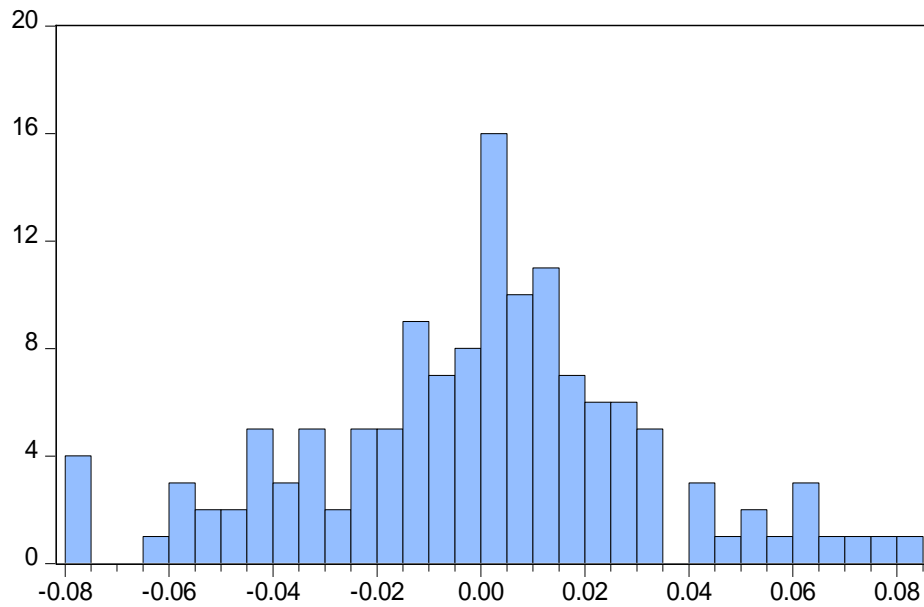
Series: Standardized Residuals	
Sample 2010 2019	
Observations 70	
Mean	0.000354
Median	0.000921
Maximum	0.083634
Minimum	-0.079830
Std. Dev.	0.032587
Skewness	-0.079936
Kurtosis	3.230793
Jarque-Bera	0.446670
Probability	0.799847

*A*ppendix 6 Correlation between independent variable

	CR	CZ	INF	IR	LR	TPR	UR
CR	1.000000	-0.043102	0.410972	-0.246952	-0.27465	0.236411	0.379207
CZ	-0.043102	1.000000	0.115147	-0.21007	0.037635	0.068742	-0.15274
INF	0.410972	0.115147	1.000000	0.008460	-0.16683	-0.11045	0.172897
IR	-0.246952	-0.21007	0.008460	1.000000	0.065832	0.019093	0.297571
LR	-0.27465	0.037635	-0.16683	0.065832	1.000000	-0.42661	-0.19051
TPR	0.236411	0.068742	-0.11045	0.019093	-0.42661	1.000000	0.545931
UR	0.379207	-0.15274	0.172897	0.297571	-0.19051	0.545931	1.000000

Appendix 7 Regression result

Dependent Variable: ROA

Method: Panel Least Squares

Date: 27/12/20   Time: 10:20

Sample: 2010 2019

Periods included: 10

Cross-sections included: 7

Total panel (balanced) observations:70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.307964	0.051211	4.331558	0.0000
CR	-0.057139	0.022956	-1.564133	0.0370
CS	0.072876	0.058313	1.611618	0.0447
INF	-0.073754	0.033717	-3.742240	0.2241
IR	0.059414	0.047454	11.20768	0.0418
LR	-0.033183	0.417159	5.853157	0.0398
TPR	-0.127517	0.055834	-2.476891	0.0127
UR	-0.277081	0.006305	-3.386892	0.0007

Cross-section fixed

R-squared	0.805214	Mean dependent var	0.089841
Adjusted R-squared	0.794531	S.D. dependent var	0.068504
S.E. of regression	0.054972	Akaike info criterion	-3.645821
Sum squared resid	0.175237	Schwarz criterion	-3.189652
Log likelihood	300.4195	Hannan-Quinn criter.	-3.485962
F-statistic	25.05456	Durbin-Watson stat	1.986521
Prob(F-statistic)	0.000000		

Appendix 8 Insurance Companies in Ethiopia

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