ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS & ECONOMICS

Risk Management and Financial Performance in the insurance Business The Case of Ethiopian Insurance Corporation

A thesis submitted to the department of Accounting and Finance in Partial Fulfillment of the Requirements for the Degree of Master of Science in Accounting and Finance

By

Taye Ameneshewa

June, 2019

Addis Ababa, Ethiopia

ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS & ECONOMICS

Risk Management and Financial Performance in the insurance Business The Case of Ethiopian Insurance Corporation

By

Taye Ameneshewa

A thesis submitted to the department of Accounting and Finance in Partial Fulfillment of the Requirements for the Degree of Master of Science in Accounting and Finance

Advisor

Dr. Habtamu Berhanu

June, 2019

Addis Ababa, Ethiopia

Declaration Statement

I, Taye Ameneshewa, declare that this thesis is my original work and has not been presented for any degree and that all sources of materials used for the study has been duly acknowledge.

Name: Taye Ameneshewa

Signature: _____

Date: _____

This thesis has been submitted for examination with my approval as university thesis advisor of MSC in Accounting and Finance program.

Name: Dr.Habtamu Berhanu

Signature: _____

Date: _____

Addis Ababa University

College of Business and Economics

MSC program

Statement of certification

This is to certify that the thesis entitled: Risk Management and Financial Performance the case of Ethiopian Insurance Corporation: is prepared by Taye Ameneshewa. The thesis is submitted in partial fulfillment for the requirements of the degree of Master of Science in Accounting and Finance complies with the regulations of the university and meets the accepted standards with respects to originality and quality.

Approved by the examining committee:

Abebe Yitayew (PHD)		
Internal Examiner	Signature	Date
Lemessa Bayissa(PHD)		
External Examiner	Signature	Date
Habtamu Berhanu(PHD)		
Advisor	Signature	Date
Program Coordinator	Signature	Date

Acknowledgement

I would like to extend my sincere gratitude to the almighty God and St. Mary's for giving me wisdom and courage to successfully complete this study. I would also like to take this opportunity my heartfelt gratitude to **Dr.Habtamu Berhanu** who has exerted great and continuous valuable efforts in shaping and assisted me to accomplish this task.

First of all I would like to express my deepest appreciation to my wife Ms. Aster Amsalu and my children Eldana, Aklesiya and Eyosiyas, for their encouragement and continuous motivation and appreciation to accomplish my work.

It is my pleasure to thank Dr.Derje Aschenake, Ato Million Melaku (my class coordinator), Ato Yimmer Mekonnen, Ato Mohamed Dawed, and Ato Belachew, for their support in availing relevant information and materials related with my work. Finally I would like to thank my entire friend for their immeasurable assistance throughout my study.

Abstract

The study focuses on the analysis of risk management factors that affect the financial performance of Ethiopian Insurance Corporation. Managing risks are an important factor which the corporation must attend to achieve its financial performance. From this perspective, risk management becomes one of the most important practices to be used in corporation in order to get higher returns. Therefore, this study attempted to ascertain the relationship between risk management and financial performance of E I C. In order to achieve this objective, the study used explanatory research design, quantitative research approach and time series data covering twenty three-years (1996–2018). The study used panel data techniques specifically fixed effect model on the regression analysis and used E-view9 software. The study used one dependent variable, return on asset (ROA), five independent variables that are liquidity risk, solvency risk, technical reserve risk, underwriting risk and reinsurance risk. The results of the fixed effect regression model revealed that technical reserve and liquidity risks have negative & insignificant impact on ROA (proxy measure for financial performance) of the corporation, whereas solvency risk, underwriting risk and reinsurance risk have positive & significant effect at 1% significance level on ROA of the corporation. The study led to the conclusion that technical reserve, liquidity risk, solvency risk, underwriting risk and reinsurance risks are the factors for the financial performance of the corporation. On the basis of these findings, the study recommends that the corporation needs of attention for mentioned risks.

Keywords: risk management, financial performance, EIC

TABLE OF CONTENTS

Abstract i
TABLE OF CONTENTS i
LIST OF FIGURES v
ACRONYMS AND ABBREVIATIONS vi
Chapter One 1
Introduction 1
1.1 Background of the study 1
1.2 The Insurance Industry in Ethiopia 4
1.3 Historical background of Ethiopian Insurance Corporation 6
1.4 Statement of the Problem 7
1.5 Research Questions 10
1.6.1 General Objective 11
1.6.2 Specific objective 11
1.7 Hypotheses of the Study 11
1.8 Scope of the Study 12
1.9 Significance of the Study 12
1.10 Structure of the Paper 13
Chapter Two 14
2.1 Introduction 14
2.2. Theories of Risk Management and Financial performance 15
2.2.1. Contingency Planning Theory 15
2.2.2. Enterprise Risk Management Theory 17
2.2.3. Managerial Self-interest Theory 18
2.2.4. DuPont Theory 19
2.3. Insurance and Risk Management 20
2.4 Financial Performance Measurements 26
2.5 Risk selection and their operational meaning 28
2.5.1 Liquidity Risk 30
2.5.2 Technical Reserve Risk 31
2.5.3 Solvency Risk 32

2.5.4 Reinsurance Risk 34
2.5.5 Underwriting Risk 36
2.6 Risk Management &Financial Performance: An Empirical Review 38
2.7 Related Empirical Studies in Ethiopia 41
2.8 Summary and Literature Gap 44
2.9 Conceptual Framework 45
Chapter Three 47
Research Design and Methodology 47
3.1 Research design 47
3.2 Research Approach 47
3.3 Source of data and data collection methods 48
3.4 Data Analysis 48
3.4.1 The Study Model Tests 49
3.4.2 Autocorrelation Test 50
3.4.3 Stability Test 51
3.4.4 Heteroscedasticity Test 53
3.4.5 Normality Test 53
3.5 Variable measurements 55
3.5.1 Dependent variables 55
3.5.2 Independent variables 56
3.6 Model specification 58
Chapter Four 60
4.1 Econometric Analysis 60
4.1.1 Descriptive statistics 60
4.1.2 Unit Root – Stationry 63
4.1.3 Autocorrelation 66
4.1.4 Stability 68
4.1.5 Heteroscedasticity 70
4.1.6Normality Test Result 72
4.2 Correlation Analysis among variables 74
4.3 Analysis of regression result 76
4.4 Discussion of Regression Result 78
CHAPTER FIVE 86

SUMMARY, CONCLUSSION AND RECOMMENDATIONS 86
5.1 Summary of findings 86
5.2 conclusions 86
5.3 Recommendation 88
Reference 93

LIST OF TABLES

Table 4:0:1Descriptive Statistics of the Variables 60
Table 4:0:2:Augmented Dickey-Fuller (ADF) Test Result 64
Table 4:0:3:Phillips-Perron (PP) Test Result 64
Table4:0:4:Regression result of Durbin-Watson Test 67
Table 4:0:5:Ramsey RESET Test Result 70
Table4:0:6:Breusch-Pagan-Godfrey Test Result 71
Table4:0:7:White Test Result 72
Table 4:0:8:Correlation matrix between independent variables 75
Table 4:9:Regression Result 77

LIST OF FIGURES

Figure 2:0.1Conceptual Frame Work.....46
Figure 3:0.1Durbin-Watson has 2 critical values: an Upper critical value and a Lower critical value 51
Figure4.0.1:Durbin-Watson has 2 critical values: (dU) and (dL) the study result 68
Figure 4.2:Normality Test Result 74

ACRONYMS AND ABBREVIATIONS

ADF	Augmented Dickey-Fuller
▪ BLUE	Best Linear Unbiased Estimators
▪ BPG	Bruserch-pagan Godfrey
▪ CLRM	Classical Linear Regression Model
▪ CSR	Claim Settlement Risk
▪ CNWP	Change in net written premium
▪ COSO	Committee Of Sponsoring Organization
▪ CP	Contingency Planning
▪ DCEO	Deputy Chief Executive Officer
▪ EIC	Ethiopian Insurance Corporation
▪ ERM	Enterprise Risk Management
▪ GNWP	Gross written premium
▪ IT	Information Technology
▪ JB	Jarque-Bera test
▪ LR	Liquidity Risk
▪ NBE	National Bank Of Ethiopia
▪ OLS	Ordinary Least Square
▪ ROA	Return On Asset
▪ ROE	Return On Equity
▪ RR	Reinsurance Risk
▪ SR	Solvency Risk
▪ S & P	Standard and Poor's
▪ TRM	Traditional Risk Management
▪ TRR	Technical Reserve Risk
▪ TSX	Toronto Stock Exchange
▪ UR	Underwriting Risk

Abstract

The study focuses on the analysis of risk management factors that affect the financial performance of Ethiopian Insurance Corporation. Managing risks are an important factor which the corporation must attend to achieve its financial performance. From this perspective, risk management becomes one of the most important practices to be used in corporation in order to get higher returns. Therefore, this study attempted to ascertain the relationship between risk management and financial performance of E I C. In order to achieve this objective, the study used explanatory research design, quantitative research approach and time series data covering twenty three-years (1996–2018). The study used panel data techniques specifically fixed effect model on the regression analysis and used E-view9 software. The study used one dependent variable, return on asset (ROA), five independent variables that are liquidity risk, solvency risk, technical reserve risk, underwriting risk and reinsurance risk. The results of the fixed effect regression model revealed that technical reserve and liquidity risks have negative & insignificant impact on ROA (proxy measure for financial performance) of the corporation, whereas solvency risk, underwriting risk and reinsurance risk have positive & significant effect at 1% significance level on ROA of the corporation. The study led to the conclusion that technical reserve, liquidity risk, solvency risk, underwriting risk and reinsurance risks are the factors for the financial performance of the corporation. On the basis of these findings, the study recommends that the corporation needs of attention for mentioned risks.

Keywords: risk management, financial performance, EIC

Chapter One

Introduction

1.1 Background of the study

Risk management is an important discipline in business especially the insurance business. Recently business put great emphasis on risk management as this determines their survival and business performance. Insurance companies are in the risk business and as such cover various types of risks like individuals, business and companies. It is therefore, necessary that insurance companies manage their risk exposure and conduct proper analysis to avoid losses due to the compensation claims made by the insured. However, Kadi (2003) observes that most insurance companies cover insurable risks without carrying out proper analysis of the expected claims from clients and without putting in place a mechanism of identifying appropriate risk reduction methods.

In modern society, financial industry is growing rapidly and gaining importance. According to Mishkin & Eakins (2013), financial markets and institutions not only affect our everyday life but also involve huge flows of funds, which in turn affect business profits, the production of goods and services, and even the economic well-being of countries. The role of financial institutions in the economy of a country in general and insurance companies in particular are facilitate the efficient and effective financial system through saving mobilization, risk transfer and intermediation (Das et al., 2003).

Therefore, financial institutions, channel funds and transfers risks from one economic unit to another economic units so as to facilitate trade and resources arrangement. More specifically 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 & Sumegi, 2008).

The major reason of all established business is make profit as they meet human demonstrable needs and want, and continue to dominate the market, but every economic activity is faced with both internal and external risks. At times, these risks involve noticeable losses that could deprive a profit-making company from surviving in the market if effective management is not established. Considering the increasing in risks in organizations, managing risk is a matter of necessity. Risk management is the total process of identifying, controlling and minimizing the influence of uncertain events. This days, businesses put great emphasis on hazard administration as this determines their survival and business performance. Poor management of risk, by insurance companies, leads to accumulation of claims from the clients hence leading to increased losses and hence poor financial performance (Magezi, 2003). Risk management activities are affected by the risk behavior of managers.

A robust hazard administration framework can help organizations to reduce their exposure to risks, and enhance their financial performance (Iqbal and Mirakhor, 2007). Further; Mikes and Kaplan (2014) argued that "the selection of particular risk tools tends to be associated with the firm's calculative culture and the measurable attitudes that senior decision makers display towards the use of risk management models. While some risk functions focus on extensive risk measurement and risk based performance management, others focus instead on qualitative discourse and the mobilization of expert opinions about emerging risk issues.

"As risk-bearing institutions can and do fail if risks are not managed adequately Christopher and Peck (2004). The central function of an insurance company as observed by Merton (1995) is its ability to distribute risk across different participants. Saunders and Cornett (2008), also state that "modern insurance companies are in the administration of hazards" business.

They discuss that insurance companies undertake risk bearing and management functions on behalf of their customers through the pooling of risks and the sale of their services as risk specialists". This indicates that management of risks should be focused on in the running of insurance companies. Management of various financial risks is the center stage of the insurance industry. Risk management, can be defined as risk pooling, transfer and indemnification in order to reduce the costly financial loss evolving from probabilistic occurrence and volatility. Skipper (1997) opined that "this fundamental aspect of insurance through the structured administration of hazard process involves identifying the exposures to accidental loss, evaluating alternative techniques for treating each loss exposure, choosing the best alternative and monitoring the results to refine the choices".

"In the process of making decision on underwriting risk, insurance companies gather relevant information on risk factors and assess risk which reflects in the price of risk (premium) and the policy conditions" (Curak and Loncar, 2008).

According to Levine (2004), few studies have shown that insurance activities, as a means of risk transfer and indemnification, contribute to economic growth by promoting financial stability, allowing different risks to be managed more efficiently, encouraging the accumulation of new capital and helping to mitigate losses as well as the negative consequences that random shocks may have on capital investment in the economy".

Rejda (2003) stated that "risk management means to a process of identifying loss exposures faced by an organization and selecting the most appropriate techniques for treating these particular exposures effectively. There are many techniques available for insurance companies to manage risks including; loss financing, risk avoidance and loss prevention and control.

Gollier (2003) described “insurance means that insurance companies take over risks from customers. Insurers consider every available quantifiable factor to develop profiles of high and low insurance risk. Level of risk determines insurance premiums”. As revealed by Dennis (2005), “generally, insurance policies involving factors with greater risk of claims are charged at a higher rate by calculating the claim ratio at least the past three consecutive years. With much information at hand, insurers can evaluate risk of insurance policies at much higher accuracy. To this end, insurers collect a vast amount of information about policy holders and insured objects”. Barlow (2000) concurred that “risk management is the human activity which integrates recognition of risk, risk assessment, developing strategies to manage it and mitigation of risk using managerial resources. Generally, a proper administration of hazard process enables a firm to reduce its risk exposure and prepare for survival after any unexpected crisis”. Finally, this study examines risk management and financial performance of Ethiopian Insurance Corporation.

1.2 The Insurance Industry in Ethiopia

The history of insurance service is as far back as modern form of banking service in Ethiopia which was introduced in 1905 when the bank of Abyssinia began to transact fire and marine insurance as an agent of a foreign insurance company. Subsequently the number of insurance companies increased significantly and reached 33 in 1960.

According to Hailu (2007), the first significant event that the Ethiopian insurance market observation was the issuance of proclamation No. 281/1970 and it was issued to provide for the control & regulation of insurance business in Ethiopia. The law required an insurer to be a domestic company whose share capital to be not less than Birr 0.4 million for a general insurance business and Birr 0.6 million in the case of long-term insurance business and Birr 1 million for both insurance business.

Non- Ethiopian nationals were not barred from involving in insurance business however domestic company as a share company having its head office in Ethiopia

and in the case of a company transacting a general insurance business at least 51% and in the case of a company transacting life insurance business, at least 30% of the paid-up capital must be held by Ethiopian national companies. Four years later the enactment of the proclamation, the military government that came to power in 1974 put an end to all private enterprise. 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 (EIC).

The nationalization of private insurance companies, the restrictions imposed on private business ventures, and management of the insurance sector had significant adverse impact on the development and growth of Ethiopian insurance industry (Hailu, 2007). However, following the change in the political environment in 1991, the proclamation for the licensing and supervision of insurance business No. 86/1994 heralded the beginning of a new era. 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 to be not less than Ethiopian Birr 60 million for a general insurance business and Ethiopian Birr 15 million in the case of long term (life) insurance business and Ethiopian Birr 75 million to do both long-term & general insurance business.

Today the total number of insurance companies, their asset and capital increased significantly. At 2018, there are 17 insurance companies in operation. Ethiopian Insurance Corporation (EIC) is state owned by government while the rest all are private.

1.3 Historical background of Ethiopian Insurance Corporation

Ethiopian Insurance Corporation (EIC) was established in 1975 by proclamation No.68/1975. The Corporation came into existence by taking over all the assets and liabilities of the thirteen nationalized private insurance companies, with Birr 11 million (USD 1.29 million) paid up capital aiming the following objectives.

I. Engage in all classes of insurance business in Ethiopia;
II. Ensure the insurance services reach the broad mass of the people;

Subject to the provision of Article 18 of the Housing and Saving Bank establishment proclamation No. 60/1975, promote efficient utilization of both material and financial resources.

EIC was operating the business for about nineteen years under protected monopolistic system as state owned-sole insurer. After the demise of the Marxist regime in mid-1991 a fundamental change has taken place and there was a shift in political, economic and social orientation from totalitarianism to that of liberalism. Therefore, EIC was re-established as public enterprise under proclamation number 201/94 with Birr 61 million (USD 7.13 million) paid up capital. Currently the paid up capital is Birr 592,000,000.00.

Upon re-establishment of the Corporation in 1994 as state owned enterprise, the law covers the following new objectives to the Corporation:

I. Engage in the business of rendering insurance services;
II. Engage in any other related activities conducive to the attainment of its purposes.

In order to continuously upgrade the educational qualification of its employees. EIC exhibited outstanding commitment in providing its staff with short & long term training programs both here in with Ethiopia and overseas.

As of June 30, 2018 EIC has 1,504 employees with different educational background. Both the management and supervisory staff of the corporation are highly skilled professionals with outstanding academic achievements as well as professional insurance qualifications and many years of excellent practical experience in the insurance industry.
Source: http://eic.com

1.4 Statement of the Problem

In risk management, a prioritization process must be followed whereby the risk with the greatest loss and greatest probability of occurrence is handled first and risks with lower loss are handled later (Kiochos, 1997, and Stulz, 2003). There is however, no specific model to determine the balance between risks with greatest probability and loss and those with lower loss, making risk management difficult. Banks (2004) notes that the key focus of risk management is controlling, as opposed to eliminating, risk exposures so that all stakeholders are fully aware of how the firm might be impacted.

Financial performance can be measured through evaluating a firm's profitability, solvency and liquidity. A firm's profitability indicates the extent to which a firm generates profit from its factors of production. Financial performance can be measured by monitoring the firm's profitability levels. Zenios et al. (1999) states that profitability analysis focuses on the relationship between revenues and expenses and on the level of profits relative to the size of investment in the business through the use of profitability ratios.

Insurance companies borrow heavily from the risk management process suggested by Kiochos (1997). According to Kiochos (1997), the risk management process involves four steps: identifying potential losses, evaluating potential losses, selecting

appropriate risk management techniques for treating loss exposures and implementing and administering the risk management program.

According to Agyei & Yeboah (2011), some financial institutions have had difficulties in growth of their profitability and some end up closing their doors; probably inadequate risk management policies and practices are the major causes of failures and poor performance of these firms.

Most insurance companies are accepting to cover all the insurable risks without first carrying out proper analysis of the expected claims from the clients and they have not put in place a mechanism of identifying various methods of reducing risks (Kadi,2003). They have accumulated claims from clients and this has led to consistent increase in losses which resulted in hindering of their financial performance (Magezi, 2003). So according to these authors, insurers‟ financial loss may be happened due to inadequate liquidity management, underpricing (imprudent underwriting practice), management issues and high tolerance to investment risks.

However, in the context of Ethiopian insurance industry, the subject has received a limited research attention. In which case, in order to either prove the above premises or reach into some other assertion regarding the relationship between risk management and financial performance of Ethiopian Insurance Corporation, empirical investigation is lacking. As far as the knowledge of the researcher is concerned, there are only few studies regarding risk management and insurance financial performance in Ethiopian insurance industry until this date. In the case of Ethiopian insurance industry as the best knowledge of the researcher there are few studies regarding risk management and insurance financial performance. Rebuma (2013), and kokebe & Gemechu (2016), both studies focused on risk management techniques (loss prevention & control, loss financing, and risk avoidance) and analyzed by using correlation matrix.

Rebuma (2013) studied on risk management techniques and financial performance of Ethiopian insurance companies. The purpose of the study was to examine the relationship between applied risk management techniques and financial performance of the insurance companies in Ethiopia, covering the period of 2002-2011. Correlation analysis was used to identify the relationship between risk management techniques and financial performance. The findings of the study indicated that risk management techniques (loss prevention and control, loss financing and risk avoidance) were applied in the Ethiopian insurance companies.

However, risk management techniques were not commonly applied among insurance companies. The findings also revealed low increase ROE ratios and a general increase in loss ratios of the insurance companies; i.e. a poor financial performance especially as indicated by the loss ratios.

Finally, the study indicated the existence of weak relationship between risk management techniques and financial performance that show ineffective on how risk management techniques are applied to improve performance of the insurance companies.

Kokobe & Gemechu (2016) worked on risk management techniques and financial performance of insurance companies in Ethiopia, primary data was collected through questionnaires and secondary data was collected from year-end financial report of the selected company. Primary data was collected from employees and secondary data was collected from financial statements of selected insurance companies and analyzed using Pearson correlation to check the relation between insurance performance and risk management techniques. The result shows that risk management practice and financial performance are uncorrelated.

Ethiopian insurance industry contributed only 0.43% to the national 2014/15 GDP, which is by far lower compared with African average penetration of 3.6% (NBE, 2017). Ethiopia's insurance market contribution to the gross domestic product (GDP) in 2011 fiscal year was only 0.2%.As far as the research knowledge is concerned out of a few studies conducted, all of the studies conducted in Ethiopia insurance industries.

Ethiopian Insurance Corporation is one public owned financial institution. It has the greatest market shares of in insurance industry in Ethiopia. However in the year of 1996 the market share of the corporation was 75.6% and at the end of year 2018 the share of the corporation was 35.5%, which shows that the market share of the corporation is declined from time to time and fronting serious problems in the retaining of existing customers and attracting new ones. In order to either prove the above premises or reach into some other assertion regarding the relationship between risk management and financial performance of Ethiopian Insurance Corporation.

Based on this, this study is designed in such a way that it focuses on the areas not addressed by the preceding studies on the corporation. This study tries to bridge the gap specifically risk management and financial performance of Ethiopian Insurance Corporation.

1.5 Research Questions

Based on the above statement of the problem the researcher develops the following research questions.

I. What types of practices improve risk management financial performance of Ethiopian Insurance Corporation?
II. What is the link between risk management and financial performance?
III. What are the risk management factors that affect the performance of Ethiopian Insurance Corporation?

1.6.1 General Objective

The general objective of this study is to empirically test the effects of risk management and financial performance of Ethiopian Insurance Corporation.

1.6.2 Specific objective

The specific objective of the study including:

a. To analyze the effects of liquidity risk on the financial performance of Ethiopian Insurance Corporation.
b. To consider the effects of Technical reserve risk on the financial performance of Ethiopian Insurance Corporation.
c. To investigate the effects of solvency risk on the financial performance of Ethiopian Insurance Corporation.
d. To inspect the effects of reinsurance risk on the financial performance of Ethiopian Insurance Corporation.
e. To examine the effects of underwriting risk on the financial performance of Ethiopian Insurance Corporation.

1.7 Hypotheses of the Study

Hypotheses of the study stand to Ethiopian insurance corporation risk management and financial performance that have been developed over the years by insurance industry and researchers past empirical studies related to insurer's risk management and financial performance. Previous Empirical results in different hemisphere of the world indicate various out comes while using the same variables to examine the effect of Risk management on financial performance of insurance companies. The literature reviews are used to establish expectations for the relationship of the different variables. Hence, based on the objective, the present study seeks to test the following five hypotheses:

H1: Liquidity risk has a significant and negative effect on Ethiopian Insurance Corporation financial

Performance.

H2: Technical reserve risk has a significant and negative effect on Ethiopian Insurance Corporation financial

Performance.

H3: solvency risk has negative and significant effect on Ethiopian Insurance Corporation financial performance

H4: Reinsurance risk has positive and significant effect on Ethiopian Insurance Corporation financial

Performance.

H5: Underwriting risk has negative and significant effect on Ethiopian Insurance Corporation financial

Performance.

1.8 Scope of the Study

The study focused on risk management and financial performance of Ethiopian Insurance Corporation by taking evidence mainly from risk management Directorate & audited financial statement for the physical period of 1996 to 2018.

The dependent variables are delimited to financial performance level (ROA).The explanatory variables are delimited to liquidity risk, technical reserve risk, solvency risk, reinsurance risk and underwriting risk. And the study area of this research is delimited to Ethiopian Insurance Corporation, and under operation for the fiscal years of 1996 to 2018.

1.9 Significance of the Study

This study is of huge value to insurance companies, academics and other concerned stakeholders. As there is scarcity of empirical studies in insurance industries, some

existed studies are mainly focused on examining the determinants of profitability of insurance industry and its contribution to economic growth. Hence this study might fill the gap by examining risk management and financial performances of Ethiopian Insurance Corporation.

The study will enable Ethiopian Insurance Corporation to improve their risk management process and to adopt efficient policy and strategies to improve the corporation financial performance through the risk management processes. This will enable the corporation to perform better and to grow their businesses and maintain a competitive advantage to other private insurance companies.

The result of this study will also serve as a data base for further researchers in this field of research. Further, the observed findings are relevant for policy-makers or insurance regulators, corporate boards, executives, general public, students and other stakeholders.

1.10 Structure of the Paper

The research paper was organized in to five chapters. Chapter one is background of the study where overview of Ethiopian Insurance Corporation, statement of the problem, research question, objectives of the study hypothesis of the study, scope of the study, significance of the study & structure of the paper presented. Chapter two is review of literature in which theories, empirical evidence and conceptual frame work are identified. Chapter three deals with research design and methodology, chapter four presented the research results and discussions. Finally, chapter five contained the summary, conclusion and recommendations for the finding of the study.

Chapter Two

Literature Review

2.1 Introduction

This chapter critically reviews the available literature on risk management and financial performance. It begins by reviewing financial theories related to risk management, then an overview of the empirical studies and literature on the risk management and financial performance.

The word risk is reasonably modern; it entered the English language in the mid-17th century, coming from the French word risqué and in the second quarter of the 18th century the Anglicized spelling began to appear in insurance transactions (Flanagan, 1993). Though the term risk has no a single definition, Rejda (2008) defined as; it is uncertainty concerning the occurrence of a loss.

According to this definition a risk exist only if an uncertain action or event happens that leads to occurrence of that risk. Although risk and uncertainty are often used interchangeably, there is a distinction between them. Uncertainty is referred to not being sure of what is going to happen in the future and risk is the degree of this uncertainty. In finance, one measure of risk is the probability that the actual return on an investment will diverge from its expected value. How risky an investment is depends on how much the actual return is likely to diverge from its expected value (Clark & Mairos, 1996). Moreover, risk is a phenomenon that by definition and by nature cannot be eliminated.

Risk management is the process of implementing and maintaining appropriate management controls including policies, procedures and practices to reduce the effects of risk to an acceptable level. The principles of risk management can be directed both to limiting adverse outcomes and achieving desirable ones. The process

involves identifying, analyzing, assessing, treating and monitoring risk in all areas of agency operations and business (Moeller, 2007).

Further more risk management is the process of identification, assessment, and prioritization of risks followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events or to maximize the realization of opportunities (Wenk, 2005).

2.2. Theories of Risk Management and Financial performance

The concept of risk management theory involves studying the various ways by which businesses and individuals raise money, as well as how money is allocated to projects while considering the risk factors associated with them Sarkis (1998). There are a number of theoretical perspectives which are used in explaining the effects of risk management on firm's financial performance.

The theories reviewed in this section are contingency planning theory, enterprise risk management theory, managerial self-interest theory and DuPont Theory.

2.2.1. Contingency Planning Theory

Contingency planning (CP) also known as business continuity planning is a crucial element of risk management. The fundamental basis of Contingency Planning is that, since all risks cannot be totally eliminated in practice, residual risks always remain. Despite the organization's very best efforts to avoid, prevent or mitigate them, incidents will still occur. Particular situations, combinations of adverse events or unanticipated threats and vulnerabilities may conspire to bypass or overwhelm even the best information security controls designed to ensure confidentiality, integrity and availability of information assets (Hisnson & Kowalski, 2008).

Riley (2012) defines contingency planning as a forward planning process, in a state of uncertainty, in which scenarios and objectives are agreed, managerial and technical actions defined, and potential response systems put in place in order to prevent, or better respond to, an emergency or critical situation. A contingency plan is meant to help network and coordinate individuals, agencies and organizations to affect a rapid and effective response.

Contingency planning ensures the availability of stand-by resources and provides mechanism for rapid decision-making that can shorten disaster response and ultimately save lives. It is the act of preparing for major incidents and disasters, formulating flexible plans and marshaling suitable resources that will come into play in the event, whatever actually eventuates.

The word, ''contingency‟ implies that the activities and resources that will be required following major incidents or disasters are contingent (depend) on the exact nature of the incidents and disasters that actually unfold. In this sense, CP involves preparing for the unexpected and planning for the unknown. The basic purpose of CP is to minimize the adverse consequences or impacts of incidents and disasters (James et al., 2013).

‘’Therefore, as insurance companies operations are full of probability, their business transactions and policy contracts are also on contingent basis. If in the policy period no damage/loss is happen, the insurer earns the whole premium which is a rare case, yet if the claim is reported within the policy contract period the compensation should be paid. Both the magnitude of the compensation and the time are not known certainly’’.

2.2.2. Enterprise Risk Management Theory

This Practice discusses Enterprise Risk Management (ERM) practices within insurance organizations. According to the Casualty Actuarial Society, ERM is defined as "the discipline by which an enterprise in any industry assesses, controls, exploits, finances, and monitors risks from all sources for the purpose of increasing the enterprise's short- and long-term value to its stakeholders."

The underlying premise of Enterprise Risk Management (ERM) is that every entity exists to provide value for its stakeholders. All entities face uncertainty and the challenge for management is to determine how much uncertainty to accept as it strives to grow stakeholder value. Enterprise risk management theory is one of the most common frameworks was introduced by the Committee of Sponsoring Organizations of the Tread way Commission (COSO) in 2004, which defines ERM as (COSO, 2004) it is a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives. It also emphasizes that the organizational benefits of risk management can create value for firms (Nocco & Stulz, 2006).

Tseng (2007) stated that, Enterprise Risk Management (ERM) is a framework that focuses on adopting a systematic and consistent approach to managing all of the risks confronting an organization. ERM is an organizational concept that applies to all levels of the organization. Furthermore, a firms total risk can be reduced, financial distress is less likely (Meulbroek, 2002; Gordon et al., 2009). Traditionally the approach of risk management has been a silo approach in which one risk is managed at a time. In this approach, risk management is purchased without acknowledging the interrelationship of risks.

The silo (traditional) risk management causes inefficiencies due to the lack of coordination between the various risk management departments (Hoyt & Liebenberg, 2011). Whereas enterprise risk management is not strictly a serial process, where one component affects only the next. It is a multidirectional, iterative process in which almost any component can and does influence another (COSO, 2004).

Most empirical studies conclude that ERM generally has a significant positive impact on firm value and performance. As opposed to Traditional Risk Management (TRM), where individual risk categories are managed separately in risk silos, ERM allows firms to manage a wide array of risks in an integrated, enterprise Wide fashion (Hyot &Liebenberg, 2006).

2.2.3. Managerial Self-interest Theory

This theory was first put forward by Stulz (1984), who argued that firm managers have limited ability to diversify the significant portion of their personal wealth held in the form of stock in the firm and the capitalization of their earnings from the firm. Such managers would prefer stability of the firm's earnings to volatility because, other things equal, such stability improves their own utility, at little or no expense to other stakeholders. This argument can be traced back to the literature on agency. In this area, the relationship between firm performance and managerial remuneration is clearly developed in such work as Ross (1977).

Demarzo & Duffie (1992), point out that observed outcomes may influence owner perception of managerial talent. This would, in turn, favor reduced volatility, or at least the protection of firm specific market value from large negative outcomes that may be found within the distribution of possible returns. For this, if for no other reason, there appears to be ample justification for the assumption that managers will behave in a manner consistent with a concave objective function. Thus, this theory links risk management and firm performances.

2.2.4. DuPont Theory

DuPont analysis, a common form of financial statement analysis, decomposes return on net operating assets into two multiplicative components: profit margin and asset turnover. These two accounting ratios measure different constructs and, accordingly, have different properties.

The traditional role of DuPont formula is to help rational investors decide on the optimal investments to undertake but has since evolved into a modern tool used to find out the strength, weakness and likely improvement on the capital structure of an organization that will help maximize stock holders' wealth (Mitchell et al., 2013).

The first Du Pont model was developed before 1970s when firms‟ main goal was that of maximizing return on assets (ROA), (Liesz & Maranville, 2013), who was an electrical engineer had been contracted by General Motors company to analyze their finances after which he discovered a relationship that existed between total asset turnover, net profit margin and return on assets. He found out that return on assets is equals to net profit margin multiplied by total asset turnover, which is actually profitability multiplied by efficiency.

Gitman (1998) contend that, in the 1970s the generally accepted goal of financial management became maximizing the wealth of the firms, owners, and focus shifted from return on assets to return on equity (Liesz & Maranville, 2008) which then led to the modified DuPont model now commonly known as, DuPont identity, where return on equity is equals to return on assets multiplied by total assets and divided by equity. This was to provide for the ways institutions leverage their operations and the modern goal of organizations which is maximization of owners‟ equity. Raza et al. (2013) contend that insurance firms when measured according to their net income levels do not rank the same as when measured using return on equity and usually the best performers in terms of net income do not manage to perform in terms of return

on owners' equity. Policyholders therefore do not like the highly performing insurance firms but the insurers which give them high returns on their investments and hence support DuPont method of measuring an insurance firm's performance (Raza etal, 2013).

2.3. Insurance and Risk Management

The term insurance defined by referring two important schools of thoughts: i) transfer school and ii) pooling school. According to transfer school, "insurance is a device for the reduction of uncertainty of one party, called the insured, through the transfer of particular risks to another party; called the insurer, who offers a restoration, at least in part of economic losses suffered by the insured" (Irving, 1956).

On the other hand, according to pooling school "the essence of insurance lies in the elimination of uncertainty or risk of loss for the individual through the combination of large number of similarly exposed individuals" (Alfred, 1935, cited in Tanveer, 2010).

"Insurance is simply a devise whereby many people contribute to a pool, so that a few who suffer a loss may be compensated" (Sabiyam, 2005). It is a promise of reimbursement in the case of loss; paid to people or companies so concerned about hazards that they have made prepayments to an insurance company. "An insurance policy may be broadly defined as a contract under which the insurer agrees, in return for a premium, to indemnify the insured for loss suffered as a result of the occurrence of specified events which cause the destruction, loss or injury of something in which the insured has an interest" (Nkrumah-Arkoh, 2012).

In law and economics, insurance is a form of risk management primarily used to hedge against the risk of a contingent uncertain loss. Insurance is defined as the equitable transfer of the risk of a loss from one entity to another in exchange for

payment. “Insurance, unlike most financial products, is characterized by the reversal of the production cycle insofar as premiums are collected when the contract is entered into and claims and costs arise only if a specified event occurs”(International Association of Insurance Supervisors, 2003).

Insurance operates on the principle of pooling risks where the people contribute to a common fund in form of premiums and where the lucky ones who do not suffer loss help the unlucky ones who suffer loss during a defined insurance period (Irukwu, 1994).

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). UNCTAD (2007) underlines the insurance industry as one of the pillars of the finance sector that plays a key and dual role (of infrastructural service and commercial service) which are both crucial to the economic development of a country:

From infrastructural perspective, a well-functioning insurance enables efficient allocation of capital mobilizes and channel savings; support trade, commerce and entrepreneurship and improve the quality of lives of individuals in a given country.

From a commercial service perspective, insurance companies promote the domestic financial sector, become significant players in the international capital market, and give financial confidence for investments. It seems insurance not only facilitates economic transactions through risk transfer and indemnification but it also promotes financial intermediation (Ward & Ralf, 2000). More specifically, insurance can have effects such as promote financial stability, mobilize savings, facilitate trade and commerce, enable risk to be managed more efficiently, encourage loss mitigation, foster efficient capital allocation and also can be a substitute for and complement government security programs (Skipper, 2001).

Insurance provides economic protection from identified risks occurring or discovered within a specified period.

Insurance is a unique product in that the ultimate cost is often unknown until long after the coverage period, while the revenue premium payments by policyholders are received before or during the coverage period.

Insurance is an important growing part of the financial sector in virtually all the developed and developing countries (Das et al., 2003). A resilient and well regulated insurance industry can significantly contribute to economic growth and efficient resource allocation through transfer of risk and mobilization of savings. In addition, it can enhance financial system efficiency by reducing transaction costs, creating liquidity and facilitating economies of scale in investment (Bodla & Garg, 2003). Some of the contributions of the insurance industry to economic development as (Davies & Podpier, 2003) state are:

Insurance promotes financial stability through transfer and pool of risks, thereby encouraging individuals and firms to specialize, create wealth, and undertake beneficial projects they would not otherwise consider.

Insurance mobilizes savings and channels them to the capital markets, and developing countries with higher savings rates tend to show faster growth and investment. Strong insurance can relieve pressure on government budget. It can play

an important role in personal retirement planning and health insurance programs, and to that extent can reduce demands on government social security and health programs.

Insurance supports trade, commerce and entrepreneurial activity to have heavy influence on all economic and commercial activities.

Insurance may lower the total risk faced by the economy through risk diversification across border as well as to promote risk mitigation activities.

Insurance improves individuals‟ quality of life and increase social stability through, for example, individual health, life insurance, pension funds and workmen's compensation.

Insurance business is usually divided into two main classes namely:

a) General insurance business. This is a contract between an insurer and the insured where by the insurer undertakes to indemnify the insured against losses, which may result from the occurrence of specified events within specified periods. General insurance business can be subdivided into different classes of business: motor, fire, accident, oil and gas, contractors‟ all risks and engineering risks; marine and credit insurance, bond and surety ship etc. This is a contract between the insurer and the insured whereby the insurer undertakes to pay benefits to the policy holder on the attainment of a specified event.

b) Life assurance business**:** comprises individual life business, group life insurance and pension business, health insurance business and annuities. Risk management and insurance are closely related as it is indicated in most literatures.

Insurance alone is not risk management rather Insurance Companies are a corporation primarily engaged in the business of providing insurance protection to the public and sale contracts of insurance.

Risk management is far broader and includes the concepts of preventing, minimizing, and avoiding losses. In addition, risk management addresses methods other than

insurance for transferring the financial consequences of losses that do occur (Stulz, 2004 and Dorfman, 1997).

Risk measurement is a fundamental to the insurance industry, from the pricing of individual contracts to the management of insurance and reinsurance companies to the overall regulation of the industry.

Insurance services offered by non- life insurance firms do cushion against risks faced by people and non-insurance firm industries (Amaya & Memba, 2015). Transfer of uncertainties to insurance firms by people and non-insurance firm industries is important because risk management is a difficult thing to do by any person as it involves identification of source of risk and then coming up with methodology of quantifying the risk using mathematical models which helps understand risk profile of the person which assists in handling the risk (Kealhofer, 2003).

According to Ndwiga, et al. (2012), identifying risk is the first step in the process of risk management and methods used in identifying risks involve tools used to optimize opportunities of knowing hazards inherent in certain systems, facilities or products and the tools are categorized in broad headings of inductive, deductive or intuitive methods. Organizations are faced with many risks which can emanate from financial variables‟ uncertainties, accidental occurrences or even failing of businesses; this can be reduced through risk monitoring and controlling (Saunders, 1996).

In insurance companies, risk management produces as well as the overall quality of management are considered as important factors and together with sufficient financial resources are key factors in protecting against insurance company insolvency. In addition, the process of effective risk management should cover all key elements of the business cycle and more importantly to adequately manage the risks to which the company is exposed.

Effective risk management can bring far reaching benefits to all organizations, whether large or small, public or private sector (Ranong & Phuenngam, 2009) and risk management may reduce or eliminate costly lower-tail outcomes (Stulz, 2003), which may also result in lower expected costs of regulatory scrutiny and external capital (Meulbroek, 2002).

These benefits include, superior financial performance, better basis for strategy setting, improved service delivery, greater competitive advantage, less time spent firefighting and fewer unwelcome surprises, increased likelihood of change initiative being achieved, closer internal focus on doing the right things properly, more efficient use of resources, reduced waste and fraud, and better value for money, improved innovation and better management of contingent and maintenance activities (Wenk, 2005). Only the amount of quantifiable risks which are beyond the level of risk appetite of the insurance organization needs to be managed by the company at its own.

This is the point where an insurance company needs to conceive a better risk management approach, employing sound and fruitful techniques, tools and procedures, which will promise the remarkable returns, thus, satisfying the organizational goals. Laconically, insurance companies resort to the three main ways of managing risks, i.e., Risk Avoidance through business practices, Risk Transference through the construction of portfolios or Diversification and Managing the risk at the firm level by holding the persons accountable.

Further, there exist markets for many of these risks borne by the insurance companies. These include catastrophic risk which can be offset by undertaking positions in the catastrophic futures or bonds. Indeed a number of alternatives to minimize the adverse impacts of such risks are under consideration Jaffee & Russell (1997).

Generally an insurance organization relies on a number of techniques in their risk management framework. But most prominently, four types of practices evolve as

instrumental in managing the risk and thereby improving the financial performance of the organization. These important techniques include standards and reports, underwriting authority and limits, investment guidelines or strategies, and incentive Schemes.

These tools are employed to quantify the risk exposure, spell out the procedures to manage and limit such exposures to the acceptable levels, and manage or motivate the risk managers to manage risk in a way which is consistent with the organizations goals and promises the better performance of the organization.
Danijela & Zeljko (2009) suggested the risk managers to devote their efforts and resources in eliminating or mitigating the risks for sound profitability.

Literature further witnesses that the Insurers use hedging instruments to maximize value. Moreover, these instruments are employed to absorb the negative consequences of asset volatility, liquidity, exchange rate and interest rate risks (Cummins et al., 2001).
Addressing risks in a more sophisticated manner, Stulz (1996) argued that the theory of risk management, if applied in a well-defined manner will protect the financial companies from the market shocks, bankruptcy and financial distress. Following the basics of risk management, managers in their best capacity can enhance the value of their business undertakings through their productive efforts.

Thus, with the help of provisions of risk management, financial institutions can make themselves withstand against the downside movements of risk.

2.4 Financial Performance Measurements

Insurance companies are engaged in the business of taking risks. Throughout the globe, these companies deal with a host category of risks which have a direct impact on the performance of these companies. These risks prove to be a greater setback in

the process of achieving growth in terms of size, assets and performance of the company which is measured in the form of returns.

It is understood that the primary goal of performance (both financial and non-financial) measurement is to assess the progress of achieving corporate objectives. In addition, the output is utilized to allocate resources appropriately throughout the organization (Christopher, 2003).

The analyst or investor may wish to look deeper into financial statements and seek out margin growth rates or any declining debt. If underlying profitability continues to deteriorate, more stock buybacks or debt leverage will be necessary to maintain return on equity, more increasing company exposure to unanticipated downturns in consumer demand or financial market crises. But letting return on equity decline is often too painful to contemplate since the impact on stock performance hence financial performance can be immediate.

Profitability analysis focuses on the relationship between revenues and expenses and on the level of profits relative to the size of investment in the business through the use of profitability ratios. Return on equity (ROE) and return on assets (ROA) are two of the most important measures for evaluating how effectively a company's management team is managing the capital that shareholders entrust to it Zenios et al. (1999).

Return on equity indicates if a company's value is growing at an acceptable rate. It's calculated as annual net income divided by average shareholder's equity, while return on assets reveals how much profit a company earns for every money of assets. It's calculated as annual net income divided by total assets. The return on total assets ratio is one of the most used methods of quantifying financial performance. It was developed in (1919) by DuPont and it emphasizes the company's ability to efficiently use its assets.

Financial institutions such as banks, insurance companies, securities and credit unions have very different ways of reporting financial information (Flemings, 2004). Insurance companies financial performance can be measured using underwriting and profitability ratios (Flemings, 2004). On the other way, William et al. (2004) argued that the performance of insurance companies in financial terms is normally expressed in net earned premium, 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. On the other hand the return on total assets ratio represents one of the most used methods of quantifying financial performance; it emphasizes the company's ability to efficiently use its assets. It reflects the ability of insurance's management to generate profits from the insurers‟ assets, although it may be biased due to off-balance-sheet activities.

Most researchers in the field of insurance and their financial performance stated that the key indicator of a firm's financial performance is ROA. Arif & Showket (2015), Njeru (2013), Catherine (2014), Mike (1999), and Hafiz (2011) are among others, who have suggested that although there are different ways to measure profitability it is better to use ROA as it helps to measure the overall resource (asset) performance.

2.5 Risk selection and their operational meaning

Rather than taking all the many possible risks the corporation facing, the researcher established some relevant and critical risks. Based on the previous empirical studies, insurers‟ financial performance is influenced by both financial and operational risks. There are so many risks under these two broad categories however; the researcher

wants to focus on main risks. Under financial risks; liquidity risk, technical reserve risks and Solvency risk are very common. On the other hand operational risk contains; reinsurance and underwriting risks.

Therefore taking into consideration the above realities, the selected crucial risks are more emphasized herein under with their corresponding hypothesis. In light of the challenging capital and insurance market environment, strong enterprise risk management (ERM) is a crucial element in maintaining financial strength and ensuring a safe insurance industry.

Barges (1963) defines financial risk to be the added variability of the net cash flows of the owners of equity that results from the fixed financial obligation associated with debt financing and cash leasing. Also, financial risk encompasses the risk of cash insolvency. However, this notion will be expanded to include the risk of being unable to meet prior claims with the cash generated by the firm, which is determined by the dispersion of net cash flows and the level of fixed obligations, as well as the firm's pool of liquid resources (Jacques & Nigro, 1997).

In a similar manner, Allen & Santomero (1997) have explained the increased importance of financial or corporate risks because of a variety of reasons stemming from price fluctuations, interest rate fluctuations, increased competition and greater deregulation. Moreover, with the advent of derivatives which acts as hedging instruments has let the organizations to resort to an additional avenue to protect their organizations against the shocks of financial risks (Bartram et al., 2011).

According to Kithinji, (2010) financial risk management practices fall into three major categories; credit risk practices, liquidity risk management practice and market risks. When we look at the insurance industry not only these three risks but also technical reserve risk is the other most crucial risk the reason that the insurance operation is full of contingency due to this much reserves are needed.

Operational risk is the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. It is the risk associated with everyday activities of an organization, which involves the management of the performance of its processes, its people, and its systems, to reach the expected business performance.

Operational risks breakdowns in internal controls, which can lead to financial losses through frauds, or failure to carry out operations in timely manner. However, in the case of insurance industry the main operational risks are underwriting, and reinsurance risks. Other aspects of operational risks include major failure of IT systems. Liquidity, technical reserve, solvency, reinsurance and underwriting risks are the selected variables based on the above analysis for this study.

2.5.1 Liquidity Risk

Liquidity shows the ability to convert an asset to cash quickly and reflects the ability of the firm to manage working capital when kept at normal levels. It measures the ability of managers in insurance and re-insurance companies to fulfill their immediate commitments to policyholders and other creditors without having to increase profits on underwriting and investment activities and/or liquidate financial assets (Adams & Buckle, 2003).

A firm can use liquid assets to finance its activities and investments when external finance is not available or it is too costly. On the other hand, higher liquidity would allow a firm to deal with unexpected contingencies and to cope with its obligations during periods of low earnings (Liargovas & Skandalis, 2008).

Liquidity risk could include two different types of risk: the risk that an insurance company will become unable to assure itself of adequate funding due to a decline in new premium income caused by a deterioration, etc. of its financial position, or an

outflow of funds caused by a big disaster, or it will incur losses because it is forced to sell assets at markedly lower prices than normal and therefore unable to maintain cash flow (capital liquidity risk), and the risk that upheavals, etc. in the market will render it impossible to trade and therefore force the company to engage in transactions at prices that are markedly more disadvantageous than normal (Black et al., 1998).

Furthermore Browne et al. (2001) found evidence supporting that performance is positively related to the proportion of liquid assets in the asset mix of an insurance company. When looking at any company's financial statements and attempting to understand where it stands as regards to its viability, liquidity ratios are quite important. The higher a company's liquidity ratio, the healthier it is. Entities with high debt and low liquidity are more likely to fail and riskier investments. It is therefore expected that insurance companies with more liquid assets will outperform those with less liquid assets.

Therefore liquidity risk is the shortage of liquid asset and the most popular ratio other than current ratio is current asset to current liability. The ratio current asset to current liability can show easily the liquid asset bases of the current liability. Thus, based on the above theories and empirical studies the researcher formulate the following hypothesis.

H1: Liquidity risk has negative and significant effect on Ethiopian Insurance Corporation Financial Performance.

2.5.2 Technical Reserve Risk

Mostly 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 outflows is known (Shiu, 2014). Its risk is both holding insufficient technical reserve and holding unjustifiably excessive provisions. Where reserves 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.

The insurance technical reserve is calculated as the ratio of net technical reserves to equity, and reflects the potential impact of technical reserves" deficit on equity in the event of unexpected losses. This ratio demonstrates the potential impact of deficiencies in technical reserves due to the occurrence of unexpected losses on the equity (Adams & Buckle, 2003). Moreover, a negative relationship between technical reserve and performance has also been found in Browne et al. (2001). Consequently, a negative linkage between the insurance financial reserve and the insurers" financial performance is expected.

H2: Technical Reserve risk has negative and significant effect on Ethiopian Insurance Corporation Financial Performance.

2.5.3 Solvency Risk

Solvency is defined as having enough value in the form of assets in your business to cover all of the liabilities of the business. Based on the accounting equation that assets = liabilities + equity, this definition means that a business has positive equity. When a businesses' equity becomes negative it is said to be insolvent. Bankruptcy is just around the corner for an insolvent business if it does not generate enough cash flow income to meet its debt requirements in a timely manner AARDLB (2010).

Solvency is the ability of a company to meet its long-term fixed expenses and to accomplish long term expansion and growth. A solvency ratio of greater than twenty percent is considered financially healthy. Research on the property-liability insurance industry reveals that firms with greater financial strength as measured by insurance rating firms, command higher premiums (Sommer, 1996).

Similarly, Cummins et al., (2002) suggest that insurers with greater ratings are perceived as safer which results in higher returns. A positive linkage between solvency margin and the insurer's financial performance is expected, since the insurers financial stability is an important benchmark to potential customers. In addition, Charumathi (2012) argue that available solvency ratio means the excess value of assets over the value of insurance liabilities and other liabilities of policyholders' and shareholders' funds.

Solvency is an ability of an insurer to meet its obligations (liabilities) under all contracts at any time. Due to the very nature of insurance business, it is impossible to guarantee solvency with certainty. In order to come to a practicable definition, it is necessary to make clear under which circumstances the appropriateness of the assets to cover claims is to be considered, e.g. is only written business (run–off basis, break– up basis) to be considered, or is future new business (going– concern basis) also to be considered.

In addition, questions regarding the volume and the nature of an insurance company's business, which time horizon is to be adopted, and the setting of an acceptable degree of probability of becoming insolvent, should all be considered. Solvency is used assessing financial health on a runoff basis while capital adequacy is used assessing financial health on a going–concern basis. Solvency of the insurance categories as expressed through the solvency margin and as such gives us a description of the size and condition of the capital adequacy of insurers. Solvency margin is the amount of capital that an insurance company must hold in order to

cover expenses that may occur due to occurrence of unexpected events. Solvency of the company is one of the most sensitive issues when they consider all the calculations in companies engaged in life insurance.

Solvency measure, amount of capital needed to make all the obligations of insurers could be settled in their redemption, is calculated as the ratio of the company's credit rating and minimum requirements for solvency (Jasmina, 2003). As per Shiu (2004) explanation, insurance companies with higher solvency margin are considered to be sounder financially.

Financially sound insurance companies are better able to attract prospective policyholders and are better able to adhere to the specified underwriting guidelines. Insurance companies with higher solvency margin outperform those with lower solvency margin.

H3: Solvency risk has negative and significant effect on Ethiopian Insurance Corporation Financial Performance.

2.5.4 Reinsurance Risk

Reinsurance is a contract of indemnity against liability by which an insurance company procures another insurance company to insure it against loss or liability by reason of the original insurance. It has a global feature as manifested by economic interdependency, mobility of capital and transactions across borders, sharing regulations, international competition and management; and like any product, it is subject to cycles and fluctuations driven by internal and external factors (Plantin, 2006).

It is a secondary market and is the main feature of the non-life insurance and life in the insurance business industry and is one of a number of options or tools to reduce the financial cost to insurance companies arising from the potential occurrence of

specified insurance claims, thus, further enhancing innovation, competition, and efficiency in the marketplace (Patrik, 2001).

According to the Chartered Insurance Institute (2004), insurance companies use reinsurance for capacity, business, asset management, catastrophe protection, spread of risk, and market environment reasons, which are all needed at different times in a company's development.

According to Munich (2010) reinsurance is a transaction whereby one insurance company (the "reinsurer") agrees to indemnify another insurance company (the "reinsured, "cadent" or "primary" company) against all or part of the loss that the latter sustains under a policy or policies that it has issued. For this service, the ceding company pays the reinsurer a premium. In addition, the purpose of reinsurance is the same as that of insurance: to spread risk. Reinsurance helps protect insurers against unforeseen or extraordinary losses by allowing them to spread their risks. For example, a catastrophic fire at an industrial enterprise could financially devastate its insurer. With reinsurance, no single insurer finds itself saddled with a financial burden beyond its ability to pay.

Garven & Lamm (2003) describe reinsurance as both risk management and financial structure decision. In terms of risk management, reinsurance enables the reinsured leverage with skills of analysis and proper and modern way of management of risk portfolios including assessing of underwriting risks, and handling of claims properly and efficiently. Insurance companies reinsure a certain amount of the risk underwritten in order to reduce bankruptcy risk in the case of high losses. Although reinsurance improves the stability of the insurance company through risk dispersion, achievement of solvency requirements, risk profile equilibration and growth of the underwriting capacity, it involves a certain cost. Purchasing reinsurance reduces insurers‟ insolvency risk by stabilizing loss experience, increasing capacity, limiting liability on specific risks, and/or protecting against catastrophes. However,

transferring risk to reinsurers is expensive. The cost of reinsurance for an insurer can be much larger than the actuarial price of the risk transferred.

Cummins et al. (2008) analyzed empirically the costs and the benefits of reinsurance for a sample of US property-liability insurers. The results show that reinsurance purchase increases significantly the insurer's costs but reduces significantly the volatility of the loss ratio. With purchasing reinsurance, insurers accept to pay higher costs of insurance production to reduce their underwriting risk. Insurers with higher reinsurance dependence tend to have a lower level of firm profitability. It is possible that an insurer that cedes more business to reinsurer and keeps lower retention more or less operates like a reinsurance broker who only transfers risk without underwriting risk and is likely to report less profit for a relatively high percentage of the premium received is ceded to reinsurers (Lee, 2012).

Retention ratio (net written premium to gross written premium) is the most common ratio in assessing reinsurance risk. Therefore, a positive connection between the retention ratio and the insurers‟ financial performance is expected, because if insurers retain more premiums, they can increase their income and then intensify their ROA.

H4: Reinsurance risk has positive & significant effect on Ethiopian Insurance Corporation Financial Performance

2.5.5 Underwriting Risk

The process of selecting certain types of risks that have historically produced a profit and rejecting those risks that do not fit the underwriting criteria of the insurer is known as underwriting. Sound underwriting guidelines are pivotal to an insurers‟ financial performance. 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 & Young, 2010).

Underwriting risk is the risk that the premiums collected will not be sufficient to cover the cost of coverage. It comprises a high proportion of an insurer's overall risk. 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 (National Association of Insurance Commissioner, 2001).

Good underwriting risk selection normally produces a favorable loss ratio. This means the premium collected, less loss and expenses, produces a profit for the insurer. Insurers must carefully underwrite all risks to avoid being the victim of adverse selection. The underwriting risk reflects the adequacy or otherwise of insurers‟ underwriting performance (Adams & Buckle, 2003).

Barth & Eckles (2009) found a negative relationship between premium growth and changes in loss ratios, suggesting that premium growth alone does not necessarily result in higher underwriting risk. Organizations that engage in risky activities are likely to have more volatile cash flows than entities whose management is more averse to risk-taking (Fama & Jensen, 1983).

Furthermore, insurance companies with high annual insurance losses will tend to increase their level of corporate management expenses example, claims investigation and loss adjustment costs that could further worsen a decline in their financial

performance. Excessive risk-taking could adversely affect the performance of Insurance Corporation.

Therefore, a negative connection between the underwriting risk and the insurers‟ financial performance is expected, since taking an excessive underwriting risk can affect the corporation stability through higher expenses.

H5: Underwriting risk has negative & significant effect on Ethiopian Insurance Corporation Financial Performance

2.6 Risk Management &Financial Performance: An Empirical Review

Currently entity stakeholders are demanding greater attention to major risks facing by the entity to ensure that stakeholder value is preserved and boosted. One response to these growing expectations is the development of a new model "Enterprise Risk Management" as an internal control system.

At the same time, organizations have been implementing "Performance Measurement System" as one of management control systems vital for corporate success. Subsequently studies have been conducted regarding on risk management, the studies which are conducted in different business sector in general, financial sector and more specifically in insurance industry provided herein under.

The study conducted by Mua et al. (2009); using a sample of Chinese firms, examine the effect of risk management strategy over performance of new product development. Their finding shows that risk management strategies that focus on technological, organizational, and marketing factors, individually and interactively improve the performance of new product development.

Effective risk management and company's performance by emphasizing investment in innovations and intellectual capital**.** The data had been collected from the

companies' financial statements and notes are available in the years of 2003 - 2008. 52 companies from 13 different industries were selected purposefully (Mohsen et al., 2011). Their result indicated that positive and significant relationship between total risk management and company's performance.

Other study conducted by Giorgio et al. (2013), the effect of enterprise risk management implementation on the firm value, on a sample of 200 European companies, belonging to both financial and non-financial industries, they did this performing a fixed effects panel regression analysis. They found a positive statistically significant relation between the ERM adoptions and firm value.

On the other hand, a study of Tony et al. (2012) investigated enterprise risk management and business performance during the financial and economic crises. It examined 156 non-financial companies listed on the Standard & Poor's (S&P) Toronto Stock Exchange (TSX) Composite Index for 2007 - 2008 and 2008 - 2009 through a content analysis of their annual reports. The study rated risk exposure, risk consequences and risk management information among types of risks. No conclusive results on the relationship between ERM and firm performance.

Risk management practices have a significant influence on banks‟ performance. While the credit and capital risk display significant positive influence on ROA. Catherine (2014), the effects of risk management on financial performance of insurance companies in Kenya, data collected from 44 insurance companies and published reports for a period of 2008 - 2012. The study established that a majority of insurance companies in Kenya had adopted risk management practices in their operations and that this had a strong effect on their financial performance.

Risk identification was found the most significant in influencing financial performance, followed by risk mitigation, risk management program, implementation & monitoring and risk assessment & measurement respectively. The study concluded

that there was a positive relationship between the adoption of risk management practices and the financial performance of insurance companies in Kenya. Patrick & Florence (2015) influence of risk management practices on financial performance of life assurance firms in Kenya: a survey study of Kisii, the target population was one hundred and eighteen respondents. Census sampling method was used. Questionnaires were used for data collection. Risk management practice is the independent variable which contained; underwriting practice, premium valuation methods, and adjustment provisions of claim liabilities. The findings, Premium valuation methods had positive influence on financial performance of life assurance firms in Kenya.

The study established that underwriting guidelines had a positive effect on financial performance of life assurance firms in Kenya. Further the study revealed that adjusting claims and benefits paid to policy holders of insurance firms‟ increase value of investment and this gave a reason for claims adjustment to get the best estimate of acceptable costs for every person which is usually determined by observed costs based on risk factors.

The study conducted by Arif & Showket (2015) relationship between financial risk and financial performance of Indian insurances revealed that capital management risk, solvency risk, liquidity risk, volume of capital and size of company were most important determinants of financial performance of life insurance companies in India, whereas had statistically insignificant relationship with underwriting risk. The study led to the conclusion that underwriting risk was found to have statistically insignificant relationship with financial performance of life insurance companies. And capital management risk, solvency risk and underwriting risk exhibit a negative relationship with financial performance while liquidity risk, size and volume of capital exhibit a positive relationship with financial performance of life insurance companies in India.

Joyce & Willy (2016), studied on effects of risk management practices on financial performance of non-life insurance firms operating in Kisii County in Kenya descriptive survey research design was used to collect data. Target population was 237 respondents, comprising of 116 directors and 121 senior managers. Stratified random sampling method was used to get the sample. Primary data was collected using a structured questionnaire while secondary data was collected from published reports and financial statements. The study shows that there was a positive relationship between financial performance of non-life insurance companies, risk identification practices, risk mitigation practices and risk monitoring practices. The study concludes that there is a strong relationship between risk management practices and financial performance of insurance companies in Kisii County.

Musa et al. (2014) examined the relationship between enterprise risk management and organizational performance: evidence from Nigerian insurance industry, using purposive sampling technique, 10 general insurance companies were selected from 49 companies operating in Nigeria. Contingency reserve, shareholders‟ fund, gross premium and net premium were used as dummies for ERM indicators. Panel data was adopted for a ten year period of 2001-2010. The study reveals that there is joint cause relationship among ERM variables and organizational performance though, individual relationship of the indicators differ. Both contingency reserve and net claims respectively have significant positive impacts on organizational performance.

Eric (2005) investigated risk management techniques and financial performance in the insurance sector in Uganda**.** The findings on the financial performance of the insurance companies for this study show fluctuating ratios as measured by ROE.

2.7 Related Empirical Studies in Ethiopia

To the general awareness of the researcher there is no study on the Ethiopian Insurance Corporation exclusively focused on risk management and financial performance of the

corporation. From financial institution In Ethiopian banking industry there are a few studies like Eneyew (2013), Endaweke and Tsion (2015).

In the case of Ethiopian insurance industry, there are few studies undertaken in relation to risk management techniques and insurer's financial performance. Eneyew (2013) conducted his study on the impact of financial risks on the profitability of commercial banks for a total of eight commercial banks in Ethiopia; covering the period of 2000-2011.As per their study adopted a mixed methods research approach by combining documentary analysis and in-depth interviews. The result of the study shows that Credit risk and liquidity risk have a negative and statistically significant relationship with banks‟ profitability.

The study conducted by Endaweke (2015) was risk management and its impact on performance in Ethiopian Commercial Banks, balanced fixed effect panel regression was used for the data of 8 commercial banks in the sample covered the period from 2002 - 2013. The results of panel data regression analysis showed that credit risk management indicator, Liquidity risk management indicator and operational risk indicator had negative and statistically significant impact on banks performance. Capital adequacy ratio had positive statistically insignificant impact on banks performance. In addition to this, analysis of primary data by descriptive statistical tools and on hypothesis testing using regression model, leads the researcher to conclude that banks with good risk management policies have a lower risk and relatively higher return on asset. Finally none performing loan ratio, liquidity ratio and cost to income ratio are significant key drivers of performance of Commercials banks in Ethiopia.

Tsion (2015) examined the effectiveness of risk management practice of commercial banks operating in Ethiopia. Information was obtained from 15 purposely sampled commercial banks & adopted concurrent mixed research design. Open and closed-ended questionnaires were administered to 86 respondents from selected commercial banks.

The Main conclusions of the paper were: risk managers perceive risk management as critical to their banks performance; the types of risks causing the greatest exposures are credit risk, operational risk, liquidity risk, interest rate risk and foreign exchange risk; there was a reasonable level of success with current risk management practices and, banks are utilizing some of the approaches/techniques traditionally used to manage risks. She finally concluded that banks operating in Ethiopia are indeed risk-focused.

Rebuma (2013), studied on risk management techniques and financial performance of Ethiopian insurance companies the purpose of the study was to examine the relationship between applied risk management techniques and financial performance of the insurance companies in Ethiopia, covering the period of 2002-2011. Correlation analysis was used identify the relationship between risk management techniques and financial performance. The findings of the study indicated that risk management techniques (loss prevention and control, loss financing and risk avoidance) were applied in the Ethiopian insurance companies. However, risk management techniques were not commonly applied among insurance companies. The findings also revealed low increase ROE ratios and a general increase in loss ratios of the insurance companies; i.e. a poor financial performance especially as indicated by the loss ratios.

Finally, the study indicated the existence of weak relationship between risk management techniques and financial performance that show ineffective on how risk management techniques are applied to improve performance of the insurance companies.

Likewise, Kokobe & Gemechu (2016), worked on risk management techniques and financial performance of insurance companies in Ethiopia, primary data was

collected through questionnaires and secondary data was collected from year-end financial report of the selected company.

Primary data was collected from employees and secondary data was collected from financial statements of selected insurance companies and analyzed using Pearson correlation to check the relation between insurance performance and risk management techniques. The result shows that risk management practice and financial performance are not correlated.

2.8 Summary and Literature Gap

A review of the literature provides evidence as to why corporations should concern themselves with risk management. The studies revealed that, the awareness and willingness of companies in managing their risks has definitely increased in the emerging economies due to impact of events such as the European financial crisis. That is, the demand for risk management is increasing, especially in the past few years. The review of the literatures correspondingly revealed the existence of gap, and shown that a risk management and firm performance is issue that requires further investigation. Different scholars using empirical investigation on the risk management and firm performance are resulting in dissimilar conclusions.

For instance, an empirical study by Mohsen et al. (2011) indicated that positive and significant relationship between total risk management and company's performance. On the other hand, Ahmed et al. (2011) conducted a study on risk management practices and Islamic Banks his result was negative and insignificant. Besides a study conducted by Eric (2005) examined the relationship between risk management techniques and financial performance of insurance companies in Uganda. The study was restricted to a single year financial performance data and concluded fluctuating financial performance.

Generally, the lack of study on the risk management and financial performance of insurance companies in Ethiopia and the existence of knowledge gap highly

absorbed. Research gaps exist since none of the studies address the effects of risk management on the financial performance of organizations.

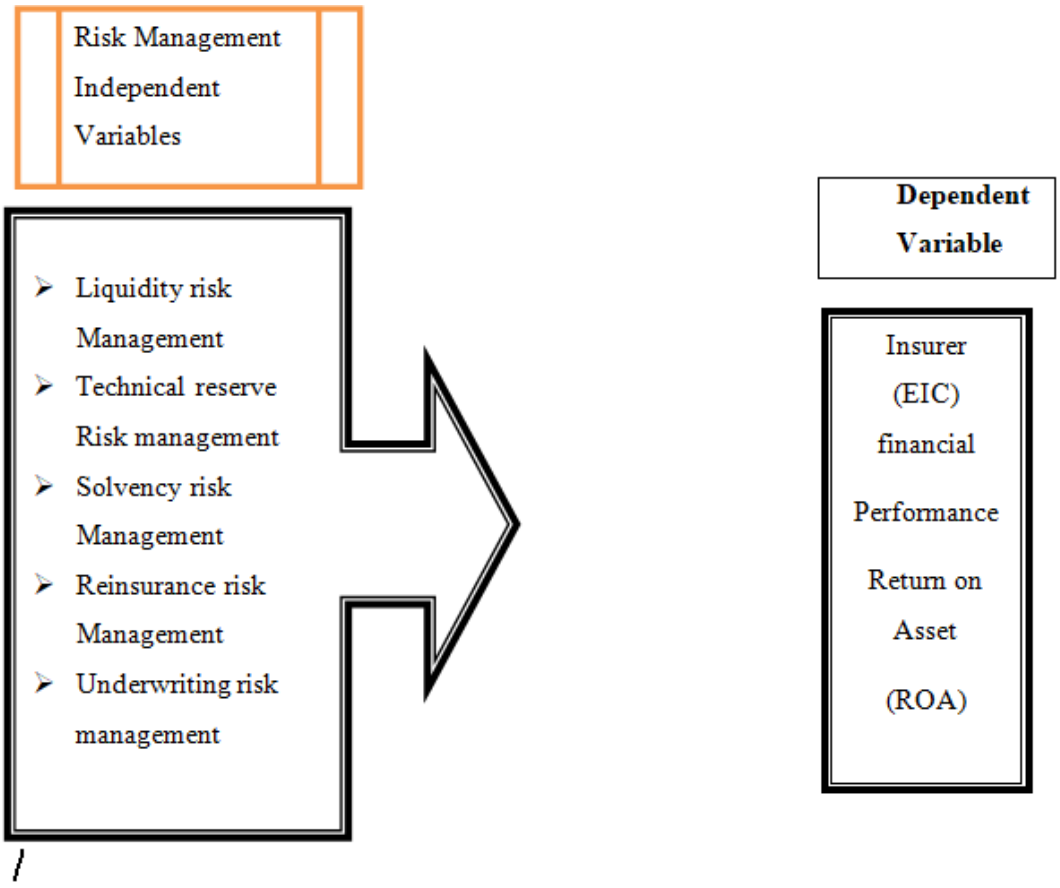
There are studies on risk management and its effect on the performance of Ethiopian commercial banks like Eneyew (2013), Endaweke (2015) and Tsion (2015) however insurance industry is much more different from banking as there are many (technical reserve, underwriting, solvency, reinsurance) in addition the similar risk like liquidity still is not the same by its nature with the banks. Of course there are two studies that were were conducted to the best knowledge of the researcher in Ethiopian insurance; Rebuma (2013) and Kokebe & Gemechu (2016) both studies focused on risk management techniques and insurers financial performance.

However the researcher does not want to study the techniques but risk management and financial performance of Ethiopian Insurance Corporation by taking the factors liquidity, technical reserve, solvency, reinsurance and underwriting risks. Therefore, this study will investigate the relationship between risk management and financial performance of Ethiopian Insurance Corporation.

2.9 Conceptual Framework

A conceptual framework as a framework that is structured from a set of broad ideas and theories that help a researcher to properly identify the problem they are looking at frame their questions and find suitable literature defined by Smyth (2004). The conceptual framework of the study will consist of independent variables of; Liquidity, technical reserve, solvency, reinsurance, & underwriting risk and a dependent variable; the financial performance of the corporation (ROA).

Figure 2:0.1Conceptual Frame Work



Source: Researcher Design Based on theories and empirical literature review mainly on Arif et al., (2015) and NBE (2010)

Chapter Three

Research Design and Methodology

This chapter deals with research design and methodology used to carry out the research. The chapter is organized in different sub sections. In its first part there is a research design, then after it presented subsequently about research approach, sources of data and data collection method, data analysis, variables measurements and model specification. The final two parts presented variables selection and hypothesis developments.

3.1 Research design

Cooper et al. (2003) discussed that explanatory studies unlike descriptive studies, go beyond observing and describing the condition and tries to explain the reasons of the phenomenon. The primary aim of this study is to examine risk management and financial performance of Ethiopian Insurance Corporation. To achieve this objective explanatory research design is selected in the study. The explanatory type of research design helps to identify and evaluate the causal relationships between the different variables under consideration (Marczyk et al., 2005). If the objective is to determine which variable might be causing a certain behavior, i.e. whether there is a cause and effect relationship between variables.

3.2 Research Approach

There are different ways of approaching the problem, when conducting a research. According to Creswell (2009), there are three approaches of research; quantitative, qualitative and mixed. The functional or positivist paradigm that guides the qualitative mode of inquiry is based on the assumption that social reality has an objective on to logical structure and that individuals are responding agents to this objective environment (Morgan & Smircich, 1980). Quantitative research is a means for testing objective theories by examining the relationship among variables (Creswell, 2009). Finally, mixed methods approach is an approach in which the

researchers emphasize the research problem and use all approaches available to understand the problem (Creswell, 2003).

Therefore, based on the above discussions of the three research approaches and by considering the research problem and objective, in this current study, primarily has been used the quantitative method.

3.3 Source of data and data collection methods

The sources of data for this study obtained from secondary data. Secondary data were collected from the audited financial statement, risk management Directorate and Finance Directorate of Ethiopian Insurance Corporation and National Bank of Ethiopia.

3.4 Data Analysis

To achieve objective of the study, mainly concentrated on quantitative analysis. Hence, the researcher used econometric model to identify and measure risk management and financial performance of Ethiopian Insurance Corporation and used Ordinary Least Square (OLS) method using Eviews-9 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 risk management and financial performance of Ethiopian Insurance Corporation.

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 time-series is reflected by the Ethiopian insurance corporation Districts and Branches management staffs which are in Addis Ababa and the time-series element is revealed from audited financial statement for the physical period of 1996-2018.

Therefore, the collected panel data is 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) assumptions hold true, then the estimators determined by OLS will have a number of desirable properties, and are known as Best Linear Unbiased Estimators (Brooks, 2008). Diagnostic checking is done to test whether the data is consistent with the following assumptions.

The assumptions of ordinary least squares are:

The errors have zero mean (E (ut) = 0), the variance of the errors is constant (Var (ut) = $\sigma 2 < \infty$), the Covariance between the error terms over time is zero (cov (ui, uj) = 0 for $i \neq j$, test for normality, multicollinearity and stability.

3.4.1 The Study Model Tests

Stationary of the variables is one of the standard methods of econometrics data analysis that which are a set of assumption applied in econometric work. A variable is said to be covariance stationary if the mean and the variances of the variable are constant over time and the covariance between two periods depends only on the gap between the periods, and not the actual time at which this covariance is considered.

There are several tests for stationary as null, although these are not as numerous as tests using unit auto regression (AR) root as null. According to Kwiatkowski et al.

developed a stationary test which takes into account the possible residual autocorrelations in the time series. This procedure tests the null hypothesis of level or trend stationarity against the unit root alternative (Harris, 1995).

3.4.2 Autocorrelation Test

Autocorrelation is one of the basic assumptions in linear regression model is that the random error components or disturbances are identically and independently distributed.

The Durbin-Watson (DW) statistic tests for first-order autocorrelation only. Also, it does not work properly if a dependent variable from a preceding time period is used as an independent variable in the model; most econometric software programs calculate the Durbin-Watson statistic automatically.

The hypothesis *H0*: probability (p) = 0 versus the alternative *H*1: p > 0 is tested. Statistic equals 2 when the p value is zero while a p value of one equals a Durbin-Watson test statistic of 0. Non-autocorrelation is specified by a d value near 2 while a value towards 0 indicates positive autocorrelation. Negative autocorrelation is indicated by d values nearing 4; the null hypothesis should be rejected for a low value of the Durbin-Watson test statistic indicating significant autocorrelation. Unlike the t- or z-statistics, the distribution of the Durbin-Watson test statistic is not available for p-value associated with *d* and tables must be used in the hypothesis testing. The decision rules for the Durbin-Watson test for autocorrelation are as follows:

If the Durbin-Watson statistic is less than dL, reject the null hypothesis of no autocorrelation; assume positive autocorrelation.

If the Durbin-Watson statistic is greater than dU, do not reject the null hypothesis of no autocorrelation; assume no autocorrelation.

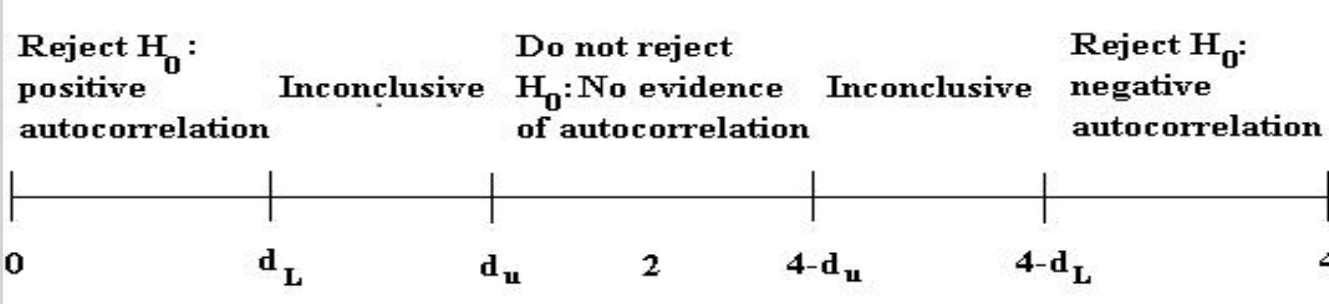
If the Durbin-Watson statistic lies between dL and dU (or exactly equal to either dL or dU), the test is inconclusive.

If the Durbin-Watson statistic is less than dL, the Durbin-Watson statistic is so far below 2 and so close to 0 that it is unlikely we would get such a low Durbin-Watson statistic when there is no positive autocorrelation. We reject the null hypothesis; there probably is positive autocorrelation.

If the Durbin-Watson statistic is greater than dU, the Durbin-Watson statistic is so close to 2 that positive autocorrelation may not be present in the model. In this case, we do not reject the null hypothesis.

Based on the above assumptions to create the Durbin-Watson bounds test table as follow:

Figure 3:0.1Durbin-Watson has 2 critical values: an Upper critical value and a Lower critical value



Source: Durbin-Watson Statistics

3.4.3 Stability Test

Stability test the most common measurement was Ramsey RESET (Regression Equation Specification Error Test) test among the many "diagnostic tests" that econometricians routinely use, some variant or other of the RESET test is widely employed to test for a non-zero mean of the error term; that is, it tests implicitly

whether a regression model is correctly specified in terms of the repressors that have been included. Among the reasons for the popularity of this test are the fact that it is easily implemented, and the fact that it is an exact test, whose statistic follows an F-distribution under the null. The construction of the test does, however, require a choice to be made over the nature the null. The construction of the test does, however, require a choice to be made over the nature of certain "augmenting regressors' that are employed to model the misspecification, the RESET test statistic has a non-null distribution which may be doubly non-central F, or may be totally non-standard. Although this has no bearing on the size of the test, it has obvious implications for its power.

The most common construction of the RESET test involves augmenting the regression of interest with powers of the prediction vector from a least squares regression of the original specification, and testing their joint significance. As a result of the Monte Carlo evidence provided by Ramsey and Gilbert (1972) and Thursby (1989), for instance, it is common for the second, third and fourth powers of the prediction vector to be used in this way. Nine essentially, Ramsey's original suggestion, following earlier work by Anscombe (1961), involves approximating the unknown non-zero mean of the errors, which reflects the extent of the model misspecification, by some analytic function of the conditional mean of the model. The specific construction of the RESET test noted above then invokes a polynomial approximation, with the least squares estimator of the conditional mean replacing its true counterpart.

If the F statistic is greater than the critical value at a given significance level then we reject the null hypothesis of correct specification. This indicates that there is a functional form misspecification. We can also use LM test statistic. The LM test statistic follows the x_2^2 distribution.

3.4.4 Heteroscedasticity Test

Heteroscedasity test is the popular which include Bruserch –Pagan-Godfrey (BPG) test and White test would be employed in this study. To generally definition this test involves testing the null hypothesis that the variance of the errors is constant (homoscedacticity) or no heteroscedasticity versus the alternative that the errors do not have a constant variance while auto-correlation an assumption that the errors are linearly independent of one another (uncorrelated with one another). If the errors are correlated with one another, it would be stated that they are auto correlated. This test is conducted in order to ascertain that the disturbance or the errors has the same variance such that OLS estimators are best leaner unbiased error (BLUE), that is the coefficient estimates are efficient, consistent and unbiased. In order to detect heteroskedasticity, there are different techniques that can be used. In this study we will use the white test to assess the stability of the variance for both models.

The null hypothesis of no heteroskedasticity is stated as follows for both models:

H0 = no heteroskedasticity and

The null hypothesis is tested against the alternative hypothesis for both models:

H1 = there is heteroskedasticity

This study focus on heteroskedasticity Breusch – Pagan –Godfrey and White heteroskedasticity; and the F-and version of the test statistics give the same conclusion that there is no evidence for the presence of heteroskedasticity since the p-values are considerably in greater than 5 % or 0.05.

3.4.5 Normality Test

Normality test: In statistics, it is needed to assess the normality of a given set of data; for many statistical processes, and used to determine if a data set is well-modeled by

a normal distribution and to compute how likely it is for a random variable underlying the data set to be normally distributed. It is prerequisite to make the assessment of the normality of the data, since it is an important assumption in parametric testing. There are various normality tests are available for the determination of normality of a data. In statistics, the normality tests are used in order to determine whether a given set of data is well-defined by a normal distribution. They are also used to measure how likely a set of data to be normally distributed for a random variable. In probability theory and statistics, the probability distributions are the set of probabilities assigned to all the possible outcomes for an event or a set of events. There are several different types of probability distributions. Normality test among the many "diagnostic tests" that econometricians routinely use, several tests of normality are discussed in the literature, we will consider two common normality test: histogram of residuals and the Jarque–Bera test.

A) **Histogram of Residuals:** A histogram of residuals is can be used to check whether the variance is normally distributed or the variance is a constant. A symmetric bell shaped histogram of residual which is distributed around zero indicates that the normality assumption is likely to be true. And also a simple graphic on the horizontal axis, we divide the values of the variable of interest (i.e. OLS residuals) into suitable intervals, and in each class interval we erect rectangles equal in height to the number of observations in frequency that class interval. If you mentally superimpose the bell shaped normal distribution curve on the histogram, you will get some idea as to whether normal approximation may be appropriate. It is always a good practice to plot the histogram of the residuals as a rough and ready method of testing for the normality assumption.

B) **Jarque–Bera (JB) Test of Normality:** Jarque–Bera (JB) Test of Normality has created by two econometrics scientists from the second named; Carlos **Jarque** and Anil K.**Bera**; The Jarque–Bera (JB) test is goodness of fit of whether sample data have the skewness and kurtosis matching a normal distribution. Jarque–Bera (JB)

Test normality is an asymptotic, or large-sample, test. It is also based on the OLS residuals. Therefore, the JB test of normality is a test of the joint hypothesis that S and K are 0 and 3, respectively. In that case the value of the JB statistic is expected to be 0. Under the null hypothesis that the residuals are normally distributed; Jarque and Bera showed that asymptotically (i.e., in large samples) the JB statistic follows the chi-square distribution with 2 df.

If the computed p value of the JB statistic in an application is sufficiently low, which will happen if the value of the statistic is very different from 0, one can reject the hypothesis that the residuals are normally distributed. But if the p value is reasonably high, which will happen if the value of the statistic is close to zero, we do not reject the normality assumption; the sample size is rather small. Hence, strictly speaking one should not use the JB statistic. If we mechanically apply the JB formula to our assumption, the JB statistic turns out to be the value; the p value of obtaining such a value from the chi-square distribution with 2 df is about some value, which is quite high. In other words, we may not reject the normality assumption. If all the above assumptions are consistent with the sample; E-view result will be accurate and reliable.

3.5 Variable measurements

This section explains the variables use as dependent (explained) and independent (explanatory) variables. The definitions are as follow:

3.5.1 Dependent variables

A dependent variable is, quite simply, dependent, in that it depends, in some sense, on an independent variable.

The most commonly used financial performance ratios are net profit margin, return on assets (ROA) and return on equity (ROE). Therefore, this study has intended to measure from the above financial performance by using ROA.

ROA= Net profit before tax /Total assets

3.5.2 Independent variables

An independent variable is exactly what it sounds like. It is a variable that stands alone and isn't changed by the other variables you are trying to measure.

This section describes the independent variables that are used in the econometric model to estimate the dependent variable. To measure the predictor variables of the corporation performance, five factors are used as independent variables which are extracted from different studies. Variables namely; liquidity, solvency, technical reserve, reinsurance and underwriting risk.

Liquidity Risk :It measured by liquidity Ratio, liquidity ratios as the amount of money that companies and other private entities have on hand at any time available to pay their debt Black et al. (1998). The liquidity ratios measures retire its liabilities to the corporation abilities to use its near cash or quick assets.

Liquidity ratio=current assets/current liabilities

Technical reserve risk: The most common reserves in insurance are outstanding claim reserves. Outstanding claims reserve is reserve for reported claims/losses but not yet paid because after reporting time different processes are undertaking like claim investigation, loss assessment and different documentation matters. The reserve held according to the best estimations of the officers. Risk of holding insufficient technical reserve or of holding unjustifiably excessive reserve. 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.

A technical reserve is measured by a **Safety ratio** = **Outstanding claim reserve/Equity.**

Solvency risk:

It is calculated as ratio of total liabilities to total assets and represented that when there is inability existed for a company to meet its long-term fixed expenses and to accomplish long term expansion and growth (Sommer, 1996). Solvency risk is about

a company's inability to meet its financial obligations. A company is said to be solvent if it can meet its obligations and insolvent if it cannot.

As per Elmehdi (2014), solvency risk occurred while there is inability of a financial institution to meet its short, middle and long term financial obligations and also defined as the inability of a financial institution to meet its obligations in the event of cessation of activity or liquidation. As defined by AARDLB (2010), solvency risk is come up when there is no enough value in the form of assets in your business to cover all of the liabilities of the business.

Previous researcher has used solvency risk variable to examine the relationship between financial risk and financial performance and discussed that it had a negative effect on return on asset (ROA) (Adrian, 2014) and (Arif et al., 2015). Relay on these empirical evidences, the study hypothesizes solvency risk as negative and statistically significant effect on performance.

Reinsurance risk: The reinsurance risk is measured by retention ratio.

Retention Ratio= Premium ceded/Total Assets

Underwriting risk:

The underwriting risk emphasizes the efficiency of the corporation underwriting activity and it was measured by the change rate of net premium. It is measured by percentage change in gross written premium that shows the growth of current net written premium from previous year net written premium in any single insurance firm as well as insurance sector. Proxy for Premium Growth is the percentage increase in Net Written Premiums (NWP).

For the purpose of this calculation the researcher lagged one year that means year 1996-(1) is included.

The equation is expressed as follows:**CNWP= (GNWP(t)-GNWP (t-1)/GNWP(t-1)**

Table 3.1 Description of variables and their expected relationship

Variables		Measures	Notation	Expected result
Dependent	Financial performance	Net profit before tax/Total assets	ROA	N/A
Independent	Liquidity Risk	CurrentAssets/Current Liabilities	LR	_
	Solvency Risk	Total liabilities/Total assets	SR	_
	Technical Reserve Risk	Outstanding claim reserve/equity	TRR	_
	Underwriting Risk	(GWPt – GWP(t-1)/GWP(t -1)	UR	_
	Reinsurance Risk	Premium ceded/Total assets	RR	+

Source: Compiled *by the researcher mainly based on Arif et al., (2015) and NBE (2010)*

3.6 Model specification

According to William et al. (2010), model building involves specifying relationships between two or more variables; perhaps extending to the development of explanatory or predictive equations. In order to achieve the objectives of this study, the panel data

regression model is used to identify the relationship between the financial performance of Ethiopian Insurance Corporation and explanatory variables liquidity risk, technical reserves, solvency risk, reinsurance risk and underwriting risk. In addition, ordinary least square (OLS) is conducted using statistical package "EVIEWS" to determine the most significant and influential explanatory variables affecting the financial performance of the Ethiopian Insurance corporation. Modeling is based on panel data techniques.

ROAit =β0 + β1LR*i, t* + β2TRR*i, t* + β3SR*i, t* + β4RR*i, t* + β5UR*i, t* + ε

Source: developed by researcher mainly based on Arif et al., (2015) and NBE (2010)

Where;

ROA = Return On Assets;

LR = Liquidity Risk;

TRR = Technical Reserve Risk;

SR =Solvency Risk;

RR = Reinsurance Risk;

UR =Underwriting Risk;

ε =is the error component for corporation i at time t assumed to have mean zero E [Є it] = 0 β0= Intercept β= 1, 2, 3…5 are parameters to be estimate; and t = the index of time periods and t = 1. . . 23

Chapter Four

Data analysis and Discussion

This chapter presents the results and analysis of data of collected from Ethiopian Insurance Corporation using the annual balanced panel data, where all the variables are observed for each cross-section and each period. The study has time serious segment from the period of 1996 up to 2018. The chapter organized in to five sections. The first section descriptive statistics, the second section correlation analysis, the third section model specification, the fourth section test for the classical linear regression model assumptions and the fifth section analysis of results.

4.1 Econometric Analysis

4.1.1 Descriptive statistics

Table 4.1 provides a summary of the descriptive statistics of the dependent and independent variables for Ethiopian Insurance Corporation from the year 1996 to 2018 with a total of 23 observations. The table shows the mean, maximum, minimum, standard deviation and number of observations for the dependent variable corporation's performance (ROA) and independent variables (liquidity risk, reinsurance risk, solvency risk, technical reserve risk and underwriting risk).

Table 4:0:1Descriptive Statistics of the Variables

	ROA	RR	TRR	UR	LOGSR	LOGLR
Mean	0.102609	0.098337	0.746086	0.122959	-0.126917	0.380425
Maximum	0.213910	0.184212	1.264147	0.541337	-0.070558	0.610229
Minimum	0.066917	0.036098	0.270800	-0.150468	-0.198155	0.165217
Std. Dev.	0.038388	0.040659	0.255779	0.172156	0.031779	0.151908

***Source**: Own computation from the financial statements using Eviews-9*

Table 4.1 presents a summary of the descriptive statistics of the dependent and independent variables for Ethiopian Insurance Corporation for a period from 1996-2018 with a total of 23 observations. Key figures, including mean, maximum, minimum and standard deviation value were reported. As indicated in the above table, the corporation performance measured by return on asset achieved 10.26% on average before tax profit over the last twenty three years from 1996 to 2018. For twenty three years financial data, return on asset had a maximum of 21.39% and minimum of 6.69%. It means that the corporation earned 21.39 cents of profit before tax for a single birr (1.00) invested in the assets of the corporation. The value of return on asset deviate from its mean by 3.84%.It indicates there was lower variation from the mean. The lower the standard deviation is a good indication that most of the observations are concentrated around the mean.

Reinsurance risk: The outputs of the descriptive statistics indicate that the mean of reinsurer risk as proxy by premium ceded to total asset was 9.83%. This means that on average 9.83% of gross written premium collected as percentage of total asset was ceded to reinsurer which is below the standard rate of national bank of Ethiopia (NBE, 2010) which is 30% that implies the corporation has less reinsurance dependency. The maximum value and the minimum of written premium ceded to total asset ratio was 18.42% and 3.61% respectively, which is below the standard rate and the value of reinsurance risk deviate from its mean by 4.07%.

Technical reserve risk: The average value of technical reserve risk as measured by the ratio of safety for net outstanding reserve to equity was (0.75). This implies that on average, reserve for outstanding claims was (0.75) times of equity. The highest technical reserve to equity for the corporation was (1.26) which is below the maximum standard of (2.5) times and above the minimum was (0.27).The dispersion/standard deviation was(0.26)which indicated that there was a high dispersion from the mean value of technical reserve on the corporation.

Underwriting risk: Concerning the underwriting risk variable, as a proxy the percentage increase/decrease in Net Written Premiums (NWP) was (12.30%), while the accepted value of premium growth range is between (–33% and +33%) as per the descriptive statistics out puts of the data the corporation mean value fall within the acceptable range. On the subject of, the maximum & minimum values of net premium growth rate were (54.13%) & (-15.05%) respectively. The standard deviation of the corporation was (17.21%), which also indicated that there was small variation from the mean. The higher the standard deviation of the corporation is not good condition for underwriting.

Solvency risk: The outputs of descriptive statistics, the average values of the solvency risk measured by total liabilities over total assets were 12.96%. It implies that there is 1 birr total assets to cover 12.96 cents of liabilities. The maximum and minimum values were -7.5% and -19.82% respectively for the study period. As regards the standard deviation, the value of solvency risk deviate from its mean by 3.18%.

Liquidity risk: This risk measures the proportion of liabilities covered by cash and quickly convertible investments or current assets. It indicates corporation ability to meet its maturing obligations without requiring the sale of long term investments or borrowing of money. The average value of the liquidity measured by liquidity ratio was 38.04%.The average value indicates that for each .38 birr current liability, there was 1 birr current asset to meet obligation which is greater than the standard rate of National bank of Ethiopia NBE (2010) which is 105% indicates that there is no less cash by the corporation. The maximum value and the minimum values were 61.02% and 16.52% respectively for the study period. The value of standard deviation

15.19% indicates lower than the maximum and the minimum values which indicate the corporation are in good condition for its obligation.

4.1.2 Unit Root – Stationry

The unit root test provides the order of integration at which the variables can be stationary. Time series data are rarely stationary means; a type of stochastic process that has received a great deal of attention and scrutiny by time series analysts is the so-called stationary stochastic process. Broadly speaking, a stochastic process is said to be stationary if its mean and variance are constant over time and the value of the covariance between the two time periods depends only on the distance or gap or lag between the two time periods and not the actual time at which the covariance is computed.

Regression involving non-stationary variables that have no clear tendency to return to a constant value or linear trend time series often lead to the problem of spurious regression spurious regression is a regression result of un- related variables but strongly related as per the result (Gujarari, 2004).

The study tests were performed on all series, such as; Liquidity ratio risk, Technical reserve risk, reinsurance risk, underwriting risk and solvency risk.by using the Augmented Dickey-Fuller (1978) and Phillips-Peron (1988) tests. The results of Augmented Dickey fuller test and Phillips-Peron tests were applied to the variables mentioned in the model of this study ADF test is first level at difference level the Ho accept or not reject the Ho and PP tests is first level Ho accept Ho accept or not reject the Ho so based on thus both test first guide line of the unit root test method ;this study the all variables are stationery at first level by this implication all critical value at 1%,5% and 10% are proved the critical value and the second guide line of the unit root test his the total absolute value t- test value greater than each critical absolute value and final the third guild line of the unit root test all variables p value less than 5% and significant at all level.

Table 4:0:2:Augmented Dickey-Fuller (ADF) Test Result

Variables		RR	TRR	UR	LOGSR	LOGLR
t-Statistic		-4.1257	-6.6787	-5.5670	-4.3656	-4.6333
Prob.*		0.0058	0	0.0004	0.0043	0.0017
Critical Values	1%	-3.8574	-3.8515	-3.9204	-3.9204	-3.8085
	5%	-3.0404	-3.0300	-3.0656	-3.0656	-2.0207
	10%	-2.6606	-2.6552	-2.6735	-2.6735	-2.6504

***Source**: Own computation from the financial statements using Eviews-9*

Significance level at 1%,5% & 10%

Table 4:0:3:Phillips-Perron (PP) Test Result

Variables		RR	TRR	UR	LOGSR	LOGLR
t-stastitcs		-14.911	-18.018	-22.0038	-22.9424	-4.5246
Prob.*		0	0	0	0	0.0022
Critical Values	1%	-3.8085	-3.8085	-3.8085	-3.8085	-3.8085
	5%	-3.0207	-3.0207	-3.0207	-3.0207	-3.0207
	10%	-2.6504	-2.6504	-2.6504	-2.6504	-2.6504

***Source**: Own computation from the financial statements using Eviews-9*

Significance level at 1%,5% & 10%

ADF Test Analysis: 1St Level with Intercept

The analysis of the ADF output presented in Table 4.2 looks at second level form with intercept the independent variable RR is the absolute t-statics value (-4.1257) is greater than the critical value 1%(-3.8574),5%(-3.0404) and 10%(-2.6606) also the independent variables RR the p- values 0.0058 which is less than 5% so those variables significant at all level; The TRR absolute t-statistics value (-6.6787) is

greater than the critical value 1% (-3.8515),5%(-3.0300)and 10%(-2.6552) also the p-values 0.0 which is less than 5% so the variable is significant at all level. The next two variables UR (-5.5670), LOGSR (-4.3656) and are greater than the critical value 1%(-3.9204), 5%(-3.0656) and 10%(-2.6735) also these two variables are the p-value 0.0004 and 0.0043 respectively which are less than 5% at significant all level. The absolute t- statistics value for the independent variable LOGLR(-4.6333) is greater than the critical values 1%(-3.8085),5%(-2.0207)and 10%(-2.6504) respectively, moreover the p- value of this variable is 0.0017which is less than 5%,so these variable is significant at all level.

PP Test Analysis: 1St Level with Intercept

The analysis of the PP output presented in Table 4.3 looks first at first level with intercept all the variables except LOGLR are the same critical value that is 1%(-3.7880),5%(-3.0124) and 10%(-3.6461) less than the absolute t-statistics value which are RR(-4.1604),TRR(-7.7433) UR(-7.9670) and LOGSR(-15.8106) also all variables the p- values 0.0000 which is less than 5% so those variables significant at all level. The exception LOGLR at second level the critical absolute values of t-statistic value(-4.5246) greater than at 1%(-3.8085) ,5%(-3.0207), & 10%(-2.6504) and also this variable the p- values 0.0 which is less than 5% so this variable is significant at all level.

Therefore the above unit root test analysis show that the ADF test statistic and Phillips-Peron (PP) in absolute term is greater than the set of critical values provided by Davidson and MacKinnon (1993) at1%, 5% and 10%. The dependent, constant and independent variable, thus the *t* statistics value obtained is compared with the critical value given at 1%, 5% and 10% and those indicated that the t- statistics values are greater than the critical values at 1%, 5% and 10%. The P-values are also less than the 5% that means it is significant, so the null hypothesis of no co-integration is rejected for the entire model. The evidence of co-integration by both methods indicates the existence of long run relationship among the variables. Hence

there are significance at first and second level both ADF and PP analysis; hence the data of the study are stationary.

4.1.3 Autocorrelation

Autocorrelation is one of the basic assumptions in linear regression model (LRM) is that the random error components or disturbances are identically and independently distributed. The Durbin-Watson (DW) statistic tests for first-order autocorrelation only. Also, it does not work properly if a dependent variable from a preceding time period is used as an independent variable in the model; most econometric software programs calculate the Durbin-Watson statistic automatically.

The hypothesis *H0*: p= 0 versus the alternative *H*1: p > 0 is tested. Statistic equals 2 when the p value is zero while a p value of one equals a Durbin-Watson test statistic of 0. Not-autocorrelation is specified by a d value near 2 while a value towards 0 indicates positive autocorrelation. Negative autocorrelation is indicated by d values nearing 4; the null hypothesis should be rejected for a low value of the Durbin-Watson test statistic indicating significant autocorrelation. Unlike the t- or z-statistics, the distribution of the Durbin-Watson test statistic is not available for p-value associated with *d* and tables must be used in the hypothesis testing. The decision rules for the Durbin-Watson test for autocorrelation are as follows:

If the Durbin-Watson statistic is less than dL, reject the null hypothesis of no autocorrelation; assume positive autocorrelation.

If the Durbin-Watson statistic is greater than dU, do not reject the null hypothesis of no autocorrelation; assume no autocorrelation.

If the Durbin-Watson statistic lies between dL and dU (or exactly equal to either dL or dU), the test is inconclusive.

If the Durbin-Watson statistic is less than dL, the Durbin-Watson statistic is so far below 2 and so close to 0 that it is unlikely we would get such a low Durbin-Watson statistic when there is no positive autocorrelation. We reject the null hypothesis; there probably is positive autocorrelation.

If the Durbin-Watson statistic is greater than dU, the Durbin-Watson statistic is so close to 2 that positive autocorrelation may not be present in the model. In this case, we do not reject the null hypothesis.

The Durbin-Watson test statistic value in Table 4.4 was 1.917296. As mentioned in the previous chapter to empirically analyze factors affecting Ethiopia insurance Corporation financial performance 23 observations were used in the model. Moreover, there were 5 independent variables and one dependent variable. Therefore, the relevant Durbin-Watson test statistic values for the test are dL= 0.699, dU = 1.674, i.e., for 23 observations and six variables excluding the constant term. Hence, 4 - dU = 4-1.674=2.326; 4 - dL = 4-0.699=3.301. The Durbin- Watson test statistic of 1.9917 is clearly between the upper limit (dU) which is 1.674 and the critical value of upper limit which is 2.236 and thus the null hypothesis of no autocorrelation is within the non- rejection region of the number line all the variables this study more over the R –squared according to many econometrics the Table 5,R-squared equals 0.817883; the study can be made that 82% of variation in the dependent variable is explained by its regression on the independent variables. That is it will increase as long as explanatory variables, regardless of their true significance there is no evidence for the presence of autocorrelation this study.

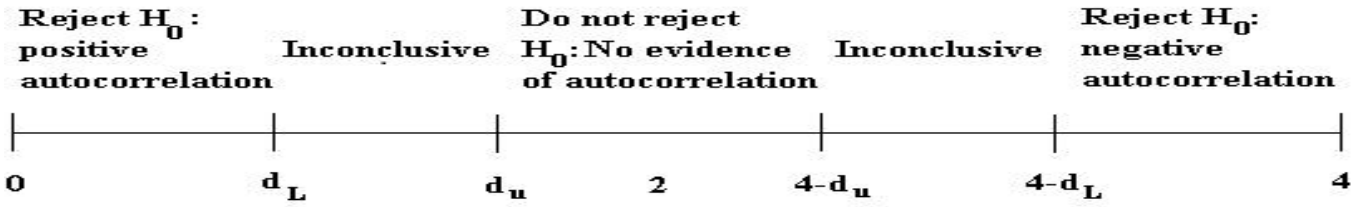
Table4:0:4:Regression result of Durbin-Watson Test

R-squared	0.817883	Mean dependent var	0.102609
Adjusted R-squared	0.764319	S.D. dependent var	0.038388

S.E. of regression	0.018636	Akaike info criterion	-4.907983
Sum squared resid	0.005904	Schwarz criterion	-4.611767
Log likelihood	62.44180	Hannan-Quinn criter.	-4.833485
F-statistic	15.26929	Durbin-Watson stat	1.990101
Prob(F-statistic)	0.000009		

***Source**: Own computation from the financial statements using Eviews-9*

Figure4.0.1:Durbin-Watson has 2 critical values: (dU) and (dL) the study result



0	0.699	1.674	1.990101	2.326	3.301	4

Source: Own the study Calculation and using Durbin-Watson Statistic: Significance Points of dL and dU

Where:

Observation = 23, Independent Variables = 5

dL = 0.699, dU = 1.674

4 - dU = 4-1.674=2.326

4 - dL = 4-0.699=3.301

4.1.4 Stability

The most common Stability test measurement was Ramsey RESET (Regression Equation Specification Error Test) test among the many "diagnostic tests" that

econometricians routinely use, some variant or other of the RESET test is widely employed to test for a non-zero mean of the error term; that is, it tests implicitly whether a regression model is correctly specified in terms of the regressors that have been included. Among the reasons for the popularity of this test are the fact that it is easily implemented, and the fact that it is an exact test, whose statistic follows an F-distribution under the null. The construction of the test does, however, require a choice to be made over the nature of the null. The construction of the test does, however, require a choice to be made over the nature of certain "augmenting regressors" that are employed to model the misspecification, the RESET test statistic has a non-null distribution which may be doubly non-central F, or may be totally non-standard. Although this has no bearing on the size of the test, it has obvious implications for its power.

The Ramsey RESET test was performed to find out the stability of the model. Ramsey RESET test was aimed at testing for specification errors or non-normality which violate the assumption that the disturbances are distributed N (0, 1). It tests for the omitted variables (that is; the vector of the regressors does not include all relevant variables), incorrect functional form and the correlation between the dependent and independent variables. Under such specification errors, Ordinary Least Squares estimators would be biased and inconsistent, and conventional inference procedures would be invalidated (Ramsey, 1969).

The null hypothesis that the model is stable (H0: Model is stable) was tested against the alternative hypothesis of no stability in the model (H1: No stability in the model). The null hypothesis is rejected in favor of the alternative hypothesis if the probability F-statistic of the Ramsey RESET test statistic is significant at 5% (five percent). The results from Ramsey RESET test are presented in appendix F and X^2 versions of the test show that the functions are linear and are stable since the *p*- value of the dependent variable is significant at 5%. So using number of fitted term our model was the probability F-statistic of the test (0.0102) is significant at five percent level.

Therefore, based on this result we fail to reject the null hypothesis that the models are linear and stable.

Table 4:0:5:Ramsey RESET Test Result

	Value	Df	Probability
F-statistic	6.330603	(2, 15)	0.0102

***Source**: Own computation from the financial statements using Eviews-9*

4.1.5 Heteroscedasticity

Heteroscedasity test is the popular which include Bruserch –Pagan-Godfrey (BPG) test and White test would be employed in this study. Generally the definition of this test involves testing the null hypothesis that the variance of the errors is constant (homoscedasticity) or no heteroscedasticity versus the alternative that the errors do not have a constant variance while auto-correlation an assumption that the errors are linearly independent of one another (uncorrelated with one another). If the errors are correlated with one another, it would be stated that they are auto correlated.

This test is conducted in order to ascertain that the disturbance or the errors has the same variance such that OLS estimators are Best Leaner Unbiased Error (BLUE), that is the coefficient estimates are efficient, consistent and unbiased. In order to detect heteroskedasticity, there are different techniques that can be used. In this study we will use the white test to assess the stability of the variance for both models.

The null hypothesis of no heteroskedasticity is stated as follows for both models:

H0 = no heteroskedasticity and

The null hypothesis is tested against the alternative hypothesis for both models:

H1 = there is heteroskedasticity

The null hypothesis, which in this study is a hypothesis for value of risk management and financial performance of the independent variables, will not be rejected in favor of the alternative hypothesis if the probability F-statistics of the white heteroskedasticity test is significant at five percent. As we can be seen under the next chapter, both the common heteroskedasticity model this study focus on heteroskedasticity Breusch – Pagan –Godfrey and White heteroskedasticity; and the F-and X2 (LM) version of the test statistics give the same conclusion that there is no evidence for the presence of heteroskedasticity since the p-values are considerably in greater than 5 % or 0.05.

Heteroscedasticity an important assumption assumed by the classical linear regression model is that the error term should be homogeneous in nature. Whenever that assumption is violated, then one can assume that heteroscedasticity has occurred in the data. In this study as shown in Table 4.7 and Table 4.8 , both the F-statistic and Chi-Square versions of the test statistic gave the same conclusion that there is no evidence for the presence of heteroscedasticity, since the p-values were in excess of 0.05. The third version of the test statistic, Scaled explained SS, which as the name suggests is based on a normalized version of the explained sum of squares from the auxiliary regression, also gave the same conclusion that there is no evidence for the presence of heteroscedasticity problem, since the p-value was considerably in excess of 0.05 the common heterosedasticity test are Breusch-Pagan-Godfrey and White tests approved this study.

Table4:0:6:Breusch-Pagan-Godfrey Test Result

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.464799	Prob. F(5,17)	0.7971
Obs*R-squared	2.766086	Prob. Chi-Square(5)	0.7360
Scaled explained SS	1.943702	Prob. Chi-Square(5)	0.8569

***Source**: Own computation from the financial statements using Eviews-9*

Table4:0:7:White Test Result

Heteroskedasticity Test: White

F-statistic	0.661706	Prob. F(5,17)	0.6573
Obs*R-squared	3.747007	Prob. Chi-Square(5)	0.5864
Scaled explained SS	2.632985	Prob. Chi-Square(5)	0.7563

***Source**: Own computation from the financial statements using Eviews-9*

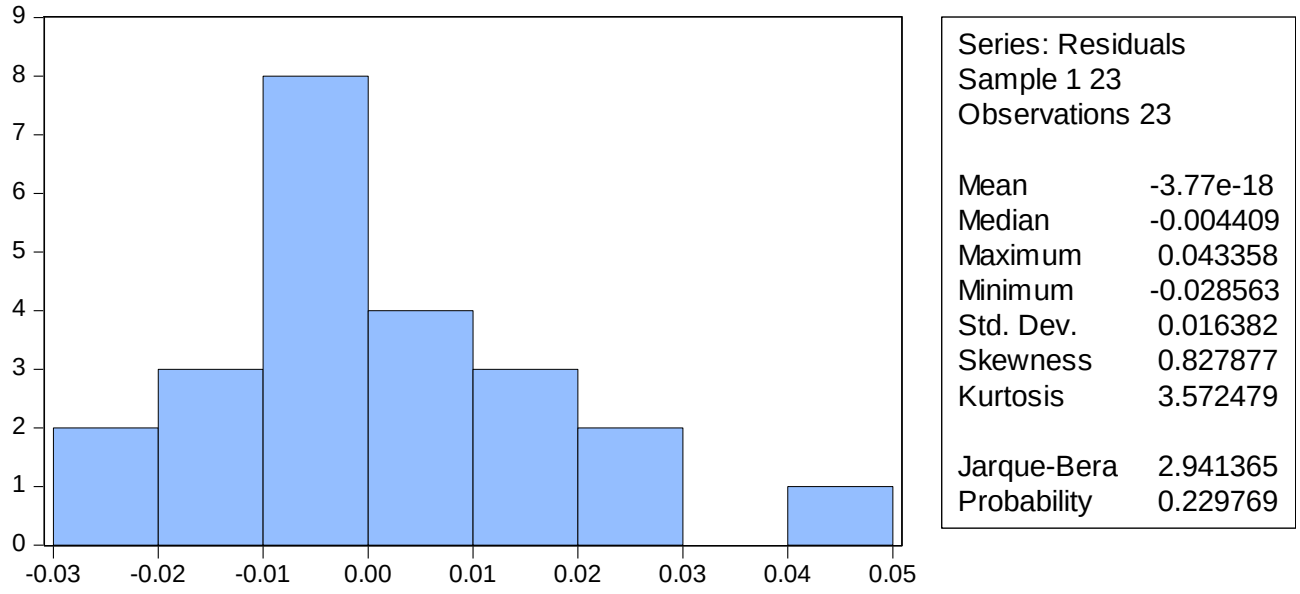
4.1.6Normality Test Result

Normality test: In statistics, it is needed to assess the normality of a given set of data; for many statistical processes, and used to determine if a data set is well-modeled by a normal distribution and to compute how likely it is for a random variable underlying the data set to be normally distributed. It is prerequisite to make the assessment of the normality of the data, since it is an important assumption in parametric testing. There are various normality tests are available for the determination of normality of a data. In statistics, the normality tests are used in order to determine whether a given set of data is well-defined by a normal distribution. They are also used to measure how likely a set of data to be normally distributed for a random variable. In probability theory and statistics, the probability distributions are the set of probabilities assigned to all the possible outcomes for an event or a set of events. There are several different types of probability distributions. Normality test among the many "diagnostic tests" that econometricians routinely use, several tests of normality are discussed in the literature, we will consider two common normality test: histogram of residuals and the Jarque–Bera test.

A) Jarque–Bera (JB) Test of Normality: Jarque–Bera (JB) Test of Normality has created by two econometrics scientists from the second named; Carlos **Jarque** and Anil K.**Bera**; The Jarque–Bera (JB) test is goodness of fit of whether sample data have the skewness and kurtosis matching a normal distribution. Become our study 23 sample size observation and 9 variables including one dependent and constant variable and Jarque–Bera (JB) Test normality is an asymptotic, or large-sample, test. It is also based on the OLS residuals. This test first computes the **skewness** and **kurtosis** measures of the OLS residuals and uses the following test statistic:

Therefore, the JB test of normality is a test of the joint hypothesis that S and K are 0 and 3, respectively. In that case the value of the JB statistic is expected to be 0. Under the null hypothesis that the residuals are normally distributed; Jarque and Bera showed that asymptotically (i.e., in large samples) the JB statistic given in equation (6) follows the chi-square distribution with 2 df. If the computed p value of the JB statistic in an application is sufficiently low, which will happen if the value of the statistic is very different from 0, one can reject the hypothesis that the residuals are normally distributed. But if the p value is reasonably high, which will happen if the value of the statistic is close to zero, we do not reject the normality assumption; the sample size is rather small. Hence, strictly speaking one should not use the JB statistic. If we mechanically apply the JB formula to our assumption, the JB statistic turns out to be the value; the p value of obtaining such a value from the chi-square distribution with 2 df is about some value, which is quite high. In other words, we may not reject the normality assumption. The normality tests for this study is as shown in figure 4.9 below where the coefficient of kurtosis is around 3.5, which is this study 3.572479 and the Bera-Jarque statistic had a P-value of 0.229769 implying that the probability is greater than 5% therefore the data were consistent with a normal distribution assumption.

Figure 4.2:Normality Test Result



***Source**: Own computation from the financial statements using Eviews-9*

Therefore, $JB = n\,[s2/6 + (k-3)2/24] = 23[(0.83)2/6 + (3.57-3)2/24] = 2.654$ almost equal the difference is 0.3, so by the Jarque –Bera assumption our model was normal and the shape of the residual some like to ball shape so we have be proved Histogram of Residuals assumption.

4.2 Correlation Analysis among variables

The problem of multicollinearity usually arises when certain explanatory variables are highly correlated. Usually, as noted by Hair et al. (2006) correlation coefficient below 0.9 may not cause serious multicollinearity problem. Correlation measures the degree of linear relationship between variables. Values of the correlation coefficient are always ranged between +1 and -1. A correlation coefficient of +1 indicates that the existence of a perfect positive relationship between the two variables, whereas a correlation coefficient of -1 indicates perfect negative relationship. A correlation coefficient of zero, on the other hand indicates no relationship between two variables

(Brooks, 2008). Table 4.8 below shows the correlation matrix among independent variables.

The correlation result in table 4.2 shows liquidity risk, solvency risk, technical reserve risk, underwriting risk and reinsurance risk have negative correlation with return on assets for measure of the corporation performance.

Table 4:0:8:Correlation matrix between independent variables

Covariance Analysis: Ordinary
Date: 05/15/19 Time: 12:27
Sample: 1 23
Included observations: 23

Correlation	RR	TRR	UR	LOGSR	LOGLR
RR	1.000000				
TRR	0.589849	1.000000			
UR	-0.091453	-0.383235	1.000000		
LOGSR	0.131131	0.636574	-0.598375	1.000000	
LOGLR	-0.735280	-0.889344	0.460070	-0.517249	1.000000

***Source**: Own computation from the financial statements using Eviews-9*

This implies that all independent variables are negatively correlated with return on asset.

The method used in this study to test the existence of multicollinearity was by checking the Pearson correlation between the independent variables. The correlations between the independent variables are shown in table 4.9 above. All correlation results are below 0.90, which indicates that multicollinearity is not a problem for this study.

4.3 Analysis of regression result

The Fixed effect Model allows for heterogeneity of the corporation under this study by allowing its own intercept value. This section presents the empirical findings from the econometric output on the risk management and financial performance of Ethiopian Insurance Corporation. Table 4.10 below reports regression results between the dependent variable (ROA) and independent variables. According to Brooks (2008) the standard error of the estimate is sometimes used as a broad measure of the fit of the regression. It is a measure of how confident one is in the coefficient estimate obtained in the first stage. If a standard error is small, the value of the test statistic will be large relative to the case where the standard error is large. Large standard error is undesirable; everything else being equal, the smaller this quantity is the closer is the fit of the line to the actual data. In this study technical reserve risk, underwriting risk and liquidity risk had small standard error their corresponding standard error amount were (0.0400), (0.0329) and (0.0801) respectively.

Moreover, from the findings in the below table 4.10, the value of R-Square, also known as the Coefficient of determination is a commonly used statistic to evaluate model fit. R-squared defined that the square of a correlation coefficient; it must lie between 0 and 1. If this correlation is high, the model fits the data well, while if the correlation is low (close to zero), the model is not providing a good fit to the data.

The adjusted R-squared compares the explanatory power of regression models that contain different numbers of predictors and it could control the extremes and the biasedness of the model. The value measures how well the regression model explains the actual variations in the dependent variable (Brooks, 2008).

R-squared statistics and the adjusted R-squared statistics of the model was (82%) and (76%) respectively. The result of this estimation particularly the adjusted R-Squared indicates that the changes in the independent variables explain 76% of the changes in the dependent variable. This means technical reserve ratio, reinsurance

ratio, liquidity ratio, solvency ratio and underwriting ratio collectively explain 76% of the changes in financial performance. Thus these variables collectively, are good explanatory variables to identify the risk management on Ethiopian Insurance Corporation financial performance.

However, the remaining 26% of changes was explained by other factors or variables which are not included in the model. Overall reliability and validity of the model was further enhanced by the Probability (F-statistic) value (0.000) which indicates strong statistical significance. Thus the null hypothesis of the overall test of significance that all coefficients are equal to zero was rejected as the p-value was sufficiently low or less than 0.05.

Table 4:9:Regression Result

Dependent Variable: ROA
Method: Least Squares
Date: 05/11/19 Time: 11:41
Sample: 1996 2018
Included observations: 23

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RR	-0.754770	0.166525	-4.532461	0.0003
SR	-0.511179	0.202009	-2.530474	0.0216
TRR	-0.031410	0.040991	-0.766254	0.4540
UR	-0.079485	0.032918	-2.414645	0.0273
LR	-0.048276	0.080102	-0.602686	0.5547
C	0.163526	0.074037	2.208700	0.0412

R-squared	0.817883	Mean dependent var	0.102609
Adjusted R-squared	0.764319	S.D. dependent var	0.038388
S.E. of regression	0.018636	Akaike info criterion	-4.907983
Sum squared resid	0.005904	Schwarz criterion	-4.611767
Log likelihood	62.44180	Hannan-Quinn criter.	-4.833485
F-statistic	15.26929	Durbin-Watson stat	1.990101
Prob(F-statistic)	0.000009		

***Source**: Own computation from the financial statements using Eviews-9*

The regression F-Statistic (15.26929) and the p-value of zero (0.0000) attached to the test statistic reveal that the null hypothesis that all of the coefficients are jointly zero should be rejected. Thus, it implies that the independent variables in the model were able to explain variations in the dependent variable. The coefficient for RR is (-0.754770) on ROA which indicates that the reinsurance risk of the corporation had negative relationship with ROA and also the relationship is significant at 1% level of significant. And also, the coefficient for LR is (–0.048276) on ROA which refers that liquidity risk had negative relationship with ROA and insignificant relation with ROA at 1%, 5%and 10%.

Next to this, the coefficient for solvency risk is (-0.511179) on ROA which refers that solvency risk had negative and significant relation with ROA at 1% level of significant. Underwriting risk with the coefficient of (-0.079485) had negative relationship with ROA and significant relationship with ROA at 1% level of significant. Finally, technical reserve risk with coefficient of (-0.031410) had negative relation with ROA and not significant at 1%, 5% and10% level.

Generally all independent variables in this study are negative relationship with ROA. The negative relationships indicate that there is an inverse relationship between the five independent variables and ROA. Thus, increasing of those variables will lead to a decrease in ROA of Ethiopian Insurance Corporation.

4.4 Discussion of Regression Result

Liquidity Risk

H1: Liquidity risk has negative relationship and statistically insignificant effect on Ethiopia Insurance Corporation performance.

According to the regression result of liquidity risk (LR) has a negative relationship and insignificant with Ethiopian Insurance Corporation performance by a coefficient

estimate of -0.048276.This means that holding other independent variables constant and when one unit increases in liquidity, consequently it decreases return on asset (ROA) of Ethiopian insurance Corporation by 0.048 but not significantly and the p-value of LR is 0.0000 & 0.5547 shows that it is statistically insignificant at 1%,5%,10% level of significance respectively.

Accordingly, the result reinforced the working hypothesis that liquidity risk has negative and statistically insignificant effect on performance of the corporation for the period of 1996 to 2018. This finding is inconsistent in level of significant with previous studies of Adrian (2014) and Abate (2012) found out liquidity risk is one of the most significant variable that adversely affect the profitability of insurance companies.

On contrary, Arif et al. (2015); Amal (2012) and Suheyli (2015) concluded that liquidity risk has a positive and significant association with performance of insurance companies who argue that the more liquid insurance company can get the better they meet their claims. Meanwhile, (Yuvaraj et al. (2013).

The study finding implies that an increase in liquidity, definitely lead to a decrease Ethiopian Insurance Corporation financial performance but not significantly.

It refers that holding of excess cash brings less profitable if the corporation don't invested to increase income. This finding is in line with the expectation and it corroborates finance theory of a negative relationship, which brought about profitability with liquidity trade-off (James et al., 2014). If the corporation does not invest sufficient funds in current assets, it may become illiquid and therefore it is risky. Also, with huge investment in current assets, the corporation would lose profitability, as idle current assets would result in insufferable opportunity cost. This would be a consequence of the fact that current assets are usually the less profitable than the fixed assets. Thus, corporation holding more liquidity could not be more profitable if they couldn't invest their excess of cash in other investment area.

Technical Reserve Risk

H2: Technical reserve risk has a significant and negative effect on Ethiopian insurance corporation financial performance.

Technical reserve risk is that the corporation liability to policyholders could be understated or overstated. The liability level is determined by actuarial methods and it depends on future liabilities and structure of insurance portfolio. The high level of technical reserve risk indicator may signal a bad use of capital resources. On the other hand low level of technical reserve risk indicates the insurer unable to pay its obligation in a proper manner this may showing it to liquidity problem and can lose its clients easily. The most common technical reserve risk in insurance is outstanding claim reserve risk. 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.

According to the regression result of this study shows that the coefficient of technical reserve which is measured by outstanding claim reserve to equity was negative coefficient (-0.03141), which implies that if technical reserve risk increase by 1 unit, ROA will decrease by (0.03141) units assuming that the remaining independent variables are constant. The result of (p-value=0.0000) and statistically insignificant at a 1%, 5%and 10%.

It indicates that when the corporation holding high reserves for outstanding claims, it will have not a significant but it has negative impact on their financial performance. The finding was not consistent with Suheyli (2015) from previous study that technical reserve risk has negative relationship with ROA and significant.

Therefore, the study supports the hypothesis is insignificant and negative impact of technical reserve risk on Ethiopian insurance corporation financial performance. Thus, the null hypothesis can be rejected.

Solvency Risk

H3: solvency risk has negative and significant effect on Ethiopian insurance corporation financial performance.

In accordance with the regression result of solvency risk (SR) has a negative relationship with Ethiopian Insurance Corporation performance by a coefficient estimate of -0.511179.

This means that holding other independent variables constant and when one unit increases in solvency risk, as a result it decreases return on asset (ROA) of Ethiopian Insurance Corporation by 0.511179 and the p- value of SR is 0.0216 discloses that it is statistically significant at 1% level of significance and the result supported the working hypothesis that solvency risk has negative and statistically significant effect on performance of the corporation for the period of 1996 to 2018.

The result is consistent with the earlier studies of Arif et al. (2015) and Adrian (2014). This implies that an increase in solvency risk, certainly lead to a decrease in performance of Ethiopian Insurance Corporation. It indicates higher debt to asset ratio, the possibility of the need to find an external funding and therefore performance of the insurance companies affected adversely. Additionally, although the Ethiopian insurance companies require having a reserve of 10% from their net profit according to NBE proclamation (746/2012), the increase in leverage undeniably put insured to have a doubt on insurance companies.

Furthermore, unlike other industries insurance companies with higher debt are relatively more risky because they tend to need more of their assets to meet their obligations. The smaller the equity in relation to liabilities of the company, the lower the ability of the company to absorb unforeseen shocks and the harder it get to repay claimants which subsequently reduces the insurance companies performance. Assets run of out before all the liabilities have been met, less estimation of the liabilities associated with those polices and lack to increase their net asset are the possible causes for the occurrence of solvency risk.

Reinsurance Risk

H4: Reinsurance risk has positive and significant effect on Ethiopian insurance corporation financial performance

Reinsurance is insurance for the insurance underwriter. Retention ratio is retained premiums to gross written premiums this means the amount of liability for which an insurance company will remain responsible after it has completed its reinsurance arrangements or treaty. The corporation underwriter makes the retention decision based on various factors, including the size and concentration of the individual risk. Corporation usually takes out reinsurance cover to stabilize earnings, increase underwriting capacity and provide protection against catastrophic losses; nevertheless it involves a certain costs.

According to the regression result of the data reinsurance risk (RR) has a negative relationship with Ethiopian Insurance Corporation financial performance by a coefficient estimate of -0.754770. This means that keeping other independent variables constant and when one unit increases in reinsurance risk, as a result it decrease return on asset (ROA) of Ethiopian Insurance Corporation by 0.7548 and the p -value of RR is 0.0003 reveals that it is statistically significant at 1% significance level and the hypothesis is consistent with prior studies of Mistre (2015) and Suheyli (2015).

Referring to previous studies, the results concerning reinsurance risk are; Lee (2014) found a significant negative relationship between reinsurance dependence and insurance profits. This means if insurers more ceded their premium their profit will be decline because their retention ratio decreased. Likewise, Shiu (2014) found a negative relationship between reinsurance dependence and insurers profitability which is consistent with this study. Thus, both studies result indicated that reinsurance dependency ratio has negative effect on insurers‟ profitability and implying that retention ratio has positive impact on corporation financial performance and the result doesn’t support the workable hypothesis that reinsurance

risk has positive and statistically significant effect on performance of the corporation for the period of 1996 to 2018.From the regression result and previous studies of the industry we can summarized that Ethiopian insurance corporation has been taken the risk of mega project.

Underwriting Risk

H5: Underwriting risk has negative and significant effect on Ethiopian insurance corporation financial performance.

The underwriting risk emphasizes the efficiency of the corporation underwriting activity and the exposure to financial loss resulting from the selection and approval of risks to be insured. It is a risk of losses from underpriced products, insufficient volume of premium due to computation, improper underwriting controls of pre risk assessment, and the development of new products that are not properly priced.

As per the regression result of underwriting risk (UR) has a negative relationship with Ethiopian Insurance Corporation financial performance by a coefficient estimate of -0.079485. This means that holding other independent variables constant and when one unit increases in underwriting risk, consequently it reduces return on asset (ROA) of Ethiopian Insurance Corporation by 0.079485 and the p- value of UR is 0.0273 reveals that it is statistically significant at 1% level of significance.

Accordingly, the result supported the working hypothesis that underwriting risk has negative and statistically significant effect on performance of Ethiopian Insurance Corporation for the period of 1996 to 2018. 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)) result showed that underwriting risk had insignificant effect on corporation performance. The possible reason for the result as observed by the researcher is that amount of premium earning was higher than the loss incurred during their study period, for this reason underwriting risk could not have significant effect on profit.

In the contrary, the study finding implies that an increase in underwriting risk, certainly lead to a decrease in performance of Ethiopian Insurance Corporation. It explains that while the claims incurred is higher than the premiums received, the corporation could not raise sufficient revenues from premiums to cover claims or sum insured. Due to this fact, the corporation loses its earrings from premiums' revenues causing their profit to decline.

Higher underwriting risk increases loss ratio and associating adverse effect on corporation performance. The possible reasons for the result are misestimating of the appropriate premium price, increasing of private insurance companies and insufficient diversification of insurance policies to the insured. The underestimation of premium price would aggravates the loss due to inefficiency of the premium earned would fail to cover the probable claims of the insured. Whereas overrating of the premium would discourage the insured to get the insurance coverage, they so need and only attempt to get insurance cover that is mandatory by the law and regulation.

ROAit =β0 + β1LR*i*, *t* + β2TRR*i*, *t* + β3SR*i*, *t* + β4RR*i*, *t* + β5UR*i*, *t* + ε

As generated by regression analysis, shown in table 4.10 above, the established regression equation is

ROAit=0.163526-0.048276i, t-0.031410i, t-0.511179i, t-0.754770i, t-0.079485i, t+ ε

Source: developed by researcher mainly based on Arif et al., (2015) and NBE (2010).

Table 4.10 Comparisons of actual result with expectation

Independent Variables	Expected relationships with performance (ROA)	Actual Result	Statistical Significance level	Status of hypothesis
Liquidity Risk	-	-	Not significant	Rejected

Solvency Risk	-	-	Significant at 1%	Failed to Reject
Technical Reserve Risk	-	-	Not significance	Rejected
Reinsurance Risk	+	-	Significant at 1%	Failed to Reject
Underwriting Risk	-	-	Significant at 1%	Failed to Reject

Source: Compiled by the researcher

CHAPTER FIVE

SUMMARY, CONCLUSSION AND RECOMMENDATIONS

The former chapter presented the result and discussion, while this chapter is organized into three sub-sections. The first section presents the summary of the result whereas the second section presents the conclusions and finally the third and the fourth sections presents the recommendations and direction for future research respectively based on the findings of the study.

5.1 Summary of findings

The research general objective was to examine risk management and financial performance in the case of Ethiopian Insurance Corporation. The study used twenty three (23) years period of time from 1996-2018 data of audited financial statements of the corporation. It carried out by constructing a balanced panel regression model using OLS as per, fixed effect model was adopted for secondary data obtained from audited annual report. The overall result obtained from the regression model indicates that risk management has an effect on financial performance of the corporation. The dependent variable used to measure insurance performance was return on asset (ROA) and independent variables those are liquidity risk, reinsurance risk, solvency risk, technical reserve risk and underwriting risk in order to attain the objective of the study. From the regression result, all independent variables had negative relationship and significant except liquidity risk and technical reserve risk, which was insignificant effect on Ethiopian Insurance Corporation financial performance.

5.2 conclusions

In this ever growing competitive insurance industry, an insurance company must be at the head of the game on every aspect of the service delivery. And to do that it's advisable for the corporation's management to utilize different scientific models to predict major contributing factors of risk management and financial performance of

its different types of insurance products, so they can focus on the most important ones.

The study specifically examines risk management and financial performance in the case of Ethiopian Insurance Corporation based on the following conclusions.

According to the study reinsurance risk, solvency risk and underwriting risk were the most influential factors of Ethiopian insurance Corporation‟ ROA, according to their respective order.

Giving to the result, the researcher concluded that the main risks affect the ROA of Ethiopian insurance Corporation are reinsurance risk, solvency risk and under writing risk, since they have statistically significant impact at confidence level of 99%. This conclusion implies that the corporation with high liquid asset, low technical reserve, large total asset, and retain more premium can make more profitable. In general managing the corporation risk by itself is difficult task as managing one risk solely may affect the other risks in negative way, so managing risks in the corporation should goes hand to hand with each other and balancing accordingly is a mandatory. This means enterprise risk management (the enterprise risk management (ERM) theory greatly looks to exert influence on the Ethiopian insurers risk management. It is, therefore, important for the corporation to be focused on the integration of the whole department risks. Similarly, the study concludes that there is a strong relationship between risk management and financial performance of the corporation. In general as explained by the model variables explanatory power adjusted R-Square was 76%, which means ROA of the corporation was explained 26% by variables other than the studied variables.

5.3 Recommendation

The findings of the study showed that reinsurance risk, solvency risk and underwriting risk are the significant drivers of risk management which has a negative effect on Ethiopian Insurance Corporation financial performance whereas liquidity risk and technical reserve risk are insignificant and negative effect on management risk determinant during the study period of 1996 to 2018. Hence, focusing and taking the necessary action on these variables could reduce the probability of risk management effect on Ethiopian Insurance Corporation financial performance. Based on the findings which are obtained from regression the researcher has drawn the following recommendations.

The result revealed that solvency risk had negative and significant effect on the performance of Ethiopian Insurance Corporation. Therefore, Ethiopian Insurance Corporation need attempt to attract more customers and boost its income through provision of enhanced estimation technique on insurance policy premium price to maximize its net premium earning and net asset. Since the country is growing and transforming into the age of industry with the existing paid up capital, it will be likely for insurance companies to face solvency risk. Hence, the researcher recommends increasing their paid -up capital for corporation based on NBE (2010) rule and regulation must be updated. Therefore, Ethiopian Insurance Corporation should take these suggestions to maximize their return and asset through becoming solvent for their liability.

The study discovered that underwriting risk had negative and significant effect on Ethiopian Insurance Corporation financial performance. For this intention, Ethiopian Insurance Corporation should consider to minimize their costs and claims through proper handling of estimation pricing, valuation technique, taking in to account risk of specific sector and catastrophic event by giving special training for the performing body. Accordingly, the Corporation to provide sufficient premium price for insurance policies, which takes high insurance coverage and more risky area based on data accumulation. Moreover, Ethiopian Ins urance Corporation should offer adequate and

diversification of insurance policy portfolio to have better premium earning that can compensate other loss when it's occurred. Therefore, The Corporation has given due attention on those areas to reduce the effect of underwriting risk for their performance.

Regarding reinsurance risk the corporation should retain as far as their capacity which usually measured by net risk (net written premium to equity). The study puts some tools hereunder; The Corporation should know its retention capacity and to know this should examine all classes of business. For example in fire and lightning policy the probable maximum loss (PML) or Estimated Maximum Loss (EML) should be calculated by the corporation professional surveyors and updating of the professional through training from international insurance industry. It helps to reduce the ceded premium for less risky classes of business.

Moreover, at the current Ethio-re was established and try to build the capacity of Ethiopian insurers have to formulate reinsurance policy and program. This is a key tool when they are arranging reinsurance agreements, as their risk appetite, risk tolerance and other matters are contained in this document.

The analysis demonstrates that technical reserve risk had negative and insignificant effect on corporation financial performance. As per the research result the study recommends the following main points for the corporation concerned the technical reserve risk.

The corporation has needed more awareness for his customers to protect and minimize the losses and for those customers create special benefit package like gift and bonus. The corporation needs adjust the outstanding claim in each claim processing steps.

The corporation has needed to minimize long outstanding claim by reinstate and pay quickly for claimants as much as possible, it helps the corporation to minimize and avoid market inflation both on labor and parts cost.

The corporation has needed to be handling the claim on time to reduce the subsequent costs like towing expenses, guarding and other related expenses.The study forwarded the following recommendation regarding liquidity risk.

The corporation has been given more attention through data base for the recovered assets or salvages, which are not economical to repair, to be disposing on time to get more cash.

The corporation has to increase the underwriting capacity by doing different marketing strategies tools, like well asset utilization system due to the negative relationship of the corporation financial performance,

Moreover, the corporation needs formulate policies and procedures and have to forecast their cash flows; these can help to utilize their working capital efficiently.

The corporation needs well organized risk management staff to compete well with the other insurance company.

5.4 Direction for future research

This study only focused on risk management and financial performance of Ethiopian Insurance Corporation. However, it is recommended for future researchers to further assess other factors or variables of risk management that can affect corporation performance by incorporating additional international insurance specific and macro-economic factors. Hence, the aspects raised above need further study and the following areas are also recommended for further research.

I. The pricing practice of premiums between government and private insurance companies.
II. The opportunity cost of not investing excess liquidity by the corporation.

Reference

Adams, M. & Buckle, M. (2003). The determinants of corporate financial performance in the Bermuda insurance market. Applied Financial Economics, Routledge, 13, 133-143.

Agyei, S. K. and Yeboah, B. (2011). Risk management and profitability of banks in Ghana, British journal of economics, finance and management sciences, 2 (2).

Ahmed, N., Ahmed, Z. & Usman, A. (2011). Determinants of Performance: A Case of Life Insurance Sector of Pakistan. International Research Journal of Finance and Economics, 61, 123-128.

Allen, F., & Santomero, A. (1997). The theory of financial intermediation. Journal of Banking &Finance, 21 (11), 1461-1485.

Amal, Y. (2012).Factors Affecting the Financial Performance of Jordanian Insurance Companies Listed at Amman Stock Exchange. Journal *of Management Research,* 4(2), 266-289.

Amaya, P. A. and Memba, F. (2015). Influence of risk management practices on financial performance of life assurance firms in Kenya: A survey study of Kisii County, International journal of Economics, Commerce and Management, 3 (5)

Andreas, A., Nobuyasu, S. & Timo, B. (2014). Macro prudential Solvency Stress Testing of the Insurance Sector. *IMF working paper.* Monetary and Capital Markets Department.

Ana-Maria, B. & Ghiorghe, B. (2014). The Determinants of Financial Performance in the Romanian Insurance Market. International journal of academic research in accounting, finance and management sciences, 4(1), 300-308.

Arif, A. & Showket, A. (2015). Relationship between Financial Risk and Financial Performance: An Insight of Indian Insurance Industry. International Journal of Science and Research 4(11),1424-1433.

Barlow, S. (2000), Case study. Prudential: embedding risk management, Internal Auditing and Business Risk , 2(6) .32-3.

Barges, A. (1963). The effect of capital structure on the cost of capital: a test and

evaluation of the Modigliani and Miller propositions.

Bartram, S., Brown, G., & Conrad, J. (2011). The effects of derivatives on firm risk and value. Journal of Financial and Quantitative Analysis, 46(4), 967-999.

Bodla, B. and Garg, P. (2003). Insurance Fundamentals, Environment and Procedures, Deep & Publications Pvt. Ltd.

Brooks, C. (2008). Introductory Econometrics for Finance. 2ndedn, Cambridge University Press, New York.

CAS, (2003) a. Overview of Enterprise Risk Management. From. : //www.casact.org/area/erm/overview.pdf.

Catherine A. (2014). The effects of risk management on financial performance of insurance companies in Kenya.

Christopher, C (2003). Coming up Short on Nonfinancial Performance Measurement, Harvard Business Review, 81(11), 88-95.

Christopher, M. & Peck, H. (2004). Building the resilient supply chain', The International Journal of Logistics Management, Vol.15 (2), 277-287.

Clark, E and Marois, B (1996). Managing Risk in International Business: Techniques and applications, International Thomson Business Press.

COSO, (2004). The Committee of Sponsoring Organizations of the Tread way Commission, Enterprise Risk Management-Integrated Framework Executive Summary.

Cooper, D & Schindler, P. (2003). Business Research Methods. 8th edn, McGraw-Hill, New York.

Creswell, W. (2003). Research design, qualitative, quantitative and mixed methods approaches, 2nd edn, Sage Publications, California.

Cummins, J. Phillips, R. & Smith, S. (2001). Derivatives and corporate risk management: Participation and volume decisions in the insurance industry. Journal of Risk and Insurance, 51-91.

Curak and Loncar (2008), International Journal of Development and Economic Sustainability Vol.1, No.4, Pp.1- 13, December 2012

Daniel, M. and Tilahun, A. (2013). Firm specific factors that determine insurance companies' in Ethiopia European Scientific Journal, 9(10), 245-255.

Danijela, M. and Zeljko, S. (2009). Determinants of Hedging Decisions in Croatian and solvenian large non-financial companies. Accounting and Finance.

Das. S., Nigel D. and Richard P., (2003). Insurance and Issues in Financial Soundness, International

Monetary Fund.

Demarzo, P. (1992). Corporate incentives for hedging and hedge accounting. Working paper, North western University.

Dennis, W. (2005), "Risk management and business continuity, overview, and perspective", Prentice, Hall Ltd.

Douglas M. & A.Wildavsky. (1982). Explaining risk perception. An evaluation of cultural theory.

Elmehdi, F. & Mohammed, V. (2014). Liquidity and Solvency in the International Banking Regulation. University, Morocco.

Emine, O. (2015). The Effects of Firm-Specific Factors on the Profitability of Non-Life Insurance Companies in Turkey. International Journal of Financial Studies, 3, 510-529.

Endaweke, M. (2015). Risk management and its impact on financial performance of commercial banks in Ethiopia. Thesis presented at Addis Abeba University.

Eneyew, L. (2013). Financial risks and profitability of commercial banks in Ethiopia. Thesis presented a Addis Ababa University.

Eric, N. (2005). Risk Management Techniques and Financial Performance in the insurance sector in Uganda, MSc Thesis, presented at Makerere University.

EstherMnyaziChipa1&Dr.GladysWamiori2Kadi,

A.M(2003).BasicConditionsandProceduresinInsurance.

The Accountant, 13(3),16-19.

Flanagan, R. (1993). Risk management and Construction; Black well science Ltd.

Fleming, M. (2004). The Determinants of Operational Performance and Mitigating the Risks Associated with the Insurance Market', Applied Financial Economics, 13, 133-142.

Giorgio, B., Elisa, C. and Gloria, G. (2013). The effect of the enterprise risk management implementation on the firm value of European companies, Working Paper 10.

Gitman, L. (1998). Principles of Managerial Finance, Dorling Kindersley India Pvt. Ltd., Licensees of Pearson Education in South Asia, Delhi.

Gollier, C. (2003), "To insure or not to insure? an insurance puzzle", The Geneva Papers on Risk and Insurance Theory.36, 414 – 439.

Gordon, L. (2009). Enterprise Risk Management and Firm Performance: A Contingency Perspective. Journal of Accounting and Public Policy, 301-327.

Grose, V. (1992) Risk Management from a technical Perceptive: The Geneva Papers on Risk Insurance 12.

Gujarati (2004): Basic Econometrics, Fourth Edition the MC Graw-Hill Companies. The McGraw−Hill Companies

HadusG.(2015).DeterminantsofProfitabilityonInsuranceCompaniesinEthiopia.UnpublishedMaster's Thesis. Addis Ababa University.

Hailu, Z. (2007). Insurance in Ethiopia: Historical Development, Present Status and Future Challenges. Addis Ababa, Ethiopia. Master Printing Press P.L.C.

Haiss, P. and Sumegi, K. (2008). The Relationship of Insurance and Economic Growth in Europe, A Theoretical and Empirical Analysis.

Hifza, M. (2011). Determinants of insurance companies' profitability: an analysis of insurance sector of Pakistan. Academic Research International, 1(3), 315-321.

Hinson, D & Kowalski, L. (2008).Roles and Responsibilities for Contingency Planning. London: UCL Press.

Hoyt, R. and Liebenberg, A. (2006). The Value of Enterprise Risk Management: Evidence From the U.S. Insurance Industry.

Hoyt, R. and Liebenberg, A. (2011). The Value of Enterprise Risk Management. Journal of Risk and Insurance, 78(4), 795-822.

Iqbal, Z. and Mirakhor A. (2007). An Introduction to Islamic Finance: Theory and Practice, 2nd Edition.

Irving, D, (1956). Risk management practice 456-474.

Irukwu, J. (1994). Insurance Management in Africa Cayton press (W.A) ltd, Ibadan, Nigeria.

Jacques, K. and Nigro p. (1997). Risk-Based Capital, Portfolio Risk and Bank Capital: A Simultaneous Equations Approach, Journal of Economics and Business, 49, 533– 549.

James A., Olawale F. & Felix A. (2014). Bank specific, industry specific and macroeconomic Determinants of bank profitability in Nigeria. European Scientific Journal, 10(25), 408-423.

James, N. & Kepha, O. (2013). Effects of Risk Management Practices on the Performance of Insurance Firms in Kenya: A Case of AIG Insurance Company Ltd. Unpublished Master's Thesis. Jomo Kenyatta University of Agriculture and Technology.

Jaz, H. (2015). Macro economy and profitability of insurance companies: a post crisis scenario in Pakistan. Pakistan business review, 243-263.

Kadi, A.M. (2003). Basic conditions and procedures in insurance. The Accountant, 13(3), 16-17.

Kealhofer, T. (2003). Survey on corporate responses to volatile exchange rates, Massachusetts institute Of technology, Cambridge, MA.

Kiochos, P. (1997). Principles of Risk Management and Insurance. 8th Edition, Pearson Education, New York

Kithinji, A. (2010). Credit Risk Management and Profitability of Commercial Banks in Kenya. Unpublished Master's Thesis. University of Nairobi.

Kokebe, S. and Gemechu, D. (2016). Risk Management Techniques and Financial performance of insurance Companies in Ethiopia. Journal of Asian and African Social Science and Humanities, 4 (1) 95-108.

Levine, R. (2004).Law, finance, and economic growth. Journal of Financial Intermediation, 8(12): 8-35.

Liargovas, P. & Skandalis, K. (2008). Factor affecting firms' financial performance: The Case of Greece, Athens: University of Peloponnese Press.

Liesz, T. and Maranville, S. (2008). Ratio analysis featuring the du Pont method: An overlooked topic in The finance module of small business management and entrepreneurship courses, Small Business Institute Journal, 1.

Lowe, (1999). Management Research, An introduction, Sage publications Ltd London.

National Bank of Ethiopia Annual Report, 2017/2018.

Magezi, J. (2003). A new framework for measuring the credit risk of a portfolio. Institute for Monetary and Economic Studies (IMES), 1-45.

Meulbroek, L. (2002). Integrated Risk Management for the Firm: A Senior Manager's Guide.

Meredith, L. (2004). The Ultimate risk manager: Boston. CUSP Communications Group Inc.

Merton, R.C. (1995). A Functional Perspective of Financial Intermediation, Financial Management Journal, 24 (2), 23-41.

Mikes, A. & Kaplan, R. (2014). Towards a contingency. Theory of Enterprise Risk Management. Working Paper 13-063

Mirie, M. (2015). Determinants of financial performance in general insurance companies in Kenya. European Scientific Journal, 11(1), 288-297.

Mishkin, S. and Eakins, G. (2013). Financial Markets and Institutions, Boston Columbus Indianapolis New York San Francisco Upper Saddle River.

Mistre, S. (2015).Determinants of Profitability on Insurance Companies in Ethiopia. Unpublished Master's Thesis, Addis Ababa University.

Mitchell, T., Mitchell, S. and Cai, C. (2013). Using the DuPont Decomposing Process to Create Marketing Model, Journal of Business & Economics Research, 11 (11).

Moeller, R. (2007). COSO enterprise risk management: understanding the new integrated ERM frame work.

Mohsen, J., Arezoo, A. and Vahid, B. (2011). Effective risk management and company's Performance: Investment in innovations and intellectual capital using behavioral and Practical approach' Journal of Economics and International Finance, 3 (15), 780 – 788. National Association of Insurance Commissions (NAIC), (2001). Insurance Regulatory Information System, Property/casualty.

Mua, J., GangPengb, Douglas, L and MacLachlan (2009). Effect of risk management strategy On NPD Performance, Tec novation Paper, No. 29, 170-180.

Munich (Re), (2010). Reinsurance: a Basic Guide to Facultative and Treaty reinsurance

Naveed, A., Zulfqar A. and Ahmad, U. (2011). Determinants of Performance, A Case of Life Insurance Pakistan, International Research Journal of Finance and Economics, Euro journals publishing.

Nissim,D., andS.Penman.2001.Ratio analysis and equity valuation: From research to practice. Review of Accounting Studies (March): 109–154.

Nocco, B. and Stulz, R. (2006). Enterprise Risk Management: Theory and Practice. Journal of Applied Corporate Finance, 18(4), 8-20.

Okotha, H. (2003). Corporate Risk Management: Costs and Benefits. Global Finance Journal, 13 (1), 29- 38.

Otley, D.T. 1980. The contingency theory of management accounting: Achievement and prognosis.

Accounting, Organizations and Society 5 (4): 413–428.

Patrik, G. (2001). Reinsurance in Causality Actuarial Society: Foundations of Casualty Actuarial Sciences. 4th ed. Arlington, Virginia: Causality Actuarial Society.343-486.

Plantin, G. (2006). "Does Reinsurance Need Reinsurance". The Journal of Risk and Insurance, 73 (1), 153- 168.

Quach, M. (2005). Problems in Managing Internal Development Projects in Multi-Project Environments, International Journal of Project Management, 21 (395- 402).

Raza, S., Jawaid, S. T. and Adnan, M. (2013). A DuPont Analysis on Insurance Sector of South Asian Region.

Rebuma, k. (2013). Risk management techniques and financial performance of Ethiopia insurance Companies Thesis presented at Addis Ababa University.

Rejda, E. (2003). Principles of Risk management and Insurance: New York, Pearson education Inc

Rejda, G. E. (2008). Principles of Risk Management and Insurance, Prentice Hall, 10 th Ed.

Riley, M. (2012), Application of multiple discriminant analysis (MDA) as a credit scoring and Risk assessment model, International Journal of Emerging Markets, 6 (2), 132-47.

Ross, S. (1977). The determination of financial structure: the incentive-signaling approach. Bell Journal Of Economics.

Sanusi, L.S (2010) "The Nigerian banking industry in the aftermath of the recent global Adams,

Saunders, A. & Cornett, M.M. (2008). Financial Institutions Management: A Risk Management Approach, McGraw-Hill, Irwin.

Shiu, Y. (2004). Determinants of United Kingdom general insurance company performance. British Actuarial Journal, 10, 1079-1112.

Skipper, H. Jr. (1997). Foreign insurers in emerging markets: issues and concerns. Center for Risk Management and Insurance, Occasional Paper 97-2.The Association of Kenya Insurance. Insurance Industry Annual Report. 2005

Skipper, J. and Harold D. (2001). Insurance in the General Agreement on Trade in Services, AEI Press Washington USA1-84.

Smyth, R. (2004). Exploring the Usefulness of a Conceptual Framework as a Research Tool: A Researcher's Reflections. Issues in Educational Research, 14.

Sommer, D. (1996). The Impact of Firm Risk on Property-Liability Insurance Prices. Journal of Risk and Insurance, 63(3), 501-514.

Stulz, R. (1984). Optimal hedging policies. Journal of Financial and Quantitative Analysis, 19, 127-140.

Stulz, R.M. (2003). Risk Management and Derivatives. South-Western: Mason, Ohio.

Stulz, R (2004). Rethinking risk management, The Revolution in Corporate Finance, Journal of Applied Corporate Finance, Paper No. 9 (3), 8–24.

Suheyli, R. (2015).Determinants of Profitability on Insurance Companies in Ethiopia. Unpublished Master's Thesis. Addis Ababa University.

Tony K.Daniel Z and Michael, M (2012). Enterprise risk management and business performance During the financial and economic crises, Problems and Perspectives in management, 10(2).

Tseng, C. (2007). Internal Control, Enterprise Risk Management, and Firm Performance Unpublished PhD Dissertation Department of Accounting and Information Assurance. Robert H. Smith School Of Business.

Tsion, F. (2015). Risk management practice of Ethiopian commercial Banks. Thesis presented at Addis Ababa University.

UNCTAD. (2007). Trade and development aspects of insurance services and regulatory frameworks. New York and Geneva: UNCTAD (UNCTAD/DITC/TNCD/2007/4).

Ward, D. and Ralf, Z. (2000). Does insurance promote economic growth? Evidence from OECD Countries. Journal of risk and insurance.

Wenk, D. (2005). Risk Management and Business Continuity, Overview and Perspective Journal of the Chartered Insurance Institute 3 (3), 234-246

William, G. Zikmund, Barry, J. Babin, C and Mitch, G. (2010). Research Business Methods, 8 edn. Canada.

Woods, M. 2009. A contingency theory perspective on the risk management control system within Birmingham City Council. Management Accounting Research 20 (1): 68–91.

Yuvaraj & Abate G. (2013). Performance of insurance companies in Ethiopia, International Journal of Marketing, Financial Services & Management Research ISSN.2, (7), 2277- 3622.

Zenios, S., Forsund, F., Hjalmarsson, L., Suominen, M. (1999), Banking efficiency in the Nordic Countries, Journal of Banking & Finance, 17 (1).

Zinaye.W (2017) The effects of risk management on financial performance of Ethiopian Insurance Industry,financial Crisis".http://www.cibng.org/admin/publications.