COLLEGE OF BUSINESS AND ECONOMICS DEPARTMENT OF

ACCOUNTING AND FINANCE

EFFECT OF BUSINESS RISK ON FINANCIAL PERFORMANCE OF INSURANCE BUSINESS: A CASE STUDY OF ETHIOPIAN INSURANCE CORPORATION

BY

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DECLARATION

To obtain a Master of Science in Accounting and Finance, I, Tamrat Assefa, hereby declare that the thesis, "Effects of Business Risk on Financial Performance of Insurance Business: A Case Study of Ethiopian Insurance Corporation," is my original work. Under Dr. Alem Hagos's supervision, I finished this study. Furthermore, I affirm that no application for a degree, diploma, or certificate has been made using this work.

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I hereby certify that the thesis entitled “Effect of Business Risk on Financial Performance of Insurance Business: A Case Study of Ethiopian Insurance Corporation,” completed under my close supervision, has been granted approval for submission to the Department of Accounting and Finance at Addis Ababa University. This work fulfills in partial the requirements for the award of the Master of Science degree in Accounting and Finance.

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ACRONYMS

ADF	Augmented Dickey-Fuller
BPR	Business Process Reengineering
CP	Contingency planning
EC	Ethiopian Calendar
EIC	Ethiopian Insurance Corporation
ERM	Enterprise Risk Management
GC	Gregorian Calendar
GDP	Gross Domestic Product
HQ	Hannan-Quinn
IAP	Insurance Association of Pakistan
ISD	Insurance Supervision Directorate
MOFED	Ministry of Finance and Economic Development
NBE	National Bank of Ethiopia
PP	Phillips-Perron
RBS	Risk-Based Supervision
RMP	Risks Management Programs
ROA	Return on Asset
VAR	Vector Auto Regressive
VECM	Vector Error Correction Model

ABSTRACT

This study aims to explore the effects of business risks on the financial performance of insurance company specifically to evaluate the trend of the financial performance of Ethiopian Insurance Corporation. Bearing the objective to explore the effect of credit risk, under-writing risk, liquidity risk, and re-insurance risk, to analyze the effect of macro-economic variables including inflation, interest, and exchange rate on EIC's financial performance. To accomplish these objectives, the study used primary annual data from Ethiopian Insurance Corporation audited annual financial statement and from National Bank of Ethiopia spanning from 2008/09 to 2022/23 G.C, to analyze the data the study used STATA software, descriptive and inferential statistics, graphical exploration, and time series model including Vector error correction model. By doing this, the result indicates that the financial performance of Ethiopian Insurance Corporation in decreasing patterns after 2020 contrast to the liquidity and credit risk, credit risk, liquidity risk, under-writing risk, re-insurance risk has not been managed well, credit, liquidity, underwriting, and re-insurance risks have long run effects on the performance of the insurance corporation. Furthermore, the results indicate that all the business risks considered for the study and included macro variables have long run effects on the performance of the corporation. Based on the above findings the researcher recommend that the corporation should provide continuous evaluation of claims, creating, recording and putting in to practice efficient procedures for managing products, and manage the types and attributes of insurance risks taken on or claims authorized, needs to create risk management plans to lessen the adverse effects of volatility, revise or induce a robust credit policy to minimize the corporations' bad debt, and the board of management and the corporation's management should induce risk aware culture across the corporation to manage business risks.

Key words:

Vector error correction model.

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CHAPTER ONE

1. INTRODUCTION

1.1. Background of the study

Insurance companies around the world write policies that address risks, and in many cases, insurance institutions are in the business of taking risks. There are many different risks that an insurer may face when conducting its basic operations, including as under-writing, pricing, processing claims, and managing reinsurance. These risks are frequently interconnected and, if improperly managed, could jeopardize the institution's capacity to establish and maintain its viability. Therefore, the idea of risk management is replacing the practice of getting coverage for every insurable risk. Insurance coverage is a component of risk management, which aims to reduce the expenses related to taking on specific risks and offer sensible protection. This pertains to pure risks, which are defined by random events and may solely cause monetary loss (Wani & Dar, 2015).

The insurance industry has been continuously upgrading itself to encounter the demands of the public and financial markets for higher standards of safety, transparency, and efficacy in addition to the altered economic climate (Everis, 2009).

Identification of risk is the foundation of risk management on an organization's loss and the selection of the most appropriate techniques to manage those risks (Rejd, 2003). Insurance companies have a variety of risk management techniques in place. These consist of loss control and prevention, risk avoidance, and loss financing (Wani & Dar, 2015). Insurance's company managers are encouraged to carefully consider the risks they insure to avoid incurring excessive losses in the event of a claim. Insurance businesses need to take risk management seriously uncertainty they hope to succeed financially. Insurance firms employ a range of risk control strategies. International businesses reinsure a portion of the risks. Additionally, businesses give clients advice on how to reduce and avoid losses. These methods were not applied correctly, though.

These businesses are distinguished by a high degree of insurable risk avoidance, inadequate levels of loss avoidance and management, and low transfer risk (Rejd, 2003). The majority of insurance providers receive coverage for all risk able events without prior conducting an appropriate examination of the customer's expected entitlements and do not have mechanisms in place to identify various risk mitigation methods. They are accumulating claims from customers, resulting in increased losses and a continuous increase in loss ratios, which impacts their earnings potential (Wani & Dar, 2015).

Every business involves some level of risk, but those that incorporate suitable risk management techniques into performance management and business planning have a higher chance of achieving their operational and strategic objectives. Insurance companies thrive on risk, and taking on risks is a necessary part of doing business. As a result, the goal of insurance is to minimize any potential negative effects on performance and achieve an appropriate risk-return ratio. This means that to succeed in a extremely viable and dynamic insurance market, more dynamic and strong risk management strategies are needed, leading to competitive advantage and, in turn, increased profits (Obudho, 2014).

Over the past decade, investors and financial firms have experienced improved precariousness in foremost markets plus financial instrument marketplaces, resulting in several monetary disasters. The revolution in technology has brought about modifications to the way markets operate, enhanced information availability, altered services offered to stockholders, and notable shifts in the creation and dissemination of financial sectors (Crouhy et al., 2006). To maintain a stable financial environment, insurance regulators collaborate with banking and other sector regulators. As a result, risk management is a concern for financial institutions and contemporary businesses, who see the implementation of a strong risk management program as a crucial aspect of corporate responsibility. They also believe that a nation's financial solidity is reflected in the insurance sector (Obudho, 2014).

According to Jacques & Nigro (1997), business risk includes the risk of bankruptcy. However, this period has been extended to include the risk that the company cannot satisfy previous claims with the liquid assets it generates, which are affected through the following factors the of net cash flows, the amount of fixed debt, and the conditions of the business.

Business risk is an additional variable that affects the net cash flows of equity owners because it is a fixed expense debt financing and cash subletting (Wani & Dar, 2015). The word "Business risk" is used to describe a variety of risk categories connected to financial dealings. This can also be defined by way of, the potential for investors to miss their cash if they fund a business whose cash flows are insufficient to cover its mature debt (Wani & Dar, 2015). Therefore, this study's main goal is to explore how business risk affects performance of Ethiopian Insurance Corporation.

1.2. Organizational Background

By proclamation No. 68/1975, Ethiopian Insurance Corporation (EIC) was founded in 1976. With Birr 11 million (USD 1.29 million) in paid-up capital, the thirteen nationalized private insurance companies' assets and liabilities were all assumed by the Corporation when it was founded. Its goals are as follows.

- Participate in all insurance-related activities in Ethiopia.
- Make sure majority of the people can access the insurance services.

Encourage the effective use financial and material resources, subject to the guidelines in Article 18 of the HSB establishment proclamation No. 60/1975.

As the only insurer owned by the state, EIC ran the company for roughly nineteen years under a protected monopolistic system. A significant transition from totalitarianism to liberalism occurred in the political, economic, and social spheres when the Marxist government collapsed in the middle of 1991. As a result, EIC was reestablished as a public enterprise with paid up capital of Birr 61 million (USD 7.13 million) under proclamation number 201/94.

After the Corporation was reestablished as a state-owned enterprise in 1994, the following new objectives are covered by law:

- Participate in the operating activity of execution on insurance industries.
- Participate in any additional relevant activities that will help it achieve its goals.

1.3. Statement of the problem

In delivering indemnification and financial amenities, we commence a variety of actuary and business risk. Issuing insurance contracts plus other debt financing involves risks. There is a risk that a company is paying too much for the funds it has received, or that the compensation it is getting for the loss it has accepted is insufficient. When investing these funds in securities that are actively traded, an insurance company should anticipate, on average, derive zero net economic return from these securities. Therefore, if an insurance company overpays, it can't be expected to make a pleasing turnover in the extended period.

The study suggests that insurance companies' performance was positively and significantly impacted by liquidity risk. (Wani & Dar, 2015). Nonetheless, the outcome demonstrated that a liquidity risk obligated a detrimental influence on insurance companies' performance (Obudho, 2014). On other hand, Mirie (2015) discovered that liquidity risk obligated no appreciable impact on the insurance company's performance.

(Claudio, 2009) verified the under-writing risk required no appreciable impact on insurance company's performance. Meanwhile, (Hifza, 2011); (Emine, 2015); Ana & Ghiorghe (2014); and (Ijaz, 2015) Research suggested that under-writing risk significantly and negatively impacted insurance companies' performance. Previous empirical findings examining the influence of business risk on insurance companies' performances in different parts of the world show varying results while utilizing the same variables. Prior studies, like (Yuvaraj & Abat, 2013); (Meaza, 2014); (Daniel & Tilahun, 2013) shown on element of profitability in Ethiopian insurance companies.

Though, each of this research neglected to focus on primarily the impact of business risk part, retaining credit risk, solvency risk, technical provision risk, and re-insurance risks; all these researchers focus on secondary data source, and they didn't practice a time series data structure. Alternative study led by (Mistre, 2015) technical provision credit risk variables were not taken into consideration when determining the profitability of Ethiopian insurance companies. Correspondingly, (Suheyli, 2015) had conducted research on the same subject, nevertheless the research didn't look at how solvency and credit risk affected Ethiopian insurance companies' performance. Hereafter, The National Bank of Ethiopia partakes also placed a strong emphasis on monitoring inherent risks, that are recognized for having an effect on the Ethiopian

insurance companies' performance. These risks include credit risk, liquidity risk, re-insurance risk, technical provisions risk, and under-writing risk. Consequently, owing the importance of the business risk issue and the dearth of empirical research on Ethiopian insurance corporation relating towards this issue, and integrating serious business risk temperamental seems to be what driven the researcher to investigate the impact on Ethiopian Insurance Corporation's performance.

1.4. Research Question

The problem statement provided above served as the basis for the research questions that the researcher developed.

- What is the performance of Ethiopian insurance corporation, and its business risks trend seems to be?
- What are the effects of business risks on Ethiopian insurance corporation performance?
- What are the effects of macro-economic variables such as interest rate, inflation, and exchange rate on Ethiopian insurance corporation performance?

1.5. Objective of the Study

1.5.1. General Objective

The general objective of the study is to evaluate the effect of business risk on financial performance of Ethiopian insurance corporation to address the research questions above.

1.5.2. Specific Objectives

The following are the study's specific objectives:

- To evaluate the trend of Ethiopian insurance corporation's performance in line with the business risk variables.
- To explore the effects of credit, liquidity, and re-insurance risk on Ethiopian insurance corporation's performance.
- To analyze the effect of macro-economic variables including inflation, exchange and interest rate on Ethiopian insurance corporation's performance.

1.6. Significance of the Study

The conclusions that resulted from this study will be advantageous to numerous parties, including the following organs:

Management of the corporation: The administration might find something of interest in determining what constitutes accomplishments and shortcomings indicators, acting to enhance company's appearance, and making best choices.

Government: Executives may be concerned about taking the required actions to prevent bankruptcy crises in these businesses.

Regulator: This study gives the National Bank of Ethiopia a better understanding of the factors influencing Ethiopian Insurance Corporation's performance, which it may use as a reference.

Investors: Such studies may pique the interest of investors who want to safeguard their capital and allocate it to the best options.

Customers and policy Holders: Based on the company's success indicators, customers might be curious to know about EICs' capacity to fulfill their financial obligations.

Academician: Academicians may have the opportunity to learn about the seriousness of business risk issues facing insurance companies, assisting students in becoming acquainted with the subject and identifying a solution for their educational process. Furthermore, this study will help shed light on how to determine the factors that influence Ethiopian insurance corporations' performance. Furthermore, it is critical in helping policy makers, business professionals, insurance managers, and business initiatives. In addition, the study provides future researchers with a foundation for additional study in the area.

1.7. Scope of the Study

The study was carried out at the Ethiopian Insurance Corporation. Because out of all 18 insurance companies registered in Ethiopia, the Ethiopian Insurance Corporation holds a market share of 42%; it consumed 15 years of data spanning from 2008 to 2022 G.C. By having this, the study used inherent risk variables which are isolated by National Bank of Ethiopia. Those variables have specific minimum and maximum standards. These standards are similar to international standards.

1.8. Limitation of the Study

The researcher faces several limitations while accompanying this study. The first and most challenging limitation was the unavailability of large size of financial data of the corporation. To deal with a detailed variability, the researcher was interested in using monthly or quarterly data. But, due to its confidentiality, the study was unable to use monthly/quarterly data. To manage this problem, the study used all available yearly data of the corporation.

1.9. Organization of the Paper

The contents of the study will be arranged as follows: The study's background and introduction, statement of the problem, research questions, scope, and limitations were all included in the first chapter. A review of theoretical, empirical, and conceptual literature pertaining to business risk in insurance businesses was provided in the second chapter. The research design, methodology, and interpretation techniques were the main topics of discussion in the third chapter. Furthermore, chapter four included the study's main discussion and conclusions. Important findings, conclusions, and suggestions were summarized in the last chapter.

CHAPTER TWO

2. LITERATURE REVIEW

This section reviews the compositions of theoretical and empirical aspects of how business risk affects the performance of insurance businesses. Because of this, the preliminary section described risk management theory and provided theoretical research regarding numerous business hazards in insurance. It displayed the link between financial risks and business performance next to these. Several empirical investigations enclosed in the subsequent section. The tertiary segment describes the gaps in the body of literature, while the fourth part presents the conceptual framework.

2.1 Theoretical Literature

2.1.1 Meaning of Risk

As Ralph (2000) outlined risk as the presence of ambiguity regarding potential consequences. Risk has a significant role in economic life because individuals and companies invest irreversibly in R&D, real estate, machinery, stock, and human resource exclusive of perceptive if the coming cash inflows from the above listed investments sufficient to settle their commitment and reward to stockholders. If the returns expected from these actual investments don't materialize, as a result of these returns, the financial claims will lose value.

2.1.2 Meaning of Business Risk

According to Holten (2004), one common definition of business risk is the unforeseen volatility or instability of yields and therefore includes market risk, liquidity risk, and credit risk. In this context, (Kithinji, 2010) similarly states Practices for business risk management consist of steps and protocols used by management to keep an organization from inherent risk. Organization risk management practices can be divided in to three main categories such as credit risk management practices, liquidity risk management practices, and market risk. 4,444 insurance companies are actively performing their activities in the risk business. Besides In delivering insurance and financial amenities, we commence a variety of actuary and business risk. Issuing insurance contracts plus other debt financing involves risks. The risk involved in the transaction of an insurance company's products, i.e. The insurance company does not bear

all the costs directly associated with the products it offers customers to protect them against actuarial risks. Financial institutions often remove or reduce the actuary and business risks associated with transactions through good business practices. Additional ways to transfer risk to the other parties include combining product design, pricing, and reinsurance. The only risks that are at management's expense are those that are not removed or transferred to others. This is due to the insurance industry's recognition that this is appropriate (Anthony and David, 1997).

2.1.3 Business Risk in Insurance

Risks related to a company's business operations, like credit risk, re-insurance risk, market risk, solvency risk, provisional reserve risk, liquidity risk, and under-writing risk, are examples of business risks connected to the provision of insurance services. These risks are discussed in more detail in the following subsections.

2.1.4 Credit Risk

As stated in Anthony and David, (1997), the risk is that the borrower will default. Credit risk may arise because the borrower is unable or unwilling to provide the services agreed to in the contract. Furthermore, (Gerald and Ulrike, 2001). explains that the risk which a counterparty won't stay able to encounter the aforementioned commitments is what's commonly referred to as credit risk. Even when a counterparty performs as agreed, a downgrade in rating could reduce the value of certain products. As a result, insurers are always exposed to credit risk if deviations in the economic policy environment adversely affect the credit quality of their investment assets. Mortgage loans also involve credit risk, which must be appropriately evaluated by using internal grading. In order to effectively manage credit risk, insurers must first avoid concentration risks (such as concentration of investments in specific investment categories and low portfolio management) and work toward the highest possible level of investment diversification.

Bestowing to risk management policy of NBE (2013), Credit risk is the possibility of suffering a financial loss even if securities or other property are realized as a result of the debtor's inability to pay the company's debts. Areas of credit risk include default risks associated with insurance companies' fixed income portfolios and other secure income investments, commercial debtors, risks of derivative contract, and default risks of the loans or the obligations

of insured contains risks. The biggest hazard arising from a weakened loan portfolio is liquidity impairment. For the majority of businesses, since financing through loans and investments plays a significant role in their operations, policy-holders' and share-holders' risks determine the quality of a financial institution's loan portfolio.

Areas of Concentration for Credit Risk

The following are the areas which NBE (2013), concentrate on credit risk have been identified by the risk management guidelines.

Lending activities: Almost always, when credit is given, collateral is required (e.g. Bond). The insurer is obviously taking a credit risk when investing in any bonds, debentures, or other proof of debt. Undoubtedly, this type of investment is a significant straight point of credit risk for an assurer.

Debtors: The credit risk stems from the possibility that policyholders won't pay their premiums on time, regardless of the existence of a first-class funding option and whether such a middleman was used to write the contract.

Re-insurance: Reinsurers are frequently a major source of claim reimbursement for insurers, particularly general insurers. Since there can be a large amount of credit risk associated with re-insurance, it is imperative that insurers set formal guidelines for choosing reinsurers.

2.1.4.1 Credit Risk Management

Hence (NBE, 2013) discussed that One of the most important aspects of harmless and secure corporate management is controlling credit risk. Creating a credit history is indispensable to sound credit risk management:

- Determining the current or potential credit risks to which the business is exposed when making loans as well as investments, on/off the balance sheet, producing tapping into place sensible credit policies to efficiently manage as well as mitigate these risks.
- Forming and putting into practice capable processes for credit approval, certification, and gathering.
- Creating and placing obsessed by repetition protocols to efficiently monitor and regulate the composition, attributes, and caliber of the credit portfolio; additionally,

creating procedures to handle problematic accounts.

2.1.5 Liquidity Risk

(Liargovas and Skandalis, 2008) described liquidity risk as the extent in which commitments payable within the succeeding 12 months will be settled with cash or other assets converted to cash. It's typically calculated through using current assets divided by current liabilities. This indicates that productiveness' quickly converts assets into cash. By doing so, it displays the organization's ability to cope with business assets, if maintained at standard levels. When external financing is either unavailable or prohibitively expensive, companies can utilize liquid assets as a means of funding their operations and investments. Conversely, an extreme liquidity enables businesses to meet obligations and handle unforeseen events when profits are low. (Gerald and Ulrike, 2001) The risk of not having enough money to pay bills on time is known as liquidity risk. How soon and how much an investment conceivably turned into cash determines its liquidity. But a few variables which influence the degree of liquidity risk determine whether an investment can be turned into cash.

Apart from the prevailing market circumstances requiring withdrawal of investments in adverse circumstances, unforeseen circumstances may arise due to credit downgrades, adverse publicity (just or unjust), or reports of problems with the same or similar other companies. may occur. This may create unnecessary liquidity requirements. Business details (Gerald and Ulrike, 2001). Maintaining high levels of liquidness can affect the administration discipline in investment and under-writing activities. Furthermore, Agency cost theory states that since managers can use liquid assets as leverage, high asset liquidity can result in higher agency costs for owners. Additionally, Because the proceeds from current assets must be reinvested in a comparatively short amount of time, there is a higher recapitalization risk associated with them. Undoubtedly, re-investment risks will weigh on performance of the companies. Therefore, less liquid insurance company is probably going to do better. In this scenario than more liquid insurance company. Still, if the right steps are taken, agency costs and reinvestment risks can be effectively reduced (Adams and M. Buckle, 2000).

(Anthony and David, 1997) termed the risk of a funding gap as liquidity risk. As the requirement for a growth strategy may be included. Here, the probability is further accurately understood identical to the possibility of a funding catastrophe. In this situations, unforeseen

events such as large losses, asset write-offs, loss of confidence, and legal crises inevitably occur. The insurance company operates in a market where insurance claims are increasing due to mass surrenders and cancellation requests of insurance policies due to natural disasters and changes in interest rates, so its liabilities are reasonably liquid. However, their assets may be less liquid, especially when investing in private equity or bonds. Considering this circumstance, it's significant for insurance companies towards having satisfactory liquidity to certainly meet their cash needs. Otherwise, insurance companies would otherwise become solvent in the absence of sudden cash needs would have to sell non-liquid assets at preferential amounts, incurring huge sufferers, creating additional financial needs, risking bankruptcy and goes to termination. Possibilities may arise. As stated in NBE's Risk Management Policy (2013), Under typical or expected business conditions, operational liquidity, also known as cash management, provides for daily cash needs. Strategic liquidity considers both temporary and persistent liquidity requirements long with the possibility of various unanticipated and possibly unfavorable business conditions. Given its potential to affect a company's final profitability, strategic liquidity is a crucial component of asset liability management. The accessibility of money, otherwise the guarantee which their would-be enough money to cover each cash inflow/outflow obligation. When they're due, is known as liquidity. refers to the fact that these responsibilities are usually satisfied by cash inflows, which are augmented by easily convertible assets otherwise by Possibility of borrowing for the business money. Mismatched capital besides interest payment streams pertaining to balance sheet items increase the probability of illiquidity (NBE, 2013).

Liquidity Risk Management

According to NBE (2013) risk management guideline satisfies the following liquidity risk management practices;

- Among the most crucial aspects of safe and sound company management is managing liquidity.
- Cautionary management of assets and liabilities in the balance sheet, is a key component of sound liquidity management. It guarantees that the size of impending cash outflows and inflows are appropriately matched.
- Liquidity forecasting evaluates prospective future needs for liquidity while taking into

account a range of potential alterations to the political, regulatory, market, economic, and other internal and external factors.

- When it comes to wide-ranging assurance, the unpredictable nature of cash-flow requirements mutually in respect of amount and the moment of payments would undoubtedly bear a big influence on figuring out liquidity requirements.
- Identification of known, anticipated, and potential cash outflows as well as consideration of alternative business management techniques are all part of planning for liquidity needs. This ensures that the company will have enough cash inflows to cover these needs.

2.1.6 Re-insurance Risk

Higher reliance on re-insurance is typically associated with lower firm profitability for insurers. An insurer that transfers more business to reinsurers while maintaining a lower retention rate may function more similar a re-insurance dealer, transferring risk exclusive of taking on under-writing risk besides probably reporting a lower profit margin because reinsurers receive a comparatively large portion of the premiums received (Lee, 2012). (Cummins et al, 2008) examined the advantages and disadvantages of re-insurance for a trial of estate liability under-writers in the United States. The findings indicate that while purchasing re-insurance considerably raises the insurer's expenses, it also significantly lowers the loss ratio's volatility. Insurers consent to pay greater indemnification production outlays with the intention of reduce their under-writing risk in exchange for re-insurance.

As per Suheyli (2015), For instance, re-insurance is typically purchased by insurance companies in order to protect themselves against catastrophic losses, boost under-writing capacity, and stabilize earnings. Re-insurance does, however, come with a price. Because of this, insurance companies need to figure out how much to cede and must balance lowering the risk of insolvency with lowering the possibility of profitability. While it boosts operational stability, a greater reliance on reinsurance—that is, a lower retention level—reduces potential profitability. Reinsurance lowers the risk of insolvency for insurers through steadying damage experience, increasing capability, restricting obligation on distinct risks, either or both providing catastrophe safeguard. But it costs money to shift risk to re-insurers. An insurer may incur much higher reinsurance costs than the risk transferred actuarial price.

Reinsurers are frequently a major source of claim reimbursement for insurers, particularly general insurers. The credit risk associated with reinsurance, among other things, can be very high, so it's imperative that insurers set formal guidelines for choosing reinsurers. Factors hereafter considered in the re-insurance loss management method include the practice of re-insurance in wealth management, the schedule of re-insurance premium outgoings besides dues in liquidity supervision, and the connection linking the re-insurance plan, pricing and under-writing management (NBE, 2013).

2.1.6.1. Functions of Re-insurance

At the moment that presented by Munich (2010) the greatest typical justifications for getting re-insurance are:

Capacity reassurance- permits the re-insured to engrave bigger protection policies.

Disaster assurance- shields the re-insured in apposition to several bulky losses or a particular disastrous damage.

Stabilization- aids in reducing the re-insured's annual operating results overall.

Surplus Relief- reduces the pressure on the surplus of the re-insured during the sharp rise in premiums.

Market exit- provides a means for the re-insured to leave a specific industry, region, or source of production.

Market Entry- It assists the re-insured in spreading the risk on new lines of business then able to propose guarantee when in unacquainted indemnification domain, up until a certain point of maturity.

Experience- gives the re-insured access to under-writing data when creating a new product, branching out into a new insurance market, or launching a new line of insurance.

Re-insurance is something that insurance companies buy to stabilize their under-writing results, increase their ability to write insurance contracts, and offer financial security. Financial soundness and observance to appropriate re-insurance risk management guidelines and actions correspond with one another. An assessment of risk level may be raised if such policies and procedures are not followed. Impaired capital or liquidity are the main risks which result from flaws in a business's re-insurance risk control strategy (NBE, 2013).

2.1.6.2. Re-insurance Risk Management

As specified by NBE (2013) For each business to fulfill the goals of its re-insurance risk control method, a thorough re-insurance plan ought to be created. As it develops the re-insurance program, the company should take into account that re-insurance arrangements (such as the use of excess contracts, stop loss policies, quota share re-insurance, or excess of loss coverage) are best suited to reducing risks that exceed one's acceptance. It ought to also determine its acceptance to risks in its under-writing registration sheet. The Insurance Supervision Directorate (ISD) should document and approve the re-insurance program. A thorough re-insurance risk management program is necessary, even though the specifics of re-insurance risk management will vary amongst businesses based on the type and complexity of their under-writing books:

- Determining when re-insurance is necessary to reduce risk for a business.
- Choosing suitable intermediaries and counterparties for reinsurance to enable risk transfer.
- Choosing suitable re-insurance contracts.
- Creating, registering, and maintaining efficient procedures for re-insurance operations.
- Creating and putting into place thorough processes to efficiently oversee and manage the re-insurance operations.

2.1.7 Market Risk

It is a corporation's vulnerability towards the impact of price fluctuations on the valuation of the particular investment, both off-balance sheet and on the balance sheet. A variety of elements, including those that are exclusive to a specific financial instrument or collection of financial instruments as a whole can cause price changes. Furthermore, the magnitude of the investment situation, in addition the amount of fee motion intervening the purchase date and any subsequent re-evaluation or sale date, as applicable, determine the impact of the price change (NBE, 2013).

2.1.8 Investments Portfolio Management Program

As enlightened by (NBE, 2013), a company's safe and sound management fundamentally depends on its ability to manage its investment portfolio. Sound investment portfolio management entails controlling risks associated with investments across a range of factors, including quality, marketability, volatility, maturity, portfolio concentration/diversification, type, along with the requirement to conserve sufficient cash and stock. Even though the specifics of financial instruments portfolio management vary amongst corporations based on the type along with the intricacy of their financial pursuits. A comprehensive program for managing a collection of investment is needs:

- Creating besides putting into practice sensible guidelines to accomplish the collection of investment portfolio, investment actions, and loss positioning.
- Forming besides putting into place efficient procedures for managing investment portfolios that control authority and decision-making. and
- Generating and putting into place thorough processes to efficiently monitor and regulate the composition, attributes, and caliber a collection of investment as well as the degree of situation risk taken on.

2.1.9 Solvency Risk

As demarcated by AARDLB (2010) the definition of solvency is having enough worth in your company's assets to pay off all of your liabilities. This explanation indicates that a company partakes favorable worth since assets = liabilities + equity in the accounting formula. A company is deemed insolvent if its equity falls to zero. If an organization is not generating adequate cash movement to meet the organizations obligation requirements in ahead of schedule, organizations insolvency is just around the corner.

The capacity of an organization to fulfill its long-term fixed costs as well as achieve long-term growth and expansion is known as its solvency. A solvency ratio above twenty percent is regarded as sound financially. Higher premiums are demanded by companies with stronger financial standing, as determined by insurance rating agencies, according to research on the property-liability insurance market (Sommer, 1996).

Similarly, (Cummins and Nini, 2002) imply that higher rated insurers receive higher returns because they are seen as safer. It is anticipated that the insurer's solvency margin will positively correlate with its financial performance, as prospective clients use the insurer's financial stability as a benchmark. Likewise, (Charumathi, 2012) assert that the available solvency ratio is the variance within the worth of assets along with liabilities of policyholders' and shareholders' funds, including insurance liabilities.

According to SAM (2009) explanation, an insurer's solvency refers to its capacity to fulfill its liabilities, or commitments, under each contract at any given time. Because of the very nature of the insurance industry, solvency cannot be guaranteed with any degree of certainty. In order to arrive at a workable definition, it must be made clear under what conditions the suitability of the assets to satisfy claims is to be taken into account. For example, is it solitary published business that needs to-be taken into account if not it also forthcoming new-fangled enterprises. Additionally, it is important to think about issues like the size and type of the operations of an insurance corporation, the appropriate temporal prospect for use, along with how satisfactory a level of insolvency likelihood to set. On a going-concern basis, financial health is evaluated by capital adequacy; on a runoff basis, financial health is evaluated by solvency.

The quantity and condition of insurers' capital sufficiency is described by the solvency of the assurance service categories as expressed through the creditworthiness sideline. The amount of capital required by an insurance service to cover potential costs resulting from the occurrence of unforeseen events is known as the solvency margin. When all the calculations are taken into account, one of the most delicate issues in lifetime assurance firms is the solvency of the business. The proportion of the business's credit rating to the necessary levels of solvency is used to calculate the solvency measure, which is the amount of money required to make all of the insurers' commitments possibly will be sort out in their improvement (Jasmina, 2003).

Simultaneously (Jasmina, 2003) clarification, Higher solvency margin insurance companies are thought to have stronger financial standing. Insurance firms with strong financial standing are better able to draw in new customers and follow the rules regarding under-writing. Higher solvency margin insurance companies perform better than lower solvency margin insurance companies.

2.1.10 Technical Provisions Risk

While discussed by (Jasmina, 2003) there is a chance that technical provisions will be either excessive or insufficient. If provisions are set lower than what is actually needed, this could give the impression that the company is in better financial shape than it actually is. This could lead to the making of unsuitable under-writing choices. For instance, higher levels of business may be written, or riskier insurance coverage might be under-written on the grounds that there is additional wealth at hand to support them than is literally the case. Technical provisions also have an impact on the insurer solvency assessment. To ensure an accurate assessment of the technical reserve level, an experienced actuary must select a suitable method as part of the valuation process.

Premiums are collected in advance by insurance companies, who then preserve them in provisional accounts for potential entitlement payments. Pretend that, the majority of the premiums that insurance companies collect are held in two primary accounts in connection with liability part of the balance-sheet: unearned premium reserves along with outstanding claims. Since the extent and scheduling of the cash in/outflows are unknown, unpaid claims provision is regarded as riskier than regular long-term corporate debt (Shiu, 2004).

(Giovanni, 2001) noted that undervaluing technical provisions is undoubtedly a provisional risk to the creditworthiness of insurance corporations. This risk relates to the companies' inability, as a result of inadequate technical provisions, to fulfill their obligations to the insured and claimants. Therefore, in order to prevent the risk of having insufficient technical provisions, both companies and supervisory authorities should adopt prudential (must be read in light of the precise and detailed methods for computing the technical provisions that are detailed in the document) calculation procedures and methodologies when setting up the provisions. If having adequate technical resources is a essential form for the corporation's viability, then the degree of consistency between the approaches used in different nations is also crucial.

The amount of money that insurance companies have set aside as technical reserves ensures that all of their obligations will be settled. The insured's premium payment forms the basis of technical provisions. Risk insurance coverage is provided by calculating the insured's premium payments. It is required of the insurer to set aside a portion of each premium payment as funds for technical provisions (Jasmina, 2003).

Conferring to NBE (2013) there is a chance that the company will understate its obligation to policyholders. The possibility of understating liability is clearly a concern from the standpoint of financial safety and soundness, as any such understatement may make the insurer unable to fulfill all of its duties to the public. Therefore, reducing the possibility of liability understatement will be the main focus.

2.1.11 Under-writing Risk

The possibility that the amount received will not be enough to pay for the expense of indemnification is known as under-writing risk. Estimates of anticipated claim costs as well as the expenses associated with issuing and managing the policy are used to set insurance rates. In the end, it's possible that the estimations and presumptions used to create policy pricing were incorrect. This could be the result of incorrect assumptions, shifting legal landscapes, longer life spans, and more frequent than anticipated weather disasters (Jasmina, 2003).

As stated by Adams and Buckle (2003) The ratio of gross claims to gross written premium is used to compute the loss ratio, is used to measure under-writing risk, which highlights the effectiveness of the insurers' under-writing activity. Under-writing risk is a measure of how well insurers performs under-writing.

Instability in an insurance corporation's under-writing operation is indicated by large swings in net premiums written. The company may be using termed "cashflow under-writing" in an effort to continue its' financial difficulties if there is an unusual increase in net premiums written. Still, this isn't always the case. If it's supplemented by sufficient keeping, success, activities, along with a constant products-mix, an unexpected increase in net premiums written may be a sign of advantageous business expansion (NAIC, 2015).

As cited by Arif and Showket (2015) Under-writing standards are essential to the financial health of an insurer. The life insurers' appetite for risk determines the under-writing risk. As per Fama and Jensen (1983) for example, businesses that take part in riskier movements are probably going to own more erratic cash-flows compared to businesses with management that is less risk-taking. Consequently, since taking on too much under-writing risk can have a detrimental effect on the stability of the company through increased expenses, an adverse relationship in the middle of under-writing risk together with insurers' performance of financial activities are anticipated.

Similarly, (Arif and Showket (2015) High yearly insurance losses will typically cause insurance companies to raise their ex-post corporate management costs (such as those associated with loss adjustment and claims investigation), which could worsen a failure in their announced financial performance. By go against, protection providers and reinsurers who experience lesser-than-anticipated periodic loss are probably going to perform healthier financially whereas, by way of illustration, their monitoring and claim handling expenses aren't as high. Under-writing also refers to the process of rejecting risks that do not meet the insurer's under-writing requirements and choosing specific risk categories that have historically generated a profit. A good loss ratio is typically the result of careful risk selection and under-writing. This indicates that the insurer makes money off of the premiums collected less losses and expenses. Under-writing all risks thoroughly is necessary for insurers to prevent adverse selection. Selecting against the insurance company is known as adverse selection. It is the propensity of insureds to buy insurance when their chance of loss is higher than average.

The process of assessing an insurance subject—be it a person, piece of property, occupation, company, or variant institution and choosing if one should obtain insurance it is known as under-writing. Under-writing forms the cornerstone of the insurance transaction process. The activity of evaluating the policy holder to see if they represent a well-qualified risk, and if so, what percentage they ought to be recognized is known as under-writing. Not all applicants can be accepted by insurers. Ensuring that an insurer can fulfill all contractual obligations under its current policies is an obligation it owes to its policyholders. If an insurance corporation issues policies on customers who signify risks that are not coverable by insurance or that require premiums higher than what the insurer will pay, it jeopardizes the insurer's ability to carry out its predetermined commitments (Temecula, 2001)

A for-profit insurer, on the other hand, is motivated by both financial gain and policyholder growth. An insurer does not wish to turn away applicants needlessly. Every one of these elements needs to be considered during the under-writing procedure. In the process of under-writing, insurers are not the only ones who suffer losses. On occasion, they are the issue. For instance, it used to be legal for insurers to approve policies based on post-claim under-writing. When applicants tried to file claims, the company vigorously investigated their application to show that they had not disclosed a condition sufficiently. However, the company did accept applicants with little to no real under-writing. The insurance would then be rescinded (cancelled) by the company rather than being paid for the claim that the applicant had misrepresented a condition (Temecula, 2001).

Determining the premium (also known as pricing risk) and occurrence risk are two risks associated with under-writing. Pricing risk exists because there's a chance that claims and expenses will exceed premiums paid before the insured event happens. It could also be referred to as the risk of inadequate or shortage of protection payments because it suggests that the percentage of damage incidence has altered from what was anticipated when premiums were set. Given the likelihood that the insurer won't make enough money from premiums to pay claims, it is also known as premium risk. Risks associated with property and liability pricing also include catastrophe risks resulting from unusual occurrences that are not adequately mitigated by reserve or premium risk. Risks associated with life insurance pricing include biometric risk (death, longevity, morbidity, and disability) and withdrawal risk **(**Jakovcevic and Mihelja 2014).

In addition to the above, **(**Jakovcevic and Mihelja 2014) stated that under-writing risks are a part of the insurance company's business operations. Any insurance contract carries the risk that there will be an insured event and a surprisingly high number of consequential losses. Under-writing risk, which relates to the uncertainty of insurance, is random and hence unpredictable by nature of protection contracts. The insurance agreement is a legitimate agreement whereby the policy-holder admits to pay the protection coverage premium and the underwriter agrees to reimburse the policyholder in the event that the insured event occurs.

2.1.11.1. Under-writing Risk Management

According to NBE (2013) Controlling under-writing risk is essential to maintaining an insurer's safety and soundness. A company's risk/reward relationship must be prudently managed, and sound under-writing, and risk management require knowledge of the risk. As a basic element and procedures intended to quantify the risk exposure at different points in time throughout the insurance cycle, a thorough under-writing and risk management program is required. despite the fact that under-writing specifications will differ between businesses based on the kind and complexity of their products as well as how they are sold and supported,

- Continuous evaluation of claims is necessary; and
- The business takes on insurance risks.
- Material changes in insurance vulnerability necessitate under-writing or risk restriction.
- Claims need to be approved.
- A material changes in the company's ability to accept insurance risk.

It is imperative for businesses to create policies that adequately handle and regulate liability during these pivotal moments in the insurance sequence. Effective risk management for under-writing management necessitates:

- Creating, recording, and putting into practice efficient procedures for managing product options, under-writing, and claim adjudication; and
- Creating and putting into place thorough processes to efficiently track and manage the types and attributes of insurance risks taken on or claims authorized.

2.1.12 Risk Management Theory

Risk management is the process of identifying, evaluating, and prioritizing risks in order to minimize the possibility and/or impact of unfavorable events or to maximize the realization of opportunities. This is followed by the efficient and well-coordinated use of resources. Efficient risk management has the potential to yield extensive advantages for all types of organizations, be they public or private, big, or small. Better financial performance, a stronger foundation for strategy formulation, enhanced provision of service, a stronger advantage over competitive, reduced time invested fighting fires also fewer unpleasant amazements, advanced chance that a modification initiative will be implemented, Some of these benefits include a stronger internal focus on completing the appropriate tasks, more efficient use of wealth, a decline in waste and fraud, better value for money, enhanced innovation, and better management of conditional and conservation actions (Wenk, 2005).

2.1.13 Enterprise Risk Management Theory (ERM)

As indicated in Gordon et al, (2009), When a company decides to manage its risks, it can choose to handle each risk individually or all of its risks collectively in an entirely different manner. The latter strategy is frequently referred to as enterprise risk management (ERM). The goal of (ERM) is to control every danger that a business firms faces by taking a methodical and consistent approach. Furthermore, the process of controlling an organization's overall exposure to uncertainty, with an emphasis on spotting and averting situations that could potentially keep the organization from reaching its objective, is known as enterprise risk management.

Enterprise risk management is the system of detecting possible actions that could have an effect on an organization and handling risk to stand over inside its risk taste. It is used in strategy formulation and across the organization to give a reasonable level of assurance regarding the accomplishment of entity goals. It is carried out by the board of directors, management, and other staff members of the entity

2.1.14 Contingency Planning Theory

Among the most significant components of risk control mechanisms are contingency planning, or business continuity planning (CP). The underlying tenet of contingency planning (CP) is that residual risks will always exist because no risk can be completely eliminated in real life. Despite the organization's best efforts to alleviate, block, or keep away incidents, they will still happen. comparably the most advanced information security measures, which are intended to guarantee the secretiveness, truthfulness, and accessibility of data assets may be circumvented or overwhelmed by certain circumstances, amalgamations of unfavorable actions, or unanticipated pressures and susceptibilities (Ibrahim, 2018)

The entirety of actions, commands, procedures, procedures, etc. pertaining to significant occurrences and catastrophes is what is referred to as CP in the context of this study. It is the process of getting ready for significant events and catastrophes, creating adaptable plans, and gathering necessary resources that will be needed, whatever happens. The term "contingency" itself suggests that the resources and actions needed in the wake of significant events or catastrophes are dependent on the specifics of the events and catastrophes which occur. And in such a way, contingency planning (CP) entails being ready for anything unexpected. Reducing the negative effects or impacts of incidents and disasters is the main goal of CP (James and O. Kepha, 2013).

2.1.15 General overview of risk on insurance companies in Ethiopia

The National Bank of Ethiopia has conducted Business Process Reengineering (BPR) studies through the goal of attaining revolutionary and essential changes in all parts of its process (central and backing), and its implementations are currently well underway. One of the main initiatives undertaken by the BPR study in the area of supervision on insurance is the transition switching from risk-based to compliance-based oversight. In light of the aforementioned, strengthening RBS's infrastructure is crucial to the company's continued operation and necessitates the straight engagement, involvement, and cooperation of all stake-holders. The first draft of the risk management guidelines for eight frequently recognized risks that are regarded as inherent and significant to insurers has been put together by the Insurance Supervision Directorate (ISD). The management team, internal control system, board of directors, and other relevant groups have clear roles to play in the process of managing these

risks NBE (2013).

Adequate attention has also been given to the necessity of developing a risk management philosophy, strategies, policies, and procedures. First, this policy should be sent to every insurance company for feedback. Second, following the inclusion of pertinent insurer feedback on the guidelines, a final draft will be made available to all insurance providers for use as a model in creating their own inherent and substantial risk management plans (RMPs), subject to Bank approval once more NBE (2013).

It is required of all insurance companies to create Risk Management Plans (RMPs) that function as a suitable benchmark for evaluating and ranking their risk management strategies, which primarily address major and inherent risks. In summary, risks are always present in insurance operations in one way or another because of their inherent nature and significant impact. The degree to which an insurance company reduces these risks will determine whether the risk exposure falls into the low or moderate risk categories. Conversely, inadequate handling of the risk level would result from minimal inherent risks to increase and move from the reasonable to the risky class. ISD and protection providers be capable of then managing "net risks" in accordance with the widely accepted risk measurement guidelines that are incorporated into the RMPs. In conclusion, risk management requires continuous effort because it is not a one-time event NBE (2013).

As a result, the entire purpose of this document is focused on managing inherent and substantial risks to ensure the security and reliability of insurance corporations' continuing operations, which in turn allows the industry to continue to contribute to the nation's economic development. Regarding dimensions, intricacy, and hazards attributes, every insurer is different. These variations will be reflected in the genuine guidelines and techniques that the boards of directors adopt. The ISD has prepared specific lowest standards for inherent and substantial risks, some of which are credit risk, market risk, liquidity risk, under-writing risk, technical Reserves risk, operational and technological risk, contagion and related party risk, and re-insurance risk NBE (2013). Furthermore, the first re-insurance company in the nation has formally started operations, as reported by the Capital newspaper on September 5, 2016, regarding the newly established Ethiopian Re-insurance share company. August 23, 2016, E.C., the company made the announcement. The National Bank of Ethiopia's most recent directive, number SRB/1/2014, required all regional insurance providers in the nation to set

aside 25% of their re-insurance payout.

2.1.16 Performance of Insurance Companies

In the past few decades have perceived a surge in the measurement of insurance organizations' performance, as the industry not only offers a means of saving money but also acts as a conduit for money to be moved from surplus to deficit sectors of the economy in order to support investment activities. According to technical definitions, performance is a subjective metric that assesses how well an organization uses its resources to increase revenue. Performance is a useful tool for comparison for the success of various companies inside an industry or among businesses since it quantifies the organization's financial soundness and health in monetary terms. An economy's ability to prosper is ultimately dependent on the insurance industry's growth, which is largely dependent on the performance of the protection organizations. By taking on various risks, the insurance companies jeopardize their operations. The current study will examine a number of ratios, including solvency, liquidity, and profitability, in order to earn an innate though of how financial risk influences the profitability of insurance companies (Arif and Showket, 2015).

(Yuvaraj and Abate, 2013) stated that while there are a variety of ways to gauge profitability, ROA is the preferred method. Furthermore, net earned premium, under-writing profitability, annual earnings, return on investment, and equity are typically used to describe the financial performance of assurance enterprises. This system of measurement may be divided into two categories: investment and profit performance metrics. Nonetheless, the majority of insurance and financial success researchers claimed that ROA, which is calculated as before-tax profits divided by total assets, is the best as well as worthy measure of a corporation's financial success.

2.1.17 Business Risk and Performance in Insurance

While stated with Yuvaraj and Abate (2013) The business of insurance companies is taking on risks. These businesses handle a broad scope of risks around the world, along with these risks directly affecting their performance. When it comes to expanding the company's size, assets, and performance—which is gauged by returns—these risks end up being a bigger hindrance. Because of this, the organization's dire circumstances demand that a better strategy be implemented in the interest of recognizing the aforementioned risks along with create a useful structure or framework to manage them. Under-writing, market, credit, operational, liquidity, and strategic risks (reputation, compliance, or legal risk, agency risk.) are the major risks that impair the financial success of insurance companies. The majority of these risks fall under the general category of business risk.

Stated by Barges (1963) Business risk is outlined as the additional flexibility of the net cash movements of the equity owners resulting from the fitted financial commitment interacted to cash leasing and debt financing. Financial insolvency is another risk that is included in business risk. This concept will be expanded to include the risk of not being able to pay past claims with the firm's cash flow, which is determined by how net cash flows are allocated, the amount owed in fixed obligations, and the firm's liquid resource pool, though (Jacques and Nigro,1997). Likewise, (Allen and Santomero, 1997) described the ways in which price swings, interest rate swings, heightened struggle, and more deregulation have contributed to the significance of financial or corporate risks. Furthermore, the introduction of derivatives, which serve as hedging tools, has given organizations another option to shield themselves from the shocks of financial risks (Bartram et al, 2011).

Simplifying the definition, business risk can be thought of as a catch-all word for a variety of risks connected to financial businesses. This also be defined as the potential for stockholders to stop having cash in the event that they fund a business whose cash flows are insufficient to cover its mature debt (Arif and Showket, 2015).

2.2 Review of Empirical Studies

The study has examined a wide range of empirical studies about the effect of business risk on the financial performance of insurance companies by combining numerous studies conducted in developed, developing, and African nations.

2.2.1 The effect of business risk on financial performance of insurance companies

(Arif and Showket, 2015) explored the connection within financial performance and business risk in the Indian protection sector. Therefore, the target population for the study consisted of 24 life assurance organizations that are at this time active in the Indian assurance business; 8 of these organizations were chosen, and they are all private sector companies. Through the annual reports of the chosen insurance companies, they employed secondary sources of data. Six explanatory variables are examined intending to ascertain the reasons that impact the financial performance of the Indian protection market between 2005/06 and 2012/13: capital management risk, solvency risk, liquidity risk, under-writing risk, company size, along with capital size. Regarding the dependent variable, the Return on Assets Ratio (ROA) is employed to quantify the insurance companies' financial performance. Lastly, the multiple regression model results show that under-writing risk has an adverse but insignificant impact on the financial performance of life assurance organizations in India, while capital management risk and solvency risk have an adverse and significant connection with it. In contrast, liquidity risk, company size, as well as volume of capital show an optimistic and substantial correlation with the financial performance of life assurance organizations in the stated country.

(Ijaz, 2015) examined the macroeconomics and insurance industry profitability in Pakistan following the crisis. Firm size, financial leverage, under-writing risk, financial strength, growing potential, heterogeneousness, working capital management, the security exchange, and inflation were the independent factors, and profitability was the dependent variable. His final conclusions were that the subsequent features were mathematically important forecasters of insurance organizations financial success: working capital management, security exchange conditions, firm size, financial leverage, under-writing risk, financial strength, growth chances, heterogeneousness, and working capital management. The financial success of life assurance organizations is absolutely obstructed by financial leverage, under-writing risk, and relative

firm size, while the remaining variables have an adverse effect.

(Ana and Ghiorghe, 2014) conducted on factors influencing the financial performance of insurance companies in Romania. Consequently, 21 companies were included in the study, and the study period ran from 2008 - 2012. 13 descriptive factors were examined, including insurance financial leverage, company size, the duration in years the organization has been operating in Romania, development in under-written premiums, stock, total market share, heterogeneousness, under-writing risk, investment ratio, re-insurance dependency, retained earning risk ratio, creditworthiness, and GDP/capita development. Regarding the dependent factors, the ratio of return on total assets is used to assess the insurance companies' financial performance. The findings indicate that under-writing risk, leverage, as well as organization written premiums all have an adverse impact on the return on total assets ratio. Furthermore, the company's size, retained risk ratio, solvency margin, and return on total assets ratio have an optimistic correlation. The length of time the business has been in busine, stock, total market share, heterogeneousness, investment ratio, and growth in actual GDP do not significantly affect the insurers' financial performance.

Similarly, (Amal, 2012) discussed a prior study on the variables influencing Jordanian protection organization registered on the Amman Stock Exchange's financial performance. The aforementioned study included all twenty-five insurance organizations that were listed on the Amman Stock Exchange between 2002 and 2007. It used all of them as a research model and relied on secondary sources, such as records, papers, pertinent literature, financial statements and piece from Jordanian insurance firms, and the Amman Stock Exchange, to gather facts for the hypothetical basis of the dissertation and to clarify its fundamental thoughts. Financial performance as measured by calculating return on assets (ROA) was the dependent factor, whereas company leverage, liquidity, age, size, and management competence index were the independent factors. The gathered data was examined using a number of fundamental statistical methods, including multiple regression and the T-test. The results confirmed that while company age had no arithmetically imperative effect on the financial performance of insurance firms, the following variables (leverage, liquidity, size, and management competence index) had a constructive and substantial arithmetic consequence on the financial performance of Jordanian insurance firms.

(Hifza, 2011) examined the factors that influence profitability in Pakistani insurance firms by focusing on all of the country's insurance firms collectively. This study's sample consists of Thirty-Five listed general and life insurance organizations that operate between 2005 and 2009. Secondary data from State Bank of Pakistan financial publications, Insurance Yearbook published by Insurance Association of Pakistan (IAP), and insurance companies' financial statements. Return on assets (ROA), which is determined by dividing profit before tax by total assets, is a crucial metric for assessing the profitability of insurance businesses. Profitability was the dependent factor in the study, and the independent factors were the company's age, size, capital, leverage, and loss ratio. Using a quantitative analytical tool, he was able to demonstrate that there is a significant favorable correlation between the size of the company and financial success, while there is no correlation among profitability and the company's age. The outcome additionally demonstrated the importance of capital volume and its positive relationship with profitability. Profitability was negative but significantly correlated with both the loss ratio and the leverage ratio. Furthermore, his research revealed that the age of the company has no bearing on financial success.

(Emine, 2015) investigated how Turkish nonlife insurance organizations' profitability was altered by internal factors. As a result, the study's eight-year timeframe was from 2006 to 2013. 24 of the thirty-six nonlife insurance organizations that were active in Turkey in 2013 have been chosen for this research based on the availability of data. The company's size, age, loss ratio, insurance leverage ratio, current ratio, premium growth, auto insurance, and premium preservation are the independent factors that were tested. The success of nonlife insurance organizations was measured in this research using two variables. Technical profitability and the sales profitability were the two of these. The research's primary findings showed that, while profitability was statistically significant and inversely correlated with the company's age, loss ratio, and current ratio, it was absolutely connected with the size of the organization and the rate of premium growth for non-life insurance companies. Nevertheless, it was determined that neither the premium retention ratio nor the proportion of vehicle insurance in the firm’s insurance portfolio constituted significant explanatory factors. Furthermore, at the 5% point, there was a substantial correlation within the technical profitability ratio and the insurance leverage ratio. Nevertheless, there was no statistically significant correlation found within the leverage ratio as well as the sales profitability ratio.

(Omasete, 2014) investigated the results of risk mitigation on Kenyan insurance companies' financial performance. The entire population of insurance organizations was used as a sample in the study, which used a census of all 49 insurance companies that are registered and active in Kenya. In this study, secondary data covering the years 2008–2012 were used. Risk identification, assessment, mitigation, implementation, and monitoring were the independent factors, and financial performance (as determined by ROA) was the dependent factor. The financial performance of insurance organizations in Kenya was found to be meaningfully impacted by risk identification, risk mitigation, program implementation and checking, risk assessment, as well as risk dimension at both the 5% and 95% confidence levels. In light of the study, risk identification has the highest effect on Kenyan insurance company's financial performance. Risk mitigation, risk assessment & measurement, and risk management program implementation & monitoring come next.

(Adrian, 2014) examined the correlation among business risk and Kenyan insurance companies' financial performance. 49 insurance companies in Kenya completed the study's population, and the five-year research period, which ran from 2009 to 2013, was chosen because it was recent and demonstrated the relationship that currently exists among business risk management and the financial performance of Kenyan assurance companies. As a result, he obtained a sample of the entire population. Secondary data on capital management risk, financial risk, solvency risk, size and liquidity risk of independent factors, and financial performance of the business, which was measured using return on asset (ROA) as dependent factor, were gathered for the research from the yearly reports of the insurance companies. SPSS Version 20 was used for data analysis, and a multiple regression model was used to apply inferential statistics. He had not included the verification of other model assumptions and had only conducted tests of significance. Finally, the research revealed that the size of the insurance organizations had a favorable effect on the performance of financial success of the insurance companies in thereof, but the capital management risk, financial risk, solvency risk, and liquidity risk had an adverse impact.

For twelve years in a row (2000 to 2011), only eight commercial banks were included in the study. Secondary sources were used in the investigation to obtain evidence about the banks' audited financial statements from NBE. He chose size, bank capitalization, GDP development, inflation growing rate, and credit risk, liquidity risk, interest rate risk, and foreign exchange rate risk as independent factors and manageable factors. Furthermore, he used return on asset (ROA), which is counted as a dependent factor, to evaluate profitability. He tested the fundamental model of assumptions and performed a quantitative analysis using panel data. According to the study, the primary factor adversely affecting Ethiopian commercial banks' profitability is credit risk. Liquidity risk was the second biggest factor that negatively impacted Ethiopian commercial banks' profitability. Interest rate risk would have a negative effect on the bank's profitability. Even at the 10% significance level, this negative relationship was not deemed statistically significant (p-value = 0.8964). Foreign exchange rate risk has a negligible negative correlation with profitability. Similarly, the primary factor influencing the variation in profitability in Ethiopian commercial banks was bank capitalization. The profitability of Ethiopian banks rises as they get bigger, supporting the idea that the nation's larger banks make more money than its smaller counterparts. GDP growth is observed to be favorably and statistically significantly connected with Ethiopian commercial banks' profitability. Ethiopian commercial banks' financial success and inflation are inversely correlated. The results point toward that price increases were not a significant variable influencing Ethiopian banks' financial success, despite the fact that this negative association was not statistically significant.

(Yuvaraj and Abate, 2013) investigated Ethiopian insurance companies' performance. Nine insurance companies were included in the study between June 2003 and June 2011. The dependent factor they used was Return on Assets (ROA), while the independent factors included the size and age of insurance firms, capital volume, growth rate, leverage ratio, company assets, and liquidity ratio. Secondary data from annual reports containing comprehensive consolidated balance sheets and income statements served as their source of information. Additionally, they used quantitative analysis to test the model's assumptions and discovered a substantial favorable relationship between size and return on assets have a substantial connection between age and financial success as determined by ROA. Additionally, there is a strong positive correlation between firm growth and ROA as well as a substantial unfavorable correlation between the leverage and ROA. Accordingly, there is a substantial

favorable correlation with capital volume and return on assets (ROA), a significant favorable Connection between asset tangibility and ROA, and a slightly unfavorable relationship between liquidity and ROA.

(Daniel and Tilahun, 2013) explored the firm-specific elements that impact Ethiopian insurance companies' performance. From 2005 to 2010, only nine insurance companies were involved in the study. By obtaining an inspected yearly report of insurance companies from the National Bank of Ethiopia (NBE) and the yearly journal articles of insurance companies, they exercised secondary sources of data. Furthermore, the research utilized return on total assets (ROA), a crucial measure of an insurance company's performance, as a dependent factors. The independent variables in the study were the company's age, size, growth in under-writing premiums, liquidity, leverage, and loss ratio. The quantitative analysis's regression analysis results showed that whereas loss ratio (risk) is arithmetically substantial and unfavorably correlated with return on assets (ROA), insurers' size, tangibility, and leverage are statistically significant and positively interrelated with ROA. Hence, tangibility, leverage, insurer size, and loss ratio are significant factors influencing how well insurance companies perform in Ethiopia. Conversely, the relationship between ROA and growth in under-written premium, insurer age, and liquidity is arithmetically irrelevant.

(Patrick, 2015) explored the impact of risk management strategies on Kenyan life insurance company’s' financial results. 118 respondents from Kenya's five largest insurance companies those are listed on the Nairobi stock exchange were used in the study. To gather primary data for the study, a structured questionnaire was employed. Secondary data for the years 2009–2013 was gathered from the examined financial statements of Kenyan life insurance companies. Profitability, investment value, and the number of policy holders are dependent variables, while under-writing procedures, premium valuation techniques, and amendment reserve of claims' liabilities are independent factors. The research concluded that premium estimation systems had a favorable impact on the financial performance of whole-life insurance firms in Kenya based on its findings, which showed that the method is favorably substantial in influencing risk management activities. The research found that the under-writing standards used by Kisii County insurance companies raise investment value and improve the financial execution of Kenyan whole-life insurance organizations. The research observed that modifying claims and benefits paid to insurance company policyholders increases the value of investment.

This provided justification for adjusting claims in order to obtain the appropriate assessment of reasonable charges for each individual, that is typically established by identified expenses premised on risk variables.

(Mirie, 2015) carried out studies on the factors influencing the business performance of Kenyan general insurance organizations. Wholly twenty-three general insurance firms in Kenya were included in the study. A 95.65% response rate was achieved by gathering data on the variables of interest from 22 general insurance companies. Since one company was under bankruptcy when the study was conducted, it was removed from the sample. The research used a multiple-regression analysis model and secondary data for each of the 4 financial periods, 2009–2012. Return on assets (ROA) was the dependent factor, and the independent factors were ownership, age, liquidity, under-writing risk, size, retention ratio, equity capital, and management competence index. The results presented size and ownership structure had a negative correlation with financial performance, while leverage, equity capital, and management competence index had a favorable correlation. Retention ratio, liquidity, under-writing risk, and age were not found to be significantly correlated with financial performance, indicating that these factors did not predict financial performance.

(Joseph, 2011) research on the life insurance companies' financial performance in Ghana. Based on data availability and the length of time an insurer has been in business, ten (10) companies were chosen for the study. By gathering the yearly financial statements of 10 insurance organizations spanning the years 2000 - 2010, he applied a secondary source of data for the analysis. Ministry of Finance and Economic Planning's and the Ghana Statistical Service's databases contained information on the macro-economic circumstances of the Ghanaian economy. The dependent variables for measuring profit were sales profitability, investment income, and under-writing profit; the independent variables were gross written premiums, claims, management expenses, re-insurance, total obligations, company size, interest rate, and GDP. An approach to panel data analysis was used to assess the factors that influence insurers' profitability. All three of the metrics used to assess the profitability of life insurers are significantly impacted by gross premium written. Payments for claims have a positive correlation with investment income but an unfavorable correlation with the under-writing profit and overall net profit. In each of the two levels, the overall net profit and the income from investments are statistically correlated with the amount spent on

management. The overall net profit and the underwritten profit are significantly positively correlated with the assets (size) of insurers. There is a positive correlation between leverage and each of the three indicators of insurers' profitability. There is a favorable correlation between under-writing profit and sales success and interest rates.

(Wani and Dar, 2015) conducted research on the variables influencing Ethiopian insurance companies' profitability. He specifically targeted all insurance companies in Ethiopia, of which nine had been selected as a sample. Purposive sampling was thought to have been used in order to include all insurance companies that had been founded and were in operation within the given time frame of June 2003 to June 2011. He obtained audited financial statements from NBE, which allowed him to use a secondary source of data. Return on asset was a dependent variable, and the company's age, capital volume, size, leverage, and growth were independent factors. Ultimately, the regression analysis revealed that growing, gearing, capital volume, size, and liquidity were the primary variables that determined financial success; as a result, there was a favorable relationship between growth, size, and capital volume. Liquidity and gearing ratios, however, in contrast have an adverse and substantial connection with financial success. Finally, there was no discernible association between financial success and the company's age or the tangibleness of its assets.

(Hadush, 2015) studied the factors that affect Ethiopian insurance companies' profitability. To this end, during the 2005–2014 research period, 9 Ethiopian insurance companies was utilized in the research with entirely Ethiopian insurance organizations serving as the population under consideration. Utilizing a statistical package named EViews 7 exclusively, the study employed secondary with quantitative data, from the yearly examined financial statements of insurance organizations, as well as financial magazines of NBE. Yield is a dependent variable, and the following are independent variables: real GDP, inflation, premium growth, tangibility, volume of capital, and claim ratio. He created a test for the model assumptions using a quantitative analytical tool. Tangibility, capital volume, premium growth, claim ratio, and real GDP are found to be the primary determinants of profitability, as indicated by the regression result; consequently, these variables are significant and positively correlated. On the other hand, real GDP and the claim ratio have an adverse but substantial connection with financial success. But The relationship between profitability and either inflation or liquidity is not very strong.

(Hadush, 2015) inspected how macro-economic and firm-specific factors affected profit in a study on the factors influencing insurance companies' profitability in Ethiopia. The study covered ten insurance companies over a six-year period (2008–2013) because of this. Secondary source of data collected from MOFED's financial publications as well as insurance companies' balance sheets and profit/loss accounts were examined. Size of businesses, gearing, tangibility of assets, liquidity, loss ratio, firm growth, managerial effectiveness, inflation rate, and economic growth were independent factors, while financial success as measured by ROA was a dependent factor. After testing all of the model's assumptions, the regression analysis revealed that the following factors significantly influenced profitability: size, gearing, tangibility of the asset, risk/loss ratio, firm growth, and management effectiveness. As a result, these factors were positively correlated with each other. Leverage and risk/loss ratio, however, in contrast had a negative but substantial connection with profitability; the factors that significantly influenced profitability were not inflation, liquidity, or economic growth.

(Hadush, 2015) explored research on the different variables that influence the insurance sector's financial success using data from insurance companies of Ethiopia. Secondary data on the financial performance of nine insurance companies from 2003 to 2014 was gathered from the yearly statements and inspected financial statements in order to conduct the study. The following factors determined a company's profitability: age, size, gearing, physicality of assets, liquidity, premium growth, loss ratio, reliance on re-insurance, solvency, and growth in GDP. The dependent factor was ROA.

The research's findings showed that while loss ratio and leverage ratio were negatively correlated with profitability (ROA), insurer size and solvency margin were favorably correlated with insurance financial success. Conversely, factors like the physicality of assets and re-insurance reliance have little bearing on the financial success of Ethiopian insurance companies, and factors like premium growth, GDP growth, insurance company age, and liquidity had no effect at all. (Hadush, 2015) carried out studies on Ethiopian insurance companies' profitability factors. This goal was accomplished by the study using a mixed research approach.

9 insurance organizations out of the whole number of insurance firms registered with NBE and operating in Ethiopia had panel data spanning an eleven-year period from 2004 to 2014

examined. Also, managers of the company were interviewed in-depth. Profitability was a dependent variable, and under-writing risk, re-insurance dependency, solvency margin, liquidity, company size, premium growth, technical provisions, inflation, and GDP were independent factors. According to the study's findings, insurers' profitability is negatively correlated and statistically significant with under-writing risk, technical provision, and solvency ratio. However, there was little correlation between profitability and reliance on re-insurance.

However, the financial success of insurance services is favorable and statistically meaningfully correlated with factors like premium growth, size, and liquidity. Besides, the percentage of economic growth has a major influence on insurers' financial success, while inflation has a negligible effect. The research demonstrated that under-writing risk, provisional availability, and liquidity were the principal determinants of Ethiopian insurance companies' profitability.

2.3 Literature gap

(Arif and Showket, 2015) carried out empirical research on the connection between business risk and monetary results. Nevertheless, (Arif and Showket, 2015) researched whole-life insurance firms in India, so the study's characteristics differ from those of developing nations in terms of government regulation, business culture, population attitudes, and economic growth. Furthermore, only life insurance companies in India were included in. In regard to (Arif and Showket, 2015) leaving out non-life insurance companies the study only tested significance. With respect to (Adrian. 2014) it did not address the verification of other model assumptions. Furthermore, only a quantitative research approach was used in the two empirical studies mentioned above.

(Ijaz, 2015) conducted research on the impact of macro-economic variables on insurance organizations profitability, (Hifza, 2011) and (Emine, 2015) had previously studied the barriers to insurance company profitability, and (Amal, 2012) had showed research on the factors influencing financial performance of insurance companies. The research's features, however, differ from those of developing nations because of factors like business culture, government regulation, population attitudes, and economic growth. As a result, the researcher considered the aforementioned gaps when conducting the study, and for the reasons listed above, this study may differ from empirical studies conducted in other countries.

In conjunction with, (Suheyli, 2015) also studied the factors that influence Ethiopian insurance companies' profitability; however, the study excluded credit and solvency risk, which are measures of total liabilities over total assets which indicate an insurance company's level of solvency. Nonetheless, these important variables have been included in this study. Furthermore, earlier research on the variables that decide Ethiopian Insurance companies' financial success (Suheyli, 2015); and (Meaza, 2014) as well as their determinants are assessed by (Daniel and A. Tilahun, 2013). Their time series period was no longer than eleven years, and their study was restricted to a quantitative approach. Therefore, the study used a 15-year timeframe, spanning from 2008 to 2023, to gather up-to-date data regarding the effect of financial risk on the Ethiopian insurance companies' financial performance.

As per NBE (2013), Credit risk denotes to the risk of financial loss result from a borrower's failure to accomplish its commitments to the company, as well as the risk of capital or liquidity impairment follow-on from a failing of the credit portfolio. Credit risk has a substantial impact on the insurance companies' performance. Nevertheless, this variable is not included in any of the prior research that has been done on insurance companies in Ethiopia. Consequently, this study would cover in everything that the aforementioned gaps by using Ethiopian Insurance Corporation's evidence.

CHAPTER THREE

3. RESEARCH METHODOLOGY

The research methodology utilized to complete the study is described in this chapter.

3.1. Research Design

To explore and analyze the effect of business risk on financial performance of insurance business in the case of Ethiopian Insurance Corporation, the study was employed descriptive and inferential statistics to interpret the data. A descriptive survey design used both quantitative and qualitative research methods.

3.2. Research Approach

The study employed a mix of quantitative and qualitative research techniques. Studying the nature of phenomena, quantitative research is particularly suitable for addressing why something is not perceived, evaluating intricate multi-component treatments, and emphasizing the enhancement of interventions. This approach has better tools to handle a wider range of research challenges when the researcher combines qualitative and quantitative designs.

3.3. Source of Data

The study uses primary sources of data spanning the period from 2008/9 to 2022/3 G.C and applied yearly time series data structure. These data collected from Ethiopian insurance corporation and National bank of Ethiopia. The study employed both descriptive and inferential statistics. To address the study's goals and address its research questions.

3.4. Method of Data Collection

The sources of data to be used by the researcher primary source of data; by having this, the data collection was from Ethiopian Insurance Corporation audited annual financial statement and from National Bank of Ethiopia for the period covered 2008/9 to 2022/23 G.C.

3.5. Method of Data Analysis

Data collection was followed by processing and examination to obtain findings and make conclusions. Using STATA software, the data was statically analyzed. Due to for statistical analysis, STATA is a commonly used application.

3.6. Description of the Study Variable

Performance: is the dependent variable, is calculated by return on assets (ROA) and denotes the effectiveness of firm i at time t. The profitability ratio is an important metric used by investors to evaluate a company because it measures the firm's capacity to turn a profit, which in turn reveals the overall effectiveness and performance of the business (Dao, 2016). Return on Assets is a metric which illustrates the yield on the quantity of assets utilized. It measures by using;

$$\text{ROA} = \frac{\text{Net income}}{\text{Average total assets}} * 100$$

Credit risk: As stated by (Anthony and David, 1997) It is the possibility that a borrower won't fulfill its commitments. Credit risk may result from the borrower's unwillingness or incapacity to fulfill the pre-committed contractual obligations.

Liquidity risk: The degree to which a company can fulfill its outstanding debts is measured by its liquidity. The current ratio is used to measure it. High profit margins allow businesses to pay out larger dividends to shareholders than those who lack the necessary cash flow, which creates liquidity. Past research supports the positive correlation between profitability and liquidity (Liargovas and Skandalis, 2008). The signaling theory states that companies with greater cash accessibility can pay larger dividends than companies with less cash (Gerald and Ulrike, 2001).

Under-writing risk: As stated by (Adams and Buckle, 2003) it is quantified by the loss ratio, which is calculated as gross claims to gross written premium. It highlights the effectiveness of the insurers' under-writing activity. Under-writing risk indicates how well insurers have performed in under-writing.

Re-insurance Risk: among the greatest crucial risk management strategies that under-writers employ is re-insurance. Re-insurance can help an insurer lower its indemnification risks and the unpredictability of its pecuniary outcomes, alleviate its creditworthiness, make better use of its existing resource, strengthen its resilience to catastrophes, expand its ability for under-writing, and benefit from the re-insurer's experience in product development.

Inflation: is defined as the general price increase, or rate of increase, of specific goods and services over a given time period. Inflation, which is typically expressed and measured as a percentage, can be used to indicate a decline in the value or purchasing power of a country's currency. It is involved in insurance and negatively affects a number of insurance-related operations, including claims, other costs, and salary expenditures. Because inflation modifies consumption patterns, insurance products are especially affected in terms of profitability.

Therefore, insurance companies might not be able to sufficiently represent the interests of people or businesses.

Exchange rate: is the amount that can be exchanged for another currency. It illustrates the relative value of various currencies on the world market. A number of variables, including supply and demand, interest rates, geopolitical events, and economic conditions, affect exchange rates.

Interest Rate: is the percentage of principal a lender charges for using its funds.

3.7. Econometric Model Specification and Tests

3.7.1. Tests of Stationarity

The econometric methodology for time series data analysis primarily observes the stationarity possessions of individually time series of data considered for the analysis. The current study makes use of Augmented Dickey-Fuller (ADF) and Phillip-Perron (PP) unit root test to inspect the stationarity of the data series. Because the ADF test adds lag terms to account for serial relationship, it circumvents the ADF issue (Gujariti, 2004). An illustration of the ADF test would be:

$\Delta Y_t = \gamma_1 + \gamma_2 t + \delta Y_{t-1} + \sum_{i=1}^{p} \alpha_i \Delta Y_{t-i} +$

ε_t (1)

Where, γ_1, $\gamma_2, \delta,$ and α are the coefficients, t is the stochastic trend, $\varepsilon_t$is a white noise error term and ΔY_{t-1}=Y_{t-1}-Y_{t-2}, ΔY_{t-2}=Y_{t-2}-Y_{t-3}, etc. The test statistic is given below:

$$Z_t = \frac{\hat{\delta}}{SE(\hat{\delta})}$$

where $SE(\hat{\delta})$ standard error of$\hat{\delta}$. Hypothesis tests: $Ho: \delta = 0$where$\delta \quad = \rho - 1$. The tests are conducted using the standard F-test, which contrasts the test statistic with the Dickey and Fuller-developed critical F-values. The regression's coefficient of Y_(t-1) is tested for a unit root in this ADF procedure. The theory that Yt contains a unit root is excluded if the coefficient deviates noticeably from zero. The stationarity of the series is implied by rejecting the null hypothesis.

An alternative approach to unit root testing is the Phillips-Perron test. A PP test employee the standard DF or ADF test but adjusts the t-ratio so that the serial relationship does not disturb the asymptotic distribution of the test statistic. It also disregards any serial relationship in the error term exclusive of adding lag difference terms.

3.7.2. Co-integration Tests

Co-integrated series are those that are made stationary by combining two or more non-stationary series linearly. Several macro-economic factors are not stationary at a level. The subsequent step is to decide whether there is a long-run equilibrium connection between the variables after the unit roots for data series have been verified. This necessitates the important cointegration analysis in order to prevent spurious regression. If variables I and II are co-integrated, they are moving in tandem and developing a long-term relationship. Conventional time-series models have not been able to adequately represent the behavior of these intricate relationships. The Johansen's method starts at the vector auto regression (VAR) order p, which is itemized by:

$$Y_t = \phi_o + \Phi_1 Y_{t-1} + \Phi_2 Y_{t-2} + \ldots + \Phi_p Y_{t-p} + \varepsilon_t \quad (2)$$

The above VAR (p) can be respecified as:

$$\Delta Y_t = \phi_o + \Pi Y_{t-1} + \sum_{t=1}^{p-1} \Gamma_i \, \Delta Y_{t-1} + \varepsilon_t$$

Where $\Pi = \sum_{t=1}^{p} \Phi_i - I and \Gamma_i = \sum_{j=i+1}^{p} \Phi_j$

There occur nxr matrices α and β, each with rank r, such that Π = αβ′ and β'Yt is stationary at level, if the coefficient matrix Π has reduced rank r<n. Each column of β is a co-integrating vector, r is the number of co-integrating correlations, and the elements of α are mentioned to as the adjustment parameters in the vector error correction model. It can be demonstrated that, for a given r, the maximum probability estimator of β specifies the set of Yt−1 that, when corrected for lagged differences and, when present, deterministic variables, yields the r largest canonical correlations of ΔYt with Yt−1. Johansen suggests two distinct probability ratio tests—the maximum eigenvalue test and the trace test, respectively—to determine the importance of these canonical relationships and, subsequently, the reduced rank of the matrix.

$$J_{trace} = -T \sum_{i=r+1}^{n} ln(1 - \hat{\lambda}_i) \; (3)$$

$$J \widehat{ln}(_{r+1_{max}}$$

In this case, λ^_i is the i[th] largest canonical correlation, and T is the sample size. The alternate hypothesis of n co-integrating vectors is verified in contradiction of the null hypothesis of r co-integrating vectors using the trace test. Conversely, the maximum eigenvalue test compares the alternative hypothesis of r +1 co-integrating vectors with the null hypothesis of r co-integrating vectors.

3.7.3. Lag Length Selection

Using model selection criteria, one can ascertain the lag length for the VAR (p) model. Finding the value of p that reduces certain model assortment standards is the general method for fitting VAR (p) models with orders p = 0, 1, 2…, p max. The Akaike (AIC), Schwarz-Bayesian (BIC), and Hannan-Quinn (HQ) information principles are the three furthermost widely used types:

$$AIC(p) = ln\left|\hat{\Sigma}(p)\right| + \frac{2}{T}pk^2 (5)$$

$$BIC(p) = ln\left|\hat{\Sigma}(p)\right| + \frac{ln(T)}{T}pk^2 (6)$$

$$HQ(p) = ln\left|\hat{\Sigma}(p)\right| + \frac{2\,lnln\,T}{T}pk^2 (7)$$

While the BIC and HQ criteria consistently determine the command under general situations if the true order p is less than or equal to p_{max}, the AIC criterion asymptotically overestimates the order with favorable possibility.

3.7.4. Vector Autoregressive (VAR) Model Specification

The vector autoregression (VAR) model is among the best suited, flexible, and easy to use models for multivariate time series analysis. The dynamic multivariate time series is a natural progression from the univariate autoregressive model. When it comes to predicting and describing the dynamic behavior of financial and economic time series, the VAR model has shown to be highly effective. It often yields more accurate predictions than univariate time series models and complicated theory-based simultaneous equations models. A VAR model is appropriate when every variable in the system depends on both the lags of other variables and its own lags.

In terms of predictions and characterizing the dynamic behavior of financial and economic time series, the VAR model has displayed to be extraordinarily valuable A multivariate time series Y_t is a VAR process of order p or VAR (p) for short if it follows the mode:

$Y_t = \phi_o + \Phi_1 Y_{t-1} + \Phi_2 Y_{t-2} + \ldots + \Phi_p Y_{t-p} + \varepsilon_t$, p > 0, t = 1,..., T(8)

Where Y_t is a vector of length k, $\phi_o$is a *k*-dimensional vector, Φ is a $k \times k$ matrix of autoregressive coefficients for j = 1, 2, . . ., p and { ε_t} is a sequence of serially uncorrelated random vectors with mean zero and covariance matrix Σ. Y_t is a vector of length k. There are k equations. The coefficient matrix Φ calculates the dynamic dependence of Y_t and are unidentified and to be predicted from the detected data.

3.7.5. **Vector Error Correction Model (VECM)**

It is now common practice in literature to analyze dynamic relationships among financial variables using Vector Autoregressive Models (VAR) and Vector Error Correction Models (VECM). A long term equilibrium connection between two series can be contingent if cointegration has been found between them. In order to assess the cointegrated series' short-term characteristics, we utilize VECM. If there is no cointegration, the Granger causality test is used to regulate the fundamental relationships between the factors, and VECM is no longer necessary.

$$\Delta \mathbf{y}_t = \vartheta + \mathbf{\Pi} \boldsymbol{y}_{t-1} + \sum_{i=1}^{p-1} \mathbf{\Gamma}_i \, \Delta \boldsymbol{y}_{t-i} + \boldsymbol{\varepsilon}_t \qquad (9)$$

Where, $\mathbf{\Pi}_i = \alpha\beta'$, $\mathbf{\Gamma}_i = -\sum_{j=i+1}^{p} \Phi_j$ and I_n is an identity matrix.

$\mathbf{\Pi}$ and the short-run parameter $\mathbf{\Gamma}_i$ i=1, 2,., p-1 are p × p matrices of coefficients. Because the cointegration hypothesis can be expressed with regard to the long-run impact matrix, "Π", the VECM as it has been expressed above is convenient. Specifically, taking into account the study's variables, VECM specified as follows:

$$\Delta lnROA_t = \alpha_1 + \sum_{i=1}^{p-1} \alpha_{2i} \Delta ROA_{t-1} + \sum_{j=1}^{p-1} \alpha_{3j} \Delta lnCR_{t_{t-1}} + \sum_{k=1}^{p-1} \alpha_{4k} \Delta \ln Li_{t-1} + \sum_{l=1}^{p-1} \alpha_{5l} \Delta lnRIR_{t-1} + \sum_{l=1}^{p-1} \alpha_{6m} \Delta lnINF_{t-1} + \sum_{l=1}^{p-1} \alpha_{7m} \Delta lnexr_{t-1} + \sum_{l=1}^{p-1} \alpha_{8m} \Delta lnIR_{t-1} + \lambda_1 EC_{t-1} + \varepsilon_{1t}$$

$$\Delta lnCR_t = \alpha_1 + \sum_{i=1}^{p-1} \alpha_{2i} \Delta ROA_{t-1} + \sum_{j=1}^{p-1} \alpha_{3j} \Delta lnCR_{t_{t-1}} + \sum_{k=1}^{p-1} \alpha_{4k} \Delta \ln Li_{t-1} + \sum_{l=1}^{p-1} \alpha_{5l} \Delta lnRIR_{t-1} + \sum_{l=1}^{p-1} \alpha_{6m} \Delta lnINF_{t-1} + \sum_{l=1}^{p-1} \alpha_{7m} \Delta lnexr_{t-1} + \sum_{l=1}^{p-1} \alpha_{8m} \Delta lnIR_{t-1} + \lambda_2 EC_{t-1} + \varepsilon_{2t}$$

$$\Delta lnLi_t = \alpha_1 + \sum_{i=1}^{p-1} \alpha_{2i} \Delta ROA_{t-1} + \sum_{j=1}^{p-1} \alpha_{3j} \Delta lnCR_{t_{t-1}} + \sum_{k=1}^{p-1} \alpha_{4k} \Delta \ln Li_{t-1} + \sum_{l=1}^{p-1} \alpha_{5l} \Delta lnRIR_{t-1} + \sum_{l=1}^{p-1} \alpha_{6m} \Delta lnINF_{t-1} + \sum_{l=1}^{p-1} \alpha_{7m} \Delta lnexr_{t-1} + \sum_{l=1}^{p-1} \alpha_{8m} \Delta lnIR_{t-1} + \lambda_3 EC_{t-1} + \varepsilon_{3t}$$

$$\Delta lnRIR_t = \alpha_1 + \sum_{i=1}^{p-1} \alpha_{2i} \Delta ROA_{t-1} + \sum_{j=1}^{p-1} \alpha_{3j} \Delta lnCR_{t_{t-1}} + \sum_{k=1}^{p-1} \alpha_{4k} \Delta \ln Li_{t-1} + \sum_{l=1}^{p-1} \alpha_{5l} \Delta lnRIR_{t-1} + \sum_{l=1}^{p-1} \alpha_{6m} \Delta lnINF_{t-1} + \sum_{l=1}^{p-1} \alpha_{7m} \Delta lnexr_{t-1} + \sum_{l=1}^{p-1} \alpha_{8m} \Delta lnIR_{t-1} + \lambda_4 EC_{t-1} + \varepsilon_{4t}$$

$$\Delta lnINF_t = \alpha_1 + \sum_{i=1}^{p-1} \alpha_{2i} \Delta ROA_{t-1} + \sum_{j=1}^{p-1} \alpha_{3j} \Delta lnCR_{t_{t-1}} + \sum_{k=1}^{p-1} \alpha_{4k} \Delta \ln Li_{t-1} + \sum_{l=1}^{p-1} \alpha_{5l} \Delta lnRIR_{t-1} + \sum_{l=1}^{p-1} \alpha_{6m} \Delta lnINF_{t-1} + \sum_{l=1}^{p-1} \alpha_{7m} \Delta lnexr_{t-1} + \sum_{l=1}^{p-1} \alpha_{8m} \Delta lnIR_{t-1} + \lambda_5 EC_{t-1} + \varepsilon_{5t}$$

$$\Delta lnexr_t = \alpha_1 + \sum_{i=1}^{p-1} \alpha_{2i} \Delta ROA_{t-1} + \sum_{j=1}^{p-1} \alpha_{3j} \Delta lnCR_{t_{t-1}} + \sum_{k=1}^{p-1} \alpha_{4k} \Delta \ln Li_{t-1} + \sum_{l=1}^{p-1} \alpha_{5l} \Delta lnRIR_{t-1} + \sum_{l=1}^{p-1} \alpha_{6m} \Delta lnINF_{t-1} + \sum_{l=1}^{p-1} \alpha_{7m} \Delta lnexr_{t-1} + \sum_{l=1}^{p-1} \alpha_{8m} \Delta lnIR_{t-1} + \lambda_6 EC_{t-1} + \varepsilon_{6t}$$

$$\Delta lnIR_t = \alpha_1 + \sum_{i=1}^{p-1} \alpha_{2i} \Delta ROA_{t-1} + \sum_{j=1}^{p-1} \alpha_{3j} \Delta lnCR_{t_{t-1}} + \sum_{k=1}^{p-1} \alpha_{4k} \Delta \ln Li_{t-1} + \sum_{l=1}^{p-1} \alpha_{5l} \Delta lnRIR_{t-1} + \sum_{l=1}^{p-1} \alpha_{6m} \Delta lnINF_{t-1} + \sum_{l=1}^{p-1} \alpha_{7m} \Delta lnexr_{t-1} + \sum_{l=1}^{p-1} \alpha_{8m} \Delta lnIR_{t-1} + \lambda_7 EC_{t-1} + \varepsilon_{7t}$$

Where, $\Delta lnROA$, natural logarithm of Return on asset, $lnCR$, natural logarithm of Credit risk, $\Delta \ln Li$, natural logarithm of Liquidity risk, $\Delta lnRIR$, natural logarithm of Re-insurance risk, $\Delta lnINF$, natural logarithm of Inflation, , $\Delta lnexr$, natural logarithm of exchange rate , $\Delta lnIR$, natural logarithm of interest rate ,p-1 is the lag length decreased by 1. $\alpha_i, \beta_i, \gamma_i, \theta_i \, and \, \varphi_i$ short run dynamics coefficient of the model's modification long run equilibrium, λ_5 -speed of modification constraint with negative sign., EC_{t-1} -the error correction term is the lagged value of the residuals gained from derived from the long-run cointegration relationship.

3.7.6. Forecasts of an estimated model

A single instance, primary goals of multivariate time series examination is forecasting. Equations (3.1) are structured to model the relationship between the values of the factors in period t and previous values. Because of this, the vector error correction model is well-suited for predicting the future courses of variables based on their historical data. Consider a illustration of explanations on Y_t that ends in period T and that we demand to estimate their values in T+1, T+2, etc (Ltkepohl,1991). Additionally, estimates for longer horizons h (h-step-ahead forecasts) can be gained using the chain-rule of predicting as;

$Y_{T+\frac{h}{T}} = D + A_1 Y_{T+h-\frac{1}{T}} + \ldots + A_P Y_{T+h-\frac{P}{T}}$, (10)

where, $Y_{T+\frac{j}{T}} = Y_{T+j}$ for $j \leq 0$.

And the h-step-ahead estimate errors may be articulated as:

$Y_{T+j} - Y_{T+\frac{j}{T}} = \sum_{s=1}^{h-1} \Psi_s \, \varepsilon_{T+h-p}$,

where, the matrices Ψ_s are resolute by recursive replacement $\Psi_s = \sum_{s=1}^{p} \Psi_{s\text{-}j}\ \Psi_j$ with $\Psi_0 = I_n$ and $\pi_j = 0$, for $j \geq p$. The estimates are balanced since wholly the forecast errors have anticipation zero and the MSE matrix for $Y_{T+\frac{h}{T}}$ is now reflect forecasting Y_{T+h} when the parameters of the VEC (p) process are predicted by means of multivariate time series (Said and Dickey, 1984).

The best linear predictor of Y_{T+h} is becomes;

$\hat{Y}_{T+\frac{h}{T}} = C + A_1 \dot{Y}_{T+\frac{h-1}{T}} + \ldots + A_P \dot{Y}_{T+\frac{h-p}{T}}$.

The h-step-ahead forecast error is given by;

$Y_{T+j} - Y_{T+\frac{j}{T}} = \sum_{s=1}^{h-1} \Psi_s\, \varepsilon_{T+h-p}\, (Y_{T+j} - Y_{T+\frac{j}{T}})$.

The term $Y_{T+j} - Y_{T+\frac{j}{T}}$ captures the part of the forecast error because of forecasting the constraints of the VAR. The MSE matrix of the h-step-ahead forecast is;

$\sum_h = \text{MSE}\,(Y_{T+j} - Y_{T+\frac{j}{T}})$ (11)

In practice the second term MSE $(Y_{T+j} - Y_{T+\frac{j}{T}})$ is frequently disregarded and $\hat{\Sigma}_h$ is figured as:

$\hat{\Sigma}_h = \sum_{j=0}^{h-p} \hat{\Psi}_s \hat{\Psi}_s'$,

where, $\hat{\Psi}_s = \sum_{j=1}^{p} \hat{\Psi}_{s-j}\, \hat{\Pi}_j$ and $\hat{\Pi}_j$ are the projected constraint matrix.

CHAPTER FOUR

4. RESULTS AND DISCUSSIONS

This chapter includes the descriptive and inferential statistics, interpretation of the results and discussion.

4.1 Trend Exploration of the Main Variables of the Study

The graphical exploration of the variables profitability (ROA), credit risk (collection rate), liquidity risk (liquidity ratio), under-writing risk (net risk), re-insurance risk (net risk), interest rate and exchange rate are present by figure 1. From this figure, it is understandable that profitability of the corporation is increasing from 2008 to around 2018 and then sharply decreased from up to 2020. Moreover, after 2020, the corporation's profitability is minimum relative to the other years while the credit risk (collection rate) and liquidity risk (liquidity ratio) were sharply increased. The under-writing risk (change in net premium) of the corporation fluctuated more over the study period than the other risks. The under-writing risk and re-insurance risk of the corporation were almost following similar patterns. Furthermore, the interest rate and exchange rate had an increasing trend over the study period.

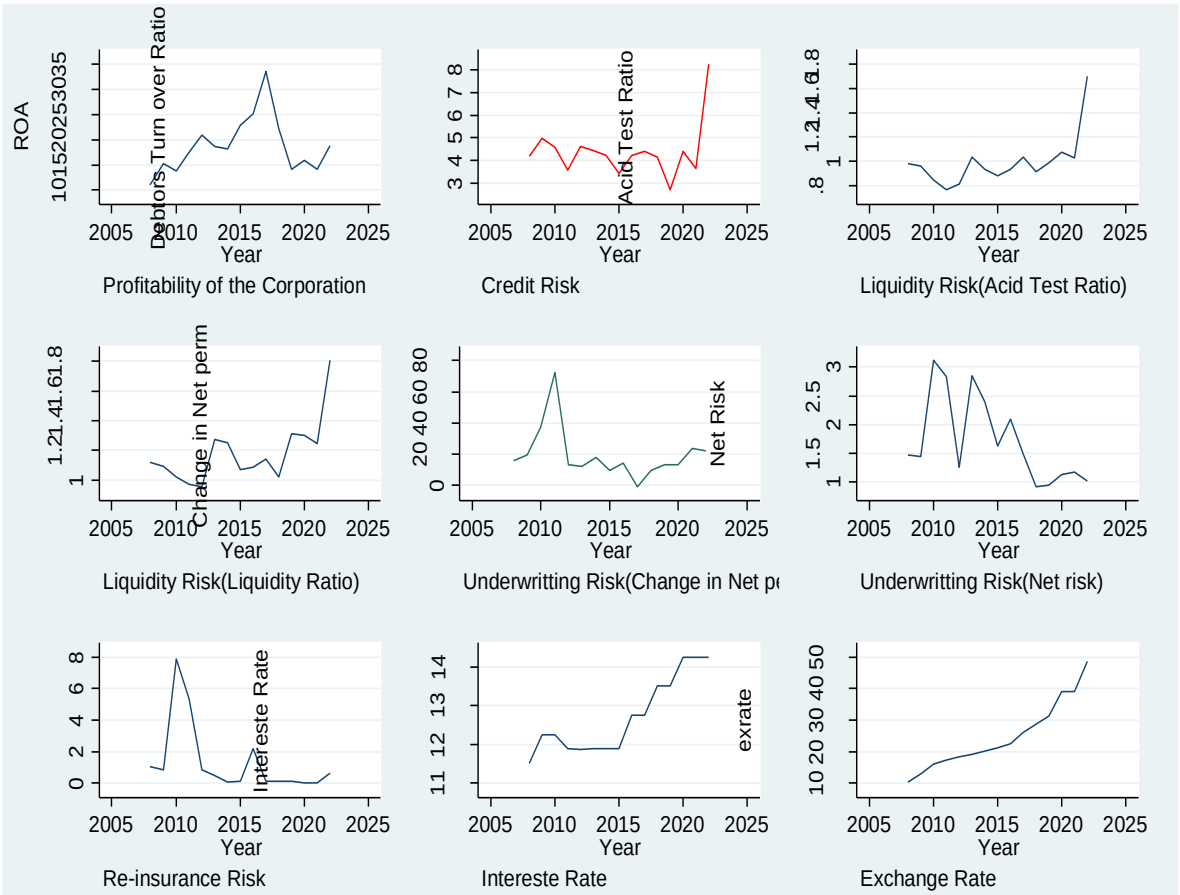

Fig.1 ROA, Credit Risk, Liquidity Risk, Underwritting Risk, Re-insurance Risk, Int.rate & EXR

4.2 Summary Statistics

Table 1 summarizes the variables' statistical data ROA, credit risk, liquidity risk, under-writing risk, re-insurance risk, interest rate, exchange rate, and inflation. The Table shows that the average profitability of the corporation was 18.80852 with 11.04639 and 33.6016 minimum and maximum values respectively.

The result of under-writing risk (change in net premium is (16.84936)), the NBE standard state that the under-writing risk (change in premium is (20% – 33%). Compared to the standard it shows that the corporation under-writing risk has an adverse impact on the corporation's performance.

The result of exchange rate (10.77556), it shows that when exchange rate increases it will have an impact on the corporation outflow besides it will increase the cost of material purchased and other corporation's expenses.

The result of ROA (5.632046), it describes the corporation's returns from its' total assets. However, the result shows that the corporation return is not satisfactory because the corporation ROA is on the float.

The result of inflation (2.490397) shows that the corporation will be affected by the persistent increasing of prices from time to time. Whereas,

The re-insurance risk (2.280121) shows that year to year the corporation ceded the written premium for re-insurers. This will have an adverse impact on the corporation's performance. Depicted on the Table shows that the variables more dispersed than the other variables. Moreover, the corporation received maximum risk in credit risk (8.255) which is not satisfactory for the corporation. This will lead to bad debt.

Table 1. summarizes the variables' statistical data

Variables		Mean	Standard deviation	Minimum	Maximum
ROA		18.80852	5.632046	11.04639	33.6016
Credit risk		4.3846	1.212007	2.698	8.255
liquidity risk	acid test ratio	0.9934667	0.2141658	0.765	1.699
	Liquidity ratio	1.1782	0.2100735	0.956	1.805
Under-writing risk	change in net premium	19.43493	16.84936	-0.846	72.476
	net risk	1.715667	0.7511376	0.914	3.116
Re-insurance risk		1.325267	2.280121	0.024	7.902
Interest rate		12.70967	0.9894559	11.5	14.25
Exchange rate		24.6986	10.77556	10.421	48.567
Inflation		4.219133	2.490397	1.62	9.18

Source: Results of one's own computation using data

4.3 Unit Root Test

The study was primary hands-on logarithm metamorphosis to accomplish the stationarity of the series and despite the transformation applied the stationarity was not achieved. The ADF unit root test depicted in Table 2 and the results of ADF displays that the null hypothesis of unit root cannot be excluded at 5% significance level for natural logarithm of all variables considered for the study at a level. Furthermore, the study applied difference transformation, and the stationarity was achieved at the initial distinction I (1) for all variables. The results of ADF test confirmed that all the series are stationary at the initial distinction. This implies that the null hypothesis of the series has a unit root had excluded at 5 % level of significance. Therefore, the series combined of order one I (1) was used for extra econometric analysis.

Table 2. ADF test outputs

ADF Tests						
	At a level			At the first difference		
Variables	Test Statistic Z(t)	Critical value at 5%	P-values	Test Statistic	Critical value at 5%	P-values
lnROA	-2.112	-3.600	0.5393	-3.382	-3.000	0.0116
lnCredit Risk	-2.745	-3.600	0.2178	-5.051	-3.000	0.0002
lnLacid test Ratio	-1.598	-3.600	0.7932	-2.686	-3.000	0.0465
lnL/liquidity ratio	-2.170	-3.600	0.5067	-5.443	-3.000	0.0208
lnUndchange pre	-2.418	-3.600	0.3700	-3.517	-3.000	0.0076
lnUndnet risk	-3.319	-3.560	0.0632	-4.515	-3.000	0.0014
lnRreinsurance	-2.660	-3.560	0.2533	-3.450	-3.000	0.0094
lnInterest rate	-1.609	-3.600	0.7891	-4.843	-3.000	0.0004
lnExchange Rate	-2.221	-3.600	0.4782	-3.621	-3.000	0.0054
Ininflation	-2.705	-3.600	0.2341	-4.038	-3.000	0.0078

Source: Results of one's own computation using data

4.4 Optimal Lag Selection Result

The study used information criteria for optimal lag length choice. Table 3 depicts the output of information criterions used for optimal lag length choice. The results indicate that AIC, HQIC and SBIC choose 1 lag order for the analysis (model fitting).

Table 3: Optimal Lag length selection

Lags	AIC	HQIC	SBIC
0	7.62786	6.93319	7.45432
1	-226.033*	-230.201*	-227.075*
2	-202.414	-206.582	-203.455
3	-166.823	-170.991	-167.864

***** Optimal lag

Source: Results of one's own computation using data

4.5 Johansen Co-integration Test Result

After determining the optimal lag order of the data, Johansen co-integration test was hired to check the presence of long-run equilibrium relationships using the trace statistic test for cointegration. Table 4 represents the co-integration rank r test result; the Johansen trace statistic suggests that the existence of at least 1 cointegrating relationship between credit risk, liquidity risk, under-writing risk, re-insurance risk, interest rate, inflation, and profitability of the corporation (trace statistic 45.3929**)**. Meaning, the null hypothesis that states there is no co-integration among the variables was excluded at 5 percent level of significance, in favor of its substitute. Thus, it confirms that the long-run connection in a vector error correction

framework was applied.

Table 4: Johansen Cointegration tests

Maximum Rank	Params	LL	Eigenvalue	Trace statistic	Critical Value 5%
0	31	394.84297	1.00000	82.6978	68.52
1	40	413.49539	0.94328	**45.3929***	47.21
2	47	424.81603	0.82477	22.7517	29.68
3	52	432.11613	0.67473	8.1515	15.41
4	55	436.17456	0.46440	0.0346	3.76
5	56	436.19187	0.00266		

* Selected rank

Source: Results of one's own computation using data

4.6 Vector Error Correction Model/VECM Result

Johansen co-integration test demonstrated that credit, liquidity, under-writing and, re-insurance risk and, interest rate, inflation and profitability of the corporation have a long-run equilibrium connection suggesting the employment of Vector Error Correction Model. Accordingly, the result of Vector Error Correction Model is presented in Table 5. In the ln re-insurance risk equation, the lagged EC term (1.171533) is positive and arithmetical significant (p=0.016) at 5% level of significance that indicates since the sign of the coefficient is positive, the value of re-insurance risk will not converge to the long run equilibrium.

Table 5: VEC model output

	Coefficient	Std. err	z	P>|z|
D_lnROA				
_ce1 | L1.	0.0334265	0.0829001	-0.09	0.687
_cons	0.0389218	0.0695827	9.06	0.576
D_lnCdebator				
_ce1 | L1.	.0191493	.0561005	-0.60	0.550
_cons	.0487694	.0898106	0.81	0.419
D_lnLacidt				
_ce1 | L1.	-.0335133	.0561005	-0.60	0.550
_cons	.0380301	.0470883	0.81	0.419
D_lnLratio				
_ce1 | L1.	-.0589487	.0487972	-1.21	0.227
_cons	.0324884	.0409582	0.79	0.428
D_lnUchangeprem				
_ce1 | L1.	-.1850426	.2008812	-0.92	0.357

_cons	.0178359	.1686109	0.11	0.916
D_lnUnetrisk				
_ce1 | L1	-.1964444	.1363482	-1.44	0.150
_cons	-.032262	.1144447	-0.28	0.778
D_lnRreinsurancesta				
_ce1 | L1	1.171533	.4844329	2.42	0.016
_cons	-.0018917	.4066118	-0.00	0.996
D_lninterate				
_ce1 | L1	-.000659	.0104169	-0.06	0.950
_cons	.0152971	.0087435	1.75	0.080
D_lnexrate				
_ce1 | L1	.0088659	.0259674	0.34	0.733
_cons	.1101778	.0217959	5.05	0.000
D_lninflation				
_ce1 | L1	.1615552	.2225926	0.73	0.468
_cons	-.0051585	.1868345	-0.03	0.978

The normalized cointegrating relationship between credit, liquidity, under-writing, and re-insurance risk, interest rate, exchange rate inflation and profitability of the corporation in Table 6. Outcomes signify that positioning the natural logarithm of ROA as dependent variable, in the long run, natural logarithm of liquidity risk, under-writing risk and exchange rate values have positive significant impact on natural logarithm of ROA at 5% level of significance. This result agreed with (Hadush, 2015) expect the sign and the works found that in the long run, liquidity risks, have significant positive effect on ROA. Additionally, the Table demonstrates that the natural logarithm of credit risk values, re-insurance risk, interest rate and inflation have favorable significant effect on natural logarithm of ROA. Moreover, under-writing risks and interest rate having negative impact indicates that when the risk increases, and interest rate were considerably decreased the long run profitability of the organization can increase. This result also agreed with the work (Hadush, 2015) and (Joseph, 2011).

Table 6: Johansen normalization restrictions imposed

Beta	Coefficient	Std. err.	Z	P-value
_ce1				
lnROA	1	.	.	.
lnCdibator	-3.056881	.3782718	-8.08	0.000
lnLacidt	4.478476	1.139409	3.93	0.000
lnLratio	-8.723245	.9939852	-8.78	0.000
lnUchangeprem	1.646941	.1979462	8.32	0.000
lnUnetrisk	1.645386	.3696254	4.45	0.000
lnRreinsurancesta	-1.078593	.0558278	-19.32	0.000
lninterate	16.70441	2.675127	6.24	0.000
Lnexrate	-5.258065	.4314022	-12.19	0.000
lninflation	-.5208579	.122906	-4.24	0.000
_cons	-29.41823	.	.	.

Source: Results of one's own computation using data

CHAPTER FIVE

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Summary

The main purpose of this study is to assess the effect of business risk on financial performance of Ethiopian insurance corporation. The study was used graphical exploratory analysis to assess the patterns the profitability of the corporation and associated business risks. The graphical exploratory analysis indicates that the profitability of the corporation increased from 2008 to around 2018 and sharply decreased up to 2020. Moreover, after 2020, the corporation's profitability was minimum relative to the other years while the credit risk (collection rate) and liquidity risk (liquidity ratio) were sharply increased. The under-writing risk of the corporation fluctuated more over the study period than the other risks. The under-writing risk and re-insurance risk of the corporation were almost following similar patterns. The results of Augmented Dickey Fuller (ADF) unit root test showed that all-natural logarithm of the variables was found to be integrated of order one I (1). The Johansen co-integration test was assumed to determine whether there is the presence of long-run connection between profitability of the insurance corporation, business risks and macro variables including inflation, exchange and interest rate. The results demonstrated that credit risk, liquidity risk, under-writing risk, re-insurance risk, interest rate, inflation and profitability of the corporation have a long-run equilibrium relationship. Furthermore, they employed vector error model. The results of the model were revealed that in the re-insurance risk equation, the lagged EC term (1.171533) is positive and statistically significant (p=0.016) at 5% level of significance which indicates since the sign of the coefficient is positive, the value of re-insurance risk will not converge to the long run equilibrium. The consequences of normalized cointegrating in the long run, natural logarithm of liquidity risk, under-writing risk and exchange rate were having positive significant impact on natural logarithm of ROA at 5% level of significance.

5.2. Conclusions

The study has generated a vital information on the profitability of the Ethiopian insurance corporation and related business risks. As reported from the results of employed vector error model and graphical explorations,

- The profitability of the corporation was fluctuating from year to year over the study period due to the fluctuation of risks including credit, liquidity, under-writing, re-insurance risk and some macro variables like, inflation, and interest and exchange rate.

- The study identified that credit risk, liquidity risk, under-writing risk, re-insurance risk has not been managed well.

- The study shows macro variables such as interest rate, inflation and exchange rate have long run effects on the profitability of the corporation. Furthermore,

- The corporation's profitability is minimum from 2020 relative to the other years while the credit risk (collection rate) and liquidity risk (liquidity ratio) were sharply increased.

- The under-writing risk of the corporation fluctuated more over the study period than the other risks.

- The credit risk of the corporation is varied and not properly managed.

5.3. Recommendations

The researcher sent along the following recommendations in light of the findings:

Since the corporation profitability sharply decrease from 2020 because of sharply increasing of credit risk (collection rate) and liquidity risk (liquidity ratio) the corporation should have to focus on these risks to increase its profitability. Business risks and macro variables have long run effects on the performance of the insurance corporation. Thus, the corporation should work on the management of these business risks. The board of management and the corporation's management should induce risk aware culture across the corporation to manage business risks.

The corporation's huge trade debtors balance seen on each year are too high. Unless it should be managed well, it will result in solvency and liquidity problems. As indicated in NBE risk management guideline for insurance companies, The corporation Risk Management Directorate needs to create risk management plans to lessen the adverse effects of volatility, and revise or induce a robust credit policy to minimize the corporations' bad debt. Unless and otherwise the corporation stops rendering credit benefit to its policy holders, it should have a robust credit policy that helps to manage its collection.

As indicated in NBE risk management guideline for insurance companies, to reduce the corporation's under-writing risk the corporation should provide continuous evaluation of claims, creating, recording and putting in to practice efficient procedures for managing products, and manage the types and attributes of insurance risks taken on or claims authorized.

As specified in NBE risk management guideline for insurance companies and Insurance supervisory Directorate, determine when re-insurance is needed, choosing suitable intermediaries and counterparties, for re-insurance to enable risk transfer, creating registering, and maintaining efficient procedures for re-insurance operations and putting into place thorough processes to efficiently oversee and manage the re-insurance operations.

The corporation should implement cost effective mechanisms to minimize the corporation's operational and administrative expenses and thereby its loss ratios would improve and ultimately bust the profit portion of the corporation. The board of management of the corporation should clearly set the risk appetite and tolerance limit of the corporation.

References

A. A. Wani and S. A. Dar (2015) "*Relationship between Financial Risk and Financial Performance: An Insight of Indian Insurance Industry*," Int. J. Sci. Res., vol. 4, no. 11, pp. 1424–1433, doi: 10.21275/v4i11.12111504.

A. Arif and A. Showket. (2015) "*Relationship between financial risk and financial performance: An insight of Indian insurance industry*," Int. J. Sci. Res., pp. 1424–1433.

A. Barges. (1963) "*The effect of capital structure on the cost of capital: a test and evaluation of the Modigliani and Miller propositions*".

A. Kithinji. (2010) "*Credit risk management and profitability of commercial banks in Kenya. Credit risk management and profitability of commercial banks in Kenya*: Nairobi".

A. Patrick. (2015) "*Influence of risk management of life assurance firms in Kenya: a survey study of Kisii country*," Int. J. Econ. Commer. Manag., vol. 3, no. 5, pp. 978–996.

A. R. Obudho. (2014) "*The Relationship Between Financial Risk and Financial Performance of Insurance Companies in Kenya*,". [Online]. Available: https://api.semanticscholar.org/CorpusID:168215414.

AARDLB. (2010) "*Alberta Agriculture and Rural Development's Livestock Business*".

B. Ana-Maria and B. Ghiorghe. (2014) "*The Determinants of Financial Performance in the Romanian Insurance Market*," Int. J. Acad. Res. accounting, Financ. Manag. Sci., vol. 4, no. 1, pp. 300–308.

B. Charumathi. (2012) "*Determinants of Profitability on {I}ndian Life Insurers; Empirical Study Proceedings of the World Congress on Engineering*," vol. 1.

C. Omasete. (2014) "*The effect of risk management on financial performance of insurance companies in Kenya*," Unpublished Master's Thesis. University of Nairobi.

C. Ralph. (2000) *Failures in Risk Management*. England Economic Review.

C. Temecula. (2001) *Insurance underwriting*. Inc: Cape Education.

D. Cummins and G. Nini. (2002) "*Optimal Capital Utilization by Financial Firms: Evidence from the Property--Casualty Insurance Industry*," J. Financ. Serv. Res., vol. 21, no. 1, pp. 15–53.

D. Jakovcevic and M. Mihelja. (2014) "*Underwriting Risks as Determinants of Insurance Cycles: Case of Croatia*," Int. J. Soc. Behav., vol. 8, no. 5, pp. 1251–

1258.

D. Sommer. (1996) "*The Impact of Firm Risk on Property-Liability Insurance Prices*," J. Risk Insur., vol. 63, no. 3, pp. 501–514.

D. Wenk. (2005) "*Risk Management and Business Continuity, Overview and Perspective*," journal Chart. Insur. Inst., vol. 3, no. 3, pp. 234–246, 2005.

E. Fama and M. Jensen. (1983) "*Agency Problems and Residual Claims*," J. Law Econ., vol. 26, no. 2, pp. 327–349.

Everis. (2009) "*Risk Management in the Insurance Business Sector*".

F. Allen and A. Santomero. (1997) "*The theory of financial intermediation*," J. Bank. Financ., vol. 21, no. 11, pp. 1461–1485.

F. Claudio. (2009) *Risk Management in the Insurance Business Sector*. S.L: MFC Artes Graficus.

G. Hadush. (2015) "*Determinants of Profitability on Insurance Companies in Ethiopia*," Unpublished Master's Thesis. Addis Ababa University.

G. Holton. (2004) "*Defining risk*," Financ. Anal. J., vol. 60, pp. 19–25.

H. Ijaz. (2015) "*Macro economy and profitability of insurance companies: a post crisis scenario in Pakistan*," Pakistan Bus. Rev., pp. 243–263.

H. Lee. (2012) "*An analysis of reinsurance and firm performance. Evidence from the Taiwan property-liability insurance industry*".

J. Cummins, G. Dionne, R. Gagne, and A. Nouira. (2008) "*The costs and benefits of reinsurance*".

K. Gerald and O. Ulrike. (2001) *Systemic Risk Factors in the Insurance Industry and Methods for Risk Assessment.* Systemic Risk Factors in the Insurance Industry and Methods for Risk Assessment.

K. Jacques and P. Nigro. (1997) "*Risk-Based Capital, Portfolio Risk and Bank Capital*: A Simultaneous Equations Approach," J. Econ. Bus., vol. 49, pp. 533–547.

L. Gordon, M. Loeb, and C. Tseng. (2009) "Enterprise Risk Management and Firm Performance: A Contingency Perspective," J. Account. Public Policy, vol. 28, pp. 301–327.

M. Adams and M. Buckle. (2000) "*The determinants of operational performance in the Bermuda insurance market*".

M. Adams and M. Buckle. (2003) "*The determinants of corporate financial performance in the Bermuda insurance market*," in Applied Financial Economics, 13, pp. 133–143.

M. Anthony and F. David. (1997) "*Financial Risk Management by Insurers*: An Analysis of the Process," J. Risk Insur., vol. 64, no. 2, pp. 231–270.

M. Crouhy, D. Galai, and R. Mark. (2006) "*Risk Capital Attribution and Risk-Adjusted Performance Measurement*," in Risk Management, M. K. Ong, Ed., Boston: Academic Press, pp. 433–454. doi: https://doi.org/10.1016/B978-012088438-4.50020-4.

M. Daniel and A. Tilahun. (2013) "*Firm specific factors that determine insurance companies' in Ethiopia*," Eur. Sci. J., vol. 9, no. 10, pp. 245–255.

M. Giovanni. (2001) "*Technical provisions in non-life insurance. Conference of the insurance supervisory authorities of the member states of the European Union*".

M. Hifza. (2011) "*Determinants of insurance companies' profitability*: an analysis of insurance sector of Pakistan," Acad. Res. Int., vol. 1, no. 3, pp. 315–321.

M. M. Ibrahim, M. M. Ibrahim, A. W. Mirza, and M. M. Ibrahim, (2018) "*the Effect of Risk Management on Financial Performance* With," vol. 2, no. 3, pp. 257–268.

M. Meaza. (2014) "*Determinants of Profitability on Insurance Companies in Ethiopia*," Unpublished Master's Thesis. Addis Ababa University.

M. Mirie. (2015) "*Determinants of financial performance in general insurance companies in Kenya*," Eur. Sci. J., vol. 11, no. 1, pp. 288–297.

Munich. (2010) "*Reinsurance*: a Basic Guide to Facultative and Treaty reinsurance".

N. Association, "of Insurance Commissions. (2001)," *Insur. Regul. Inf. Syst. Prop*. Natl. Bank Ethiop. (NBE), (, vol. 3, no. 5, pp. 501–514.

N. James and O. Kepha. (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.

NBE. (2013) "*Risk Management Guideline for Insurance Companies in Ethiopia* 2(4)".

O. Emine. (2015) "*The Effects of Firm-Specific Factors on the Profitability of Non-Life Insurance Companies in Turkey*," Int. J. Financ. Stud., vol. 3, no. 510–529, pp. 1251–1258.

O. Joseph. (2011) "*The financial performance of life insurance companies in Ghana. University of Ghana Business School*".

P. Liargovas and K. Skandalis. (2008)"*Factors affecting firms' performance*. Factors affecting firms' performance: The case of Greece Athens: Peloponnese University press".

R. Adrian. (2014) "*The Relationship between Financial Risk and Financial Performance insurance companies in Kenya*," Unpublished Master's Thesis. University of Nairobi.

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

Rejd. (2003) "*principles of The Pearson Series in Finance*".

S. Bartram, G. Brown, and J. Conrad. (2011) "*The effects of derivatives on firm risk and value*," J. Financ. Quant. Anal., vol. 46, no. 4, pp. 967–999.

S. Jasmina. (2003) "*Actuarial estimation of technical provisions adequacy in life insurance companies*," Sch. Econ. Bus. Sarajev. Bosnia Herzegovina, pp. 523–533.

S. Mistre. (2015) "*Determinants of Profitability on Insurance Companies in Ethiopia*," unpublished master's Thesis. Addis Ababa University.

S. Yuvaraj and G. Abate. (2013) "*A study on the performance of insurance companies in Ethiopia*," Int. J. Mark. Financ. Serv. Manag. Res., vol. 2, no. 7, pp. 139–150.

SAM. (2009) "*Solvency Assessment and Management* (SAM),".

Y. Amal. (2012) "*Factors Affecting the Financial Performance of Jordanian Insurance Companies* Listed at Amman Stock Exchange," J. Manag. Res., vol. 4, no. 2, pp. 266–289.

Y.-M. Shiu. (2004) "*Determinants of United Kingdom General Insurance Company Performance*," Br. Actuar. J., vol. 10, no. 5, pp. 1079–1110, doi: 10.1017/s1357321700002968.