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**THE EFFECT OF FINANCIAL RISK ON PERFORMANCE OF
PRIVATE INSURANCE COMPANIES IN ETHIOPIA**

BY

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Declaration

I, undersigned declare that this thesis is my original work. Furthermore, all sources of materials used for the thesis had been duly acknowledged.

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This is to certify that the thesis prepared by Beletech Menna entitles: ***The effect of financial risk on performance of private insurance companies in Ethiopia*** and submitted in partial fulfillment of the requirements for the degree of masters of Science in accounting and finance compiles with the regulations of the university and meets the accepted standards with respect to originality and quality.

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Acronyms and Abbreviations

BLUE	Best Linear Unbiased Estimator
CLRM	Classical Linear Regression Model
CR	Credit risk
CSA	Central Statics Agency
CSA	Central statics agency
DW	Durbin Watson
ERM	Enterprise risk management
FER	Fixed effect models
FS	Firm size
GDP	Gross Domestic product
HO	Null hypothesis
IRR	Internal rate of return
JB	Jarque Bera
LR	Liquidity risk
NBE	National Bank of Ethiopia
OLS	Ordinary Least Square
REM	Random effect models
RIR	Reinsurance risk
ROA	Return on Assets Ratio
ROE	Return on equity
SR	Solvency risk
TPR	Technical provision risk
UR	Underwriting risk

Abstract

The insurance companies are exposed to various risks which originated from both the internal and external environment. Hence, the effect of financial risk has been considered to be an important issue on the performance of insurance companies. Therefore this study tried to examine the relationship between financial risk and financial performance of insurers in Ethiopia. In order to achieve this objective, the researcher used explanatory research design and quantitative research approach. Also the secondary Panel data covering eight (8) private insurance companies in Ethiopia for twelve (12) consecutive years (2007–2018) were analyzed by using STATA software. The study tried to examine the relationship between independent variables credit risk, liquidity risk, solvency risk, technical provision risk, reinsurance risk, underwriting risk, firm size and dependent variable ROA. The regression result showed that credit risk, solvency risk, and technical provisions risk have negative and significant effect at 1% and 5% significance level on performance of private insurance companies in Ethiopia, whereas Liquidity risk, reinsurance risk and firm size have positive and significant effect on ROA. The researcher concluded that financial risk has significant effect on the performance of Ethiopian insurance companies. On the basis of the findings, the study recommended that there is greater need for Ethiopia insurers to give due attention the financial risks particularly credit risk, liquidity risk, solvency risk, technical provision risk, reinsurance risk and firm size more integrally and to increase their size by enhancing their assets base.

Key Words: Insurance, financial risk and financial performance

CHAPTER ONE

INTRODUCTION

This chapter of the study discusses at the beginning the background of the study. Followed by the background the researcher tried to identify the insurance industry in Ethiopia, the statements of the problem and presented the intended objective of the study. The research questions and hypothesis of the study are also included in this part of the chapter. And finally the significance, scope and limitation of the study are presented in line with the organization of the study.

1.1. Background of the Study

The insurance industry forms an integral part of a country's financial sector. If this crucial sector was missing, the consequences on the economy would be devastating. Insurance companies are important for both businesses and individuals as they indemnify losses and put them in the same positions as they were before the occurrence of the loss. Insurers provide economic and social benefits in society such as mitigating the impact of losses, reduction in fear and uncertainty as well as employment creation (Mazviona et al., 2017). According to Kazeem (2015) the importance of insurance companies becomes more obvious for businesses and individuals as they indemnify business losses, thereby safeguarding economic activities in the society from collapse. Insurers provide economic and social benefits in the society not only by prevention of losses, but through reduction in anxiety and fear, increase employment and also through accumulated premium generated for long term investment. Thus, like any other industry, insurance companies are expected to continue improving their performance so as to sustain their role in the society.

In any country financial performance of any sector serves as a backbone of economic growth and industrialization of the country. Insurance sector has its own importance because it is responsible to provide proficient financial aid, channel funds, utilization of resources in optimal manner and investor's treatment. Under the umbrella of financial sector, Insurance sector plays a pivotal role of regulating funds to different industries thereby contributing major inflows towards economic and financial growth (Andrieş&Căpraru, 2014).

Insurance companies are in the business of taking risks and Worldwide these companies write policies that deal with specific risks, and in many cases, even underwrite exotic risks. In carrying its core activities, i.e., pricing, underwriting, claims handling and reinsurance management, an insurer will face a wide range of risks which are often interlinked and if not properly managed, could threaten the ability of the institution to achieve and sustain its viability. Therefore, obtaining coverage for every insurable risk is being replaced by the risk management concept. Risk management, which includes insurance coverage, is intended to minimize the costs associated with assuming certain types of risk and providing prudent protection. It deals with pure risks that are characterized by chance occurrence and that may only result in a financial loss. Managing risks is an important factor which insurance companies must attend to if they are to achieve financial performance (Arifet.al., 2015).

According to Adrian (2014) risk is inherent in every business, but organizations that embed the right risk management strategies into business planning and performance management are more likely to achieve their strategic and operational objectives. Risk taking is core to the Insurance Company's business, and the risks mentioned earlier are an inevitable consequence of being in business. The insurance's aim is therefore to achieve an appropriate balance between risk and return and minimize potential adverse effects on its performance. This requires more dynamic and sound Risk Management methods to perform well in an ever dynamic and highly competitive insurance industry, which will translate into having a competitive advantage and thus generate growth in profits. Risk management is a process of identifying loss exposures faced by an organization and selecting the most appropriate techniques for treating such exposures (Rejda, 2003).

As stated by Arif & Showket, (2015), there are many techniques available for insurance companies to manage risks. These include: loss financing, risk avoidance and loss prevention and control. Management of insurance companies is argued to carefully judge the insurable risks so as not to incur excessive losses in settling claims. Managing risks is an important factor which insurance companies must attend to if they are to achieve financial performance. Insurance companies apply various techniques to manage risks. Some of their risks are re-insured by some companies abroad (Meredith, 2004).

Insurance supervisors, along with banking and other sector regulators, play an important role in ensuring a stable financial environment. Therefore, financial institutions and modern businesses concerned with their ability to manage risks and see the need for sound programs of risk management as an essential part of corporate responsibility. They also consider the insurance industry as a mirror for the financial stability of a country (Adrian, 2014).

According to Jacques et al. (1997) financial risk encompasses the risk of cash insolvency. However, this notion will be expanded to include the risk of being unable to meet prior claims with the cash generated by the firm, which is determined by the dispersion of net cash flows and the level of fixed obligations, as well as the firm's pool of liquid resource.

Barges (1963) defines financial risk to be the added variability of the net cash flows of the owners of equity that results from the fixed financial obligation associated with debt financing and cash leasing. Financial risk is an umbrella term for multiple categories of risk associated with financial transactions. It can further be explained as the possibility where the investors loss money if they are investing in the company whose cash flows are inadequate to meet the matured obligations (Arifet.al., 2015).

Insurance companies' performance has attracted scholarly attention in recent years due to its importance in development and stabilizing of countries economy. Return on Assets (ROA) as the most commonly used measure of for financial performance. Based on literature review in developing countries like Ethiopia the topic the effect of financial risk on insurance company financial performance has received little attention. Thus, the major concern of this study is to examine the effect of financial risk on financial performance of private insurance companies in Ethiopia.

According to Hailu Zeleke (2007), the first significant event that the Ethiopian insurance market observation was the issuance of proclamation No. 281/1970 and this proclamation was issued to provide for the control & regulation of insurance business in Ethiopia. Consequently, it created an insurance council and an insurance controller's office, its strange impact in the sector. The controller of insurance licensed 15 domestic insurance companies, 36 agents, 7 brokers, 3 actuaries & 11 assessors in accordance with the provisions of the proclamation immediately in the year after the issuance of the law.

Currently, According to National Bank of Ethiopia report 2017/18 the numbers of insurance companies operate in Ethiopia is total of 17 companies from which, 16 private and 1 public insurance companies. Total branch office reached to 532 from 465 a year earlier, which is 14% increase from past years. From total of 532 insurance companies branches 285 or 54% are found in Addis Ababa. The total capital of the insurance sector in Ethiopia has an aggregate capital of 5.5 billion birr which is 26% increase from the past year total capital of 4.3 billion birr. There has been some change made in this sector. (NBE report 2017/2018).

1.2. Statement of the problem

Anthony et al. (1997) stated that insurers are in the risk business. In the process of providing insurance and other financial services, they assume various kinds of actuarial and financial risks. Risk arises from raising funds via the issuance of insurance policies and other liabilities. It is the risk that the firm is paying too much for the funds it receives or, alternatively, the risk that the firm has received too little for the risks it has agreed to absorb. If an insurer invests these funds in efficiently traded securities, it should expect to have, on average, a zero net economic profit on those securities. Therefore, if the insurer pays too much for its funds, it cannot expect to earn a satisfactory profit in the long run.

Financial risks are inherent in every firm and firms should be embedded in determining the risks that affect their performance insurance firms assume risks of other businesses and focus should be on how to reduce cost related to the risk assumption to avoid financial loss (Arifet.al., 2015). Insurance firms face risks of taking excessive risks that might attract huge insurance losses and increase management expenses in claims investigation, claims payments and monitoring costs. Therefore, adequate risk management process is necessary for insurance firms' enhance their financial performance. Adrian (2014) found that financial risk negatively affected financial performance. On the other hand, modern portfolio theory by Markowitz (1952) show the risk appetite of investors where financial institutions are said to be risk averse and tend to adopt discriminative risk management practices to reduce risk.

There are few studies conducted in the case of Ethiopian insurance company's performance related to financial risk in the Addis Ababa University. Amongst the study some of them are, Taye (2019) conducted the study on risk management and Financial performance and the result

of the study revealed that technical reserve and liquidity risks have negative and insignificant impact on financial performance of the corporation, whereas solvency risk, underwriting risk and reinsurance risk have positive and significant effect. Zinaye (2017) also conducted the study on the effects of risk management on financial performance. The result of the study showed that technical reserve and liquidity risks have negative and significant impact on ROA (proxy measure for financial performance) of non-life insurers in Ethiopia, whereas company size and reinsurance risk have positive and significant effect on ROA. Fekade (2019) on the study of the effects of risk management on financial performance of non-life insurance companies; the finding of the study revealed that; financial risk which is measured by liquidity risk have a positive and statically significant effect on financial performance. Cost to income ratio, claim settlement ratio and asset utilization ratio which are proxy for operational risk of insurance companies have negative, negative and positive impact on financial performance of the insurers respectively and statically significant. Firm size which is measure for enterprise risk management has positive and statically significant effect on the financial performance of insurance companies. Daniel (2017) conducted the study on the financial risk on financial performance of insurance companies in Ethiopia. The regression result show that credit risk, liquidity risk, solvency risk, underwriting risk and technical provisions risk show negative and significant effect at 1% and 5% significance level on performance of insurance companies in Ethiopia, whereas reinsurance risk has insignificant effect on performance of insurance companies.

Previous empirical studies on financial risk and financial performance have presented somewhat conflicting results, others agreeing some disagreeing with important theories of risk management. The contradictory results justify further research. Also most of studies done in Ethiopia have focused on relationship between risk management and financial performance, making it impossible to give a convincing outcome and henceforth the need to do this study. Therefore, this study seeks to add knowledge on the topic of the study and attempts to give an explanation to the question, what is the effect of financial risk on financial performance of insurance firms listed in Ethiopia?

In addition, the study was providing insights into the recent financial risk effects on financial performance of private insurance companies in Ethiopia.

1.3. Research Questions

In order to address the problem of the study, the following research questions were raised:

1. What effect do the financial risks on the return on assets (ROA) the proxy of financial performance of private insurance companies in Ethiopia?
2. What type of the relationship exists between the financial risks and the financial performance of private insurance companies in Ethiopia?
3. Which of the financial risk factors that affect the performance of Ethiopian private insurance companies strongly?

1.4. Objectives of the study

1.4.1. General Objective

The main objective to conduct this study is to examine the effect of financial risk on performance of insurance companies in Ethiopia.

1.4.2. Specific Objectives

The specific objectives of the study are;

1. To examine the effect of financial risk on performance of Ethiopian private insurers.
2. To study the relationship between financial risk and financial performance of private insurance companies in Ethiopia.
3. To examine the effect of aggregated financial risk factors on performance of Ethiopian private insurers.

1.5. Research Hypotheses

Hypotheses are predictions about the outcome of the results that has capable of being tested by scientific methods that relates independent variables to some dependent variable. Therefore, in order to succeed objectives of the study, the following hypotheses were developed regarding the effect of financial risks on performance of insurance companies, the relationship between financial risk and performance of insurance companies, and the effect of financial risks

management on performance of insurance companies based on different empirical research and theoretical reviewed made. The hypothesis developed by the study was based on empirical evidence and theory of different researchers. This empirical evidence and theoretical bases used to develop the hypothesis and how this hypothesis are developed discussed in chapter three of this study paper in variables definition parts. Since the bases for hypothesis are presented in chapter three and the following part only present the hypothesis of the study.

H₁: Credit risk has a significant negative effect on the performance of Ethiopian private insurance companies.

H₂: liquidity risk has a positive and significant effect on the performance of Ethiopian private insurance companies.

H₃: Solvency risk has a positive and significant effect on the performance of Ethiopian private insurance companies.

H₄: technical provision risk has a negative and significant effect on the performance of Ethiopian private insurance companies.

H₅: reinsurance risks a negative and significant effect on the performance of Ethiopian private insurance companies.

H₆: underwriting risk has a negative and significant effect on the performance of Ethiopian private insurance companies.

H₇: firm size has a positive and significant effect on the relationship between the financial risk and performance of Ethiopian private insurance companies.

1.6. Significance of the study

In Ethiopia, a few researches have been investigated in insurance industries and most of the studies previously focused on bank industries not insurance industries. As there is scarcity of empirical studies in insurance industries, some existed studies are mainly focused on examining the determinants of profitability and effect of risk management on performance of insurance companies in Ethiopia. Hence this study might fill the gap by examining the effect of financial risk on performance of Ethiopian private insurance companies.

The finding of this study benefits insurance companies to understand the financial risks that they are exposed to and therefore put in measures to curb against them hence reducing or eliminating losses. Also it is valuable the management personnel of listed insurance firms in making decisions regarding financial risks as well as how to increase investor confidence generally through managing various financial risks. In addition the result of this study was also serving as a data base for further researchers in this field of research. Further, the observed findings are relevant for policy-makers or insurance regulators, corporate boards, executives, general public, students and other stakeholder.

1.7. Scope and Limitation of the Study

The study was limited on the effect of financial risk on performance of private insurance companies in Ethiopia and the result of this study depends on secondary data analysis. Most of private insurance companies are established recently and to use 12 years (1 July 2007 to 30 June 2018) panel data in the study, the researcher limited to include 8 insurance companies established before 2007. The study used seven financial risk variables for independent variables and one dependent variable of ROA (proxy of performance of insurance companies).

The study has a limitation on the measurement of credit risk variable, because the measurement may not specifically display the default amount from the total uncollectable amount unlike banking industry measurement of nonperforming loan. Hence, the study employed total of outstanding receivable balance to measure credit risk. In addition due to the unique accounting system used by life assurance business, the income statement is not prepared at the end of each year. It may be prepared in three years or five years due to difficulty to prepare income statement of life assurance business and it needs an actuary which is high cost and also not all private insurance company in Ethiopia gives life assurance service. So the secondary data collection from income statement, balance sheet and revenue account was limited to general insurance business.

1.8. Organization of the study

This study paper organized in to five chapters. Chapter one deals with background of the study, insurance industry in Ethiopia, statement of the problem, research questions, objective of the study, research hypothesis, significance of the study, scope and limitation of the study. The second chapter is a review of literature in which theories, empirical evidence and conceptual frame work are identified. Chapter three contained research methodology where research design, research approach, population, sampling techniques, sample size, source of data, instruments, technique of data analysis. Chapter four focused on the result and associate discussions obtained from the secondary data on study area. Finally, the last chapter contained the summary, conclusion and recommendations for the finding.

CHAPTER TWO

LITERATURE REVIEW

This section presents theoretical and empirical review on the effect of financial risk on Ethiopian insurance companies' performance. Accordingly, the first part present theoretical literature about different financial risks in insurance and also explain risk management theory. Next to these, it presents the relationship between financial risks and firms 'financial performance. The second part discusses about various empirical studies. The gaps in existing literature were described in the third part and the conceptual framework was depicting in the fourth part.

2.1. Theoretical and conceptual literature Review

2.1.1. Financial Risk

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

The word risk is reasonably modern; it ^{entered} the English language in the mid-17th century, coming from the French word *risqué* and in the second quarter of the 18th century the Anglicized spelling began to appear in insurance transactions (Flanagan, 1993).

As mentioned by Arif et al. (2015) insurance companies are engaged in the business of taking risks. Throughout the globe, these companies deal with a host category of risks which have a direct impact on the performance of these companies. These risks prove to be a greater setback in the process of achieving growth in terms of size, assets and performance of the company which is measured in the form of returns. Thus, such a crippling situation in the organization

necessitates a better approach being in place in order to understand these risks and develop an instrumental structure or framework to handle such risks.

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

To put the financial risk in simpler terms, it can be defined as an umbrella term for multiple categories of risk associated with financial transactions. It can further be explained as the possibility where the investors lose money if they are investing in the company whose cash flows are inadequate to meet the matured obligations, defines financial risk to be the added variability of the net cash flows of the owners of equity that results from the fixed financial obligation associated with debt financing and cash leasing. Also, financial risk encompasses the risk of cash insolvency (Arif et al., 2015).

2.1.2. Financial Performance

According to Nirmal (2004) Performance not only indicates demonstration of something but it also indicates the quality and result achieved by the management of enterprise. Almajali (2012) explained performance as an outcome achieved by an individual or a group in an organization related to the authority and responsibility given to achieve the goal legally, it is the ability of firm to gain and manage the resources in several ways to develop competitive advantage.

Technically, financial performance is defined as a subjective measure which determines how well the organizations use their available resources to generate more revenues. The financial performance measures the financial soundness and health of the organization in monetary terms and thus, can be used to compare the performance of different corporations within any particular industry or between the industries (Arif et al., 2015).

According to Nandan (2010) financial performance can be defined as a subject measure of how well a firm can use assets from its primary mode of business and generate revenues. Further this

term is used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation. Erasmus (2008) noted that financial performance measures like profitability and liquidity among others provided a valuable tool to stakeholders to evaluate the past financial performance and the current position of a firm.

2.1.3. Financial risk in insurance

Insurers are in the risk business. In the process of providing insurance and other financial services, they assume various kinds of actuarial and financial risks. The risks contained in the insurer's product sales-that is, those embedded in the products offered to customers to protect against actuarial risk-are not all borne directly by the insurer itself. In many instances, the institution will eliminate or mitigate the actuarial and financial risk associated with a transaction by proper business practices; in others, it will shift the risk to other parties through a combination of reinsurance, pricing, and product design (Anthony et al., 1997).

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

Insurance is a contract in which the insured transfers risk of potential loss to the insurer who promises to compensate the former upon suffering loss. The insured then pays an agreed fee called a premium in consideration for this promise. The promisor is called the insurer and the promisee is called the insured (Lowe, 1999).

Financial risks are risks associated with financial operations in insurance firms and they include credit risk, liquidity risk, solvency risk, technical provisions risk, reinsurance risk and underwriting risk.

Credit risk

According to Vaughan and Vaughan (2007) credit risk is a risk that arises from financial loss as result of not meeting financial obligation. Credit risk management of organization aims at measuring and controlling of the impact of this credit related loss on a company. It deals with the

identification and measurement of credit risk and the appropriate measure to be taken in order to ensure the soundness of credit granting policy and procedure. In the process of identifying their credit risk it will be important for Insurance companies consider the likelihood of credit default over the life of the obligation or over a specified time in order to develop the expected credit default frequency (Birla et al., 2008).

In addition, Gerald et al. (2001) mentioned that credit risk basically means the risks that counterparty cannot meet its liabilities. Even if counterparty does manage to meet its liabilities, the value of a given item may decline if its rating is downgraded. Consequently, the insurance company will be subject to credit risk whenever changes in the economic policy framework entail adverse changes in the creditworthiness of invested assets. Mortgages as well are subject to credit risk, which must be adequately assessed by means of internal ratings. When managing credit risk, insurance companies must primarily look to avoid concentration risk (e.g. concentration of investments in a particular investment category, low degree of portfolio diversification) and strive to achieve as much diversification in their investments as possible.

Liquidity risk

Liquidity indicates a firm's readiness to settle both expected and unexpected demands of cash at any time (Gamlath & Rathirane, 2013). Liquidity risk is a financial risk that arises due to insufficient liquid asset to meet operational obligation. The availability of fund is necessary for the insurance companies so that cash outflow commitments both on and off balance sheet. These commitments are usually met by assets readily convertible to cash or through the capacity to borrow. The liquidity risk for insurance companies is the risk of going illiquid i.e. shortage of availability of funds (Vaughan and Vaughan, 2007). In determining the soundness of liquidity management insurance companies, especially in the case of risk based supervision of insurance, planning for liquidity needs is a preferred current trend in identifying known, expected and potential cash out flows and in terms of quantity and timing of payment (Thompson, 2001).

Liquidity risk could include two different types of risk: the risk that an insurance company will become unable to assure itself of adequate funding due to a decline in new premium income caused by a deterioration, etc. of its financial position, or an outflow of funds caused by a big disaster, or it will incur losses because it is forced to sell assets at markedly lower prices than

normal and therefore unable to maintain cash flow (capital liquidity risk), and the risk that upheavals, etc. in the market will render it impossible to trade and therefore force the company to engage in transactions at prices that are markedly more disadvantageous than normal (Black et al., 1998).

Solvency risk

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

In accordance with SAM (2009) justification, solvency is an ability of an insurer to meet its obligations (liabilities) under all contracts at any time. Due to the very nature of insurance business, it is impossible to guarantee solvency with certainty. In order to come to a practicable definition, it is necessary to make clear under which circumstances the appropriateness of the assets to cover claims is to be considered, e.g. is only written business (run-off basis, break-up basis) to be considered, or is future new business (going-concern basis) also to be considered. In addition, questions regarding the volume and the nature of an insurance company's business, which time horizon is to be adopted, and the setting of an acceptable degree of probability of becoming insolvent, should all be considered. Solvency is used assessing financial health on a runoff basis while capital adequacy is used assessing financial health on a going-concern basis.

As per Shiu (2004) explanation, insurance companies with higher solvency margin are considered to be sounder financially. Financially sound insurance companies are better able to attract prospective policyholders and are better able to adhere to the specified underwriting guidelines. Insurance companies with higher solvency margin outperform those with lower solvency margin.

Technical provision risk

Technical provision risk is a type of risk that arises from the exposure to financial loss due to inability to meet future claims and associated expenses. This happens when the claims provision held are insufficient overstating earnings and equity (IMF, 2005). Mostly insurance companies collect premiums in advance and keep them in reserve accounts for future claim settlements. For instance, most premiums collected by insurance companies are kept in outstanding claims and unearned premiums reserves which are two main accounts in the liability side of the balance sheet. Outstanding claims reserve is considered riskier than ordinary long-term corporate debt since neither the magnitude nor the timing of the cash outflows is known (Shiu, 2014).

As referred by Jasmina (2003) it is a risk of holding insufficient technical provisions or holding unjustifiably excessive provisions, where provisions are set at a lower level than actually required then this could present the company's financial position in a better light than it actually is. This could result in inappropriate underwriting decisions being made. Giovanni (2001) mentioned that a technical risk for the solvency of insurance companies is certainly that of underestimating technical provisions. This risk concerns the impossibility on the part of the companies to meet their commitments towards the insured and the claimants due to insufficient technical provisions. The risk of insufficient technical provisions should therefore be forestalled both by companies by adopting prudential (this term is to be interpreted in relation to the specific and precise methodologies for calculating technical provisions described in the report) calculation procedures and methodologies when setting up the provisions, and by supervisory authorities. If the possession of sufficient technical provisions is an indispensable requisite for the company's solvency, the level of harmonization among the methodologies adopted in the various countries is equally important.

The insurance technical reserve is calculated as the ratio of net technical reserves to equity, and reflects the potential impact of technical reserves "deficit on equity in the event of unexpected losses. This ratio demonstrates the potential impact of deficiencies in technical reserves due to the occurrence of unexpected losses on the equity (Adams & Buckle, 2003).

Reinsurance risk

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

Reinsurance risk occurs when an insurance companies suffers high claims beyond its ability to meet the obligations. Therefore, reinsurance is a process where an insurance firm agrees to insurer another insurance firm against a portion or all losses that the reinsured may suffer (Lee, 2012). Reinsurance risk is a risk type that arises from bankruptcy or insolvency risk of reinsurance (Everis, 2009). It is known that most insurers in Ethiopia mostly rely on Reinsurance Company's support to increase their underwriting capacity. Thus the underwriting result of insurers is highly affected by the financial stability of reinsurance companies (Kokobe and Gemechu, 2016).

As per Suheyli (2015) illustration, insurance companies usually take out reinsurance cover to stabilize earnings, increase underwriting capacity and provide protection against catastrophic losses. Nevertheless, there is a cost for reinsurance. As a result, determining an appropriate ceding level is important for insurance companies, and they have to try to strike a balance between decreasing insolvency risk and reducing potential profitability. Although it increases operational stability, increasing reinsurance dependence, i.e. lowering the retention level, reduces the potential profitability. Purchasing reinsurance reduces insurers' insolvency risk by stabilizing loss experience, increasing capacity, limiting liability on specific risks, and/or protecting against catastrophes. However, transferring risk to reinsurers is expensive. The cost of reinsurance for an insurer can be much larger than the actuarial price of the risk transferred.

Underwriting risk

Underwriting is the function of evaluating the subject of insurance, whether a person, property, profession, business, or other entity, and determining whether to insure it. Underwriting is the foundation of the insurance transaction process. Underwriting is the process of determining whether an insured is an acceptable risk, and if so, at what rate the insured will be accepted. Insurers cannot accept every applicant. An insurer has a responsibility to its current policyholders to make sure that it will be able to meet all the contractual obligations of its existing policies. If the insurance company issues policies on applicants that represent risks that are uninsurable or risks that require premiums higher than the insurer may charge can cover, the insurer's ability to meet its contractual obligations is jeopardized (Temecula, 2001).

Underwriting risk risks that arise due to the exposure to financial loss resulting from the selection and approval of risks to be insured the adjudication of claims and other related liabilities (Robert and Andre, 2011). Underwriting risk is a possibility that the premiums pooled by the insurance firms may not be enough in cost coverage (Ernst et al., 2010). According to Birla et al. (2008) it is the fundamental functions of insurances companies to give coverage to risk holders (insurance clients). In the process, it is obvious that if these risks materialize the burden is known to affect the financial position of insurance companies.

Underwriting risk is the risk that the premiums collected will not be sufficient to cover the cost of coverage. It comprises a high proportion of an insurers overall risk. Huge fluctuations in net premiums written indicate a lack of stability in underwriting operation of an insurance company. An unusual increase in net premiums written might indicate that the company is engaging in the so called cash-flow underwriting to attempt to survive its financial difficulty. However, this is not necessarily the case. An unusual increase in net premiums written could indicate favorable business expansion if it is accompanied by adequate reserving, profitable operations, and stable products mix (National Association of Insurance Commissioner, 2001).

Firm Size

Size of a company determines the amount of debt that the company can access for investments or project financing. Large firms are advantaged due to economies of scale and use of average cost of production because of efficiency in their operations and capacity to invest in sophisticated technologies. It is easier for larger firms to access debt as compared to their smaller firms because large firms maintain a positive corporate reputation that is got from their stakeholders (Cheng, 2008). Due to instability of smaller firms, most financial institutions get discouraged to give credit to these smaller firms. Smaller firms record high growth rates that necessitate the need for debt while large firms are stable and established. According to Meanza (2014) larger companies are competitive than their smaller companies in exploiting economies of scale, this results to high levels of profitability. When size of a company increases, its performance is likely to increase (Alchian & Harold, 2011). However, Berger and Ofek (2015) indicate that for large companies, the impact of their size might be adverse due to bureaucracies, company structure among other factors.

2.1.4. Financial Performance of Insurance Companies

The performance of the insurance companies plays a pivotal role in the growth of the industry as a whole, which ultimately contributes to the success of an economy. The insurance companies endanger their performance by assuming different types of risks. In order to have full and fuller understanding of the impact of financial risk on the profitability of insurance companies the present study will take into consideration various ratios like solvency, liquidity, profitability (Arif et al., 2015). Yuvaraj et al. (2013) cited in William et al. (2004) suggested that although there are different ways to measure profitability it is better to use ROA. In addition to this, performance of insurance companies in financial terms is normally expressed in net premium earned, profitability from underwriting activities, annual turnover, return on investment and return on equity. These measures could be classified as profit performance measures and investment performance measures. However, most researchers in the field of insurance and their profitability stated that the key indicator of a firm's performance is ROA defined as before tax profits divided by total assets.

Insurance companies financial performance can be measured using underwriting and profitability ratios (Flemings, 2004). On the other way, William et al. (2004) argued that the performance of insurance companies in financial terms is normally expressed in net earned premium, profitability from underwriting activities, annual turnover, return on investment, and return on equity.

2.1.5. Risk Management Theory

Risk management is the identification, assessment, and prioritization of risks followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events or to maximize the realization of opportunities. Effective risk management can bring far reaching benefits to all organizations, whether large or small, public or private sector. These benefits include, superior financial performance, better basis for strategy setting, improved service delivery, greater competitive advantage, less time spent firefighting and fewer unwelcome surprises, increased likelihood of change initiative being achieved, closer internal focus on doing the right things properly, more efficient use of resources, reduced waste and fraud, and better value for money, improved innovation and better management of contingent and maintenance activities (Wenk, 2005).

Enterprise risk management theory

Enterprise risk management (ERM) theory developed by (mikes, 2005) states that an organization can either cope with risks by either tackling one risk separately, by dividing them into various sections and dispersing them from one sphere; or a summation of risks combined together within a synchronized and strategically set framework. The initial approach is known as enterprise risk management. The approach emphasizes that the most successful organizations are such because of them having effective ERM which earns them a sustainable competitive edge over those that single out risks and tackle them singly. The main logic behind the approach is that, measurement and management of risks procedurally and structurally and provision of key decision makers with the information and motivation to maximize return, reinforces the firm which enables it meet long-term strategic objectives. Effective implementation of ERM can boost organizations competitive advantage and maximizes shareholders value (Arena et al., 2010).

The implementation of ERM is however not upfront even though its conceptualization is quite direct. All financial institutions including insurance firms face financial risks including foreign exchange risk, legal risks, credit risks, operational risks, liquidity risks and counterparty risks among others to some extent. Banks operate in an economic environment which is volatile. Emmett and Vaughan (2003) encourage most organizations to implement corporate risk management. This theory provides a comprehensive framework for this study for specification and measurement of investment risk by insurance firms hence enables the development of relationships between financial risks and firm performance.

Agency theory

Agency theory is anchored on contractual relationship between two parties, the principal and the agent with an obligation to perform some services. It entails delegating decision making authority to the agent by the principal (Jensen & Meckling, 1976). In addition, the agent is given powers to bring the principal into a contractual relationship with the third party without making reference to him or herself (Wright & Oakes, 2002). This theory traces its grounds to mismatch arising from information asymmetry between shareholders, debt holders, and management about earnings distribution which can lead to firms engaging in high risk profile projects or failing to engage in positive net profit projects (Mayers and Smith, 1987). Smith and Stulz (1985) points out that agency issues have been shown to influence managerial attitudes toward risk taking and hedging in the field of corporate risk management. Consequently, agency theory implies that defined hedging policies can have important influence on firm value (Fama and Pfleiderer, 1995). According to Bowie et al. (1992), agency theory points out that, in imperfect labor and capital markets, corporate managers will endeavor to maximize their personal interest at the expense of shareholders. Managers are able to advance their personal interest due to their ability to access both external and insider information. This theory is relevant to this study since it informs the organization structure/governance variable and risk affinity hence plays a critical role in credit risk management decisions.

2.2. Review of Empirical studies

The study has reviewed various empirical studies that are related with the effect of financial risk on insurance companies' performance by incorporating various empirical studies conducted in developed countries, emerging market countries and African countries.

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

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

Almajali (2012) conducted research on the factors that mostly affect financial performance of Jordanian Insurance Companies. He included all 25 insurance companies' enlisted at Amman stock Exchange during the period 2002-2007. The data collected was analyzed by using a number of basic statistical techniques as T-test and Multiple- regression. The results showed that the following variables Leverage, liquidity, Size, Management competence index have a positive statistical effect on the financial performance of Jordanian Insurance Companies. Finally the researcher recommended that a high consideration of increasing the company assets will lead to a good financial performance and there is a significant need to have highly qualified employees in the top managerial staff.

Boyjoo and Ramesh (2017) investigated the factors influencing the performance of general insurance companies operated in Mauritius for a five consecutive years from 2011-2015. In the study, performance of general insurers was determined by using Return on Assets (ROA) as dependent variable. The panel data of ordinary least square (OLS) multiple regressions is used to analyze the secondary data collected for the study purpose. The result of the study reveals that size of the company, underwriting risk, Leverage, liquidity, concentration ratio and investment performance has positive and significant impact on the profitability of the firm measured by return on asset (ROA) whereas, reinsurance dependency and growth rate has negative and insignificant relationship with ROA. However, sales profitability ratio, net operating expense, company age and premium growth are positively and insignificantly related with financial performance of general insurance companies operated in Mauritius.

Adrian (2014) studied on the relationship between financial risk and financial performance insurance companies in Kenya. The population for this study was 49 insurance companies in Kenya and the study period was cover 5 years period starting from year 2009 to 2013 and selected since it is recent and it showed the existing relationship between financial risk management and financial performance of insurance companies in Kenya. Due to this fact, he acquired the entire population as a sample. The study collected secondary data from insurance companies' annual report for capital management risk, financial risk, solvency risk, size and liquidity risk of independents variables and financial performance of the company which was measured using return on Asset (ROA) as dependent variables. Data analysis was done using SPSS Version 20 whereby inferential statistics was applied by means of multiple regression model. He had only made test of significance, but he overlooked proving of other model assumptions. As a final point, the study found that capital management risk, financial risk, solvency risk and liquidity risk negatively affect the financial performance of insurance companies in Kenya, but size of the insurance companies was found positively influence to the financial performance of insurance companies in Kenya.

Suheyli (2015) examined the determinants of the insurance companies' profitability in Ethiopia. The mixed research approach was used in the study, which consist of annual report of the firm and interview with manager of insurance companies. Panel data covering from 2004 to 2014 eleven year period are analyzed for a sample of nine insurance companies in Ethiopia. The result

of the study demonstrate that underwriting risk, technical provision and solvency ratio have statistically significant and negative relationship with insurers' profitability. However, reinsurance dependence has negative but insignificant relationship with profitability. On the other hand, liquidity, company size and premium growth have a positive and statistically significant relationship with insurers' profitability. In addition, economic growth rate has significant influence on profitability whereas inflation has insignificant influence on insurers' profitability. The study identified that underwriting risk; technical provision and liquidity are the most important factors that affect profitability of insurance companies in Ethiopia. So that, the managers of insurance companies give attention for this factors.

Yemane and Raju (2015) researched on the impact of corporate governance on performance of insurance firms in Ethiopia. The study used descriptive research design. The population of the study was 15 insurance firms operating in the market but a sample of 10 firms was used. Secondary data was collected from annual reports of the firm's for a period of 2009-2013. Data was analyzed through regression analysis to show the relationship among the predictor variables and responsive variable. The finding indicated that the relationship between board compensation, firm size and board meeting was positive and statistically significant to financial performance while gender diversity, board size and board committees had no significant impact. This study presents a contextual knowledge gap which the current study seeks to fill because it focused on corporate governance.

Taye (2019) conducted the study on risk management and financial performance and the result of the study revealed that technical reserve and liquidity risks have negative and insignificant impact on financial performance of the corporation, whereas solvency risk, underwriting risk and reinsurance risk have positive and significant effect.

Zinaye (2017) also conducted the study on the effects of risk management on financial performance. The result of the study showed that technical reserve and liquidity risks have negative and significant impact on ROA of non-life insurers in Ethiopia, whereas company size and reinsurance risk have positive and significant effect on ROA.

Fekade (2019) on the study of the effects of risk management on financial performance of non-life insurance companies; the finding of the study revealed that; financial risk which is measured

by liquidity risk have a positive and statically significant effect on financial performance. Cost to income ratio, claim settlement ratio and asset utilization ratio which are proxy for operational risk of insurance companies have negative, negative and positive impact on financial performance of the insurers respectively and statically significant. Firm size which is measure for enterprise risk management has positive and statically significant effect on the financial performance of insurance companies.

Daniel (2017) carried out a study on the effect of financial risk on performance of insurance companies in Ethiopia. The study employed a mixed method research approach by combining documentary analysis and unstructured in-depth interviews. The population of the study was Eight (8) privately insurance companies covering the period of Sixteen (16) consecutive years, 2000-2015. The study used panel data techniques specifically fixed effect model on the regression analysis. Six variables that are credit risk, liquidity risk, reinsurance risk, solvency risk, technical provisions risk and underwriting risk used for independent variable while return on asset was the dependent variable. Data was analyzed through E-views software and regression analysis was used to show the relationship between the variables. The research concluded that financial risk has significant effect on the performance of Ethiopian insurance companies.

2.3. Literature gap

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

In line with this, Suheyli (2015) had also conducted a research on determinant of profitability in Ethiopian insurance companies, but the study didn't include credit risk and solvency risk as measurement of total assets over total liabilities that can show the insurance companies how they are solvent for their total liabilities. However, this study has included these significant variables.

The research gap that have addressed in this study is that, some research findings do not appear to have transferred well to the workplace that produce dual camp of knowledge producer from knowledge user, hence, it creates research gap. The study is expected to give general enlightens on the problem on hand in developing countries context like in Ethiopia particular. However, most available previous studies not conducted on the same topic in Ethiopia insurance companies', it is contribute to the topic as a new knowledge related to the effect of financial risk on performance of insurance companies in the world. Besides the finding of the study had relevance to improve understanding of particular insurance business in the country.

Therefore, this study seeks to fill the above-explained gaps by providing information about the effect of financial risk on performance by examining the untouched one, and replicating the existing in Ethiopia by using eight(8) insurance companies existing before 2007GC in Ethiopia that have 12 years' data. To this end, the study provides insights in to the effect of financial risk on performance of private insurance companies in Ethiopia. There was no too much earlier study related to the topic in Ethiopia. Therefore, this study was aimed to fill this gap theoretically and practically in the mentioned area.

2.4. Conceptual Framework

Conceptual framework is a map which shows how particular variables are connected with each other in the study, that is, it helps to clearly identify the variables that used in the research process (Teklit and Jasmindeep, 2017).

The conceptual framework describes the relationship between independent and dependent variables of the study. This research seeks to establish effect of credit risk, liquidity risk, solvency risk, and technical provisions risk, reinsurance risk, underwriting risk, financial leverage and firm size (independent variables) on financial performance (dependent variable).

Independent Variables

Financial Risk

- Credit risk
- Liquidity risk
- Solvency risk
- Technical provisions risk
- Reinsurance risk
- Underwritingrisk

Dependent Variable

Financial Performance

- ROA

Control Variables

- FirmSize

Figure 2.1: Conceptual Framework

Sources: Prepared by researcher, 2020

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

This chapter outlines and explains the methodology employed to achieve the research objective and test the research hypotheses formulated in the study. First section provides a brief overview of the research design followed section two with the research approach and section three discussed about population and sampling techniques adopted in the study, section four includes actual data sources and collection instruments and then section five present variable measurements. Section six and seven discussed about the model specifications and data presentation and analysis techniques used in the study respectively.

3.1. Research design

Cooper et al. (2003) discussed that explanatory studies unlike descriptive studies, go beyond observing and describing the condition and tries to explain the reasons of the phenomenon. If the objective is to determine which variable might be causing a certain behavior, i.e. whether there is a cause and effect relationship between variables, explanatory research must be undertaken (Shields, 2013).

Thus, explanatory research designs were used in this research because the study identified the effect of financial risk on Insurance companies' performance which was appropriate for the objective of the study.

To implement this design study used quantitative approach and the data collected from Eight (8) private insurance companies in Ethiopia using twelve (12) years panel data (2007 to 2018). Secondary source of data included Balance Sheet, Income statements, and Revenue Account, of the insurance companies obtained from the NBE and other data that couldn't be directly obtained from financial statements collected from the insurance companies themselves. Secondary sources are the most reliable one, as these financial statements are already audited by independent auditors and accepted by the users of the information.

3.2. Research approach

When conducting a research, there are different ways of approaching the problem. According to Creswell (2009), there are three approaches of research; quantitative, qualitative and mixed. The functional or positivist paradigm that guides the qualitative mode of inquiry is based on the assumption that social reality has an objective onto logical structure and that individuals are responding agents to this objective environment (Morgan & Smircich, 1980). Quantitative research is a means for testing objective theories by examining the relationship among variables (Creswell, 2009). Finally, mixed methods approach is an approach in which the researchers emphasize the research problem and use all approaches available to understand the problem (Creswell, 2003).

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

3.3. Population and sampling techniques

The total population of the study is Seventeen (17) insurance companies registered by NBE and under operation in Ethiopia from 2007 to 2018 to allow the researcher to obtain sufficient data for calculating the representative data from each insurer. The twelve years is assumed to be relevant because five years and above is the recommended length of data to use in most finance literatures. Thereafter, to make the balanced panel data structured, i.e. every cross-section follows the same regular frequency with the same start and end dates.

As noted in Jonker & Pennink (2010) it is obvious that researchers are typically unable to study the entire population. Therefore, researchers typically study a subset of the population which known as a sample. The procedure used for drawing the sample from the available lists is the insurance service year profile, for the reason that the study intend to use document sources. Therefore, sample size is decided based on the availability of operating data in the insurance operating in Ethiopia. The sampling techniques can broadly be divided as probability sampling and non-probability sampling (Leedy & Ormrod, 2005). Singh (2006) when the subjects used in the sample is homogeneous; using purposive sampling technique is appropriate, that of part of non-probability sampling.

A sample of 8 insurance companies are taken from the total population of 17 insurers over 12 years period covering calendar years from 2007 to 2018 to provide for 96 observations (8 insurers * 12 years) which is well adequate to operate regression techniques in customarily minimum of 95 observations is recommended by many researchers.

Moreover the researcher believes that the sample size is enough to make sound conclusion about the population as far as it covers approximately 50% of the total population. In addition to this, the selected insurance companies have significant shares from the total population in terms of total asset, capital and profit before tax. Twelve years average total asset, capital and profit before tax of Ethiopian insurance industry were 6.42billion, 1.97billion and 0.74billion respectively out of these 3.46billion, 1.16billion and 0.26billion were owned by the selected 8 insurers so this also can take us in a conclusion that, the sampled insurers can represent the total population (Ethiopian insurers). The sample size includes Awash Insurance Company (Awash), Global Insurance Company (Global), Nile Insurance Company (Nile), National Insurance Company of Ethiopia (NICE), Africa Insurance Company (Africa), Nib Insurance Company (Nib), Nyala Insurance Company (Nyala), and United Insurance Company (UNIC).

3.4. Data sources and collection instruments

The sources of data for this study collected from only secondary data. To examine the effect of financial risk on performance of Insurance Company the researcher used 12 years panel secondary data, which obtained from insurance companies' audited financial statements and annual reports filed with NBE through document review. Compared to primary data, secondary data gives higher quality data, the feasibility to conduct longitudinal studies and the durability of data which means secondary data generally provided a source of data that is both permanent and available in a form that may be checked relatively easily by others. And also according to Chris Brookes (2008) using panel data has advantage of address a broader range of issues and Tackle more complex problems, examine how variables dynamically change (over time) or the relationships between them and also structuring the model in an appropriate way, we can remove the impact of certain forms of omitted variables bias in regression results.

Consistent and reliable research indicates that research conducted by using appropriate data collection instruments increases the credibility and value of the research findings (Koul 2006).

Accordingly, document review is to be used for this study to collect the required data which is relevant for addressing the objectives of the study from audited financial statements of 8 selected insurance companies for 12 consecutive years (filed with NBE the period from 2007 to 2019) have to be used for the study to examining the effect of financial risk on Insurers financial performance.

3.5. Variable measurements

3.5.1. Definition of variables

According to Creswell (2009), to make it is clear to readers what groups are receiving the experimental treatment and what outcomes are being measured, the variables need to be specified in quantitative researches. Dependent variable is the regressand, effect variable, or explained variable; whereas Independent variable is the regressor, causal variable, or explanatory variable (Chris Brook 2008).

The variables that are used as dependent (explained) and independent (explanatory) variables in this study explained in this section. The definitions or measurements used for these variables are described as follow:

3.5.2. Dependent Variable

The most commonly used financial performance ratios are net profit margin (NPM), return on assets (ROA) and return in equity (ROE). Return on assets (ROA) is probably the most important single ratio in comparing the efficiency and financial performance of insurance companies as it indicates the returns generated from the assets that Insurers owns (Mehari and Aemiro, 2013). As explained by Amal (2012) return on assets determines an organization's ability to make use of its assets and return on equity reveals what return investors take for their investments. In addition, as stated by Ana-Maria et al. (2014), the return on total assets ratio represents one of the most used methods of quantifying financial performance. It was developed in 1919 by Dupont and it emphasizes the company's ability to efficiently use its assets. As indicated by Mirie (2015), financial performance is a measure of an organization's earnings, profits, appreciations in value as evidenced by the rise in the entity's share price. Accordingly, in most previous studies on insurance sector, return on asset (ROA) is being used as a proxy of

performance (Arif et al., 2015; Adrian, 2014; Yuvaraj et al., 2013 and Mirie, 2015). Thus, the study has taken return on asset (ROA) as dependent variable to measure performance of Ethiopian insurance companies. The formula for the performance measure is given as follows:

$$\text{ROA} = \text{Net profit before tax} / \text{Total assets}$$

3.5.3. Independent variables

This subsection describes the independent variables that are used in the econometric model to estimate the dependent variable. To measure the effect of financial risk variables on insurance companies' performance in Ethiopia, eight measures are used as independent variables which are extracted from different studies. The variables namely; credit risk, liquidity risk, solvency risk, and technical provisions risk, reinsurance risk, underwriting risk, financial leverage and firm size.

Financial risks

Credit Risk (CR): It is measured using the ratio of premium debtors plus due from reinsurer and other receivable to net asset of insurance company (premium debtors + due from reinsurer + other receivable / net asset). Currently, Ethiopian insurance companies have employed this ratio to grading their credit risk NBE (2010). In accordance with NBE (2010), area of credit risk includes counter party risk on derivative contracts and the risk of default on insured debts and trade debtors.

Gerald et al. (2001) mentioned that credit risk basically means the risks that counterparty cannot meet its liabilities. In addition, as stated by Anthony et al. (1997) it is the risk that a borrower will not perform in accordance with its obligations. Credit risk may arise from either an inability or unwillingness on the part of the borrower to perform in the pre-committed contracted manner.

$$\text{CR} = \text{Premium debtors} + \text{Due from reinsurer} + \text{other receivable} / \text{Net assets}$$

Liquidity risk (LR): According to Anas et al. (2014) liquidity risk arises if the maturities of the two sides of balance sheet are different. This difference could be due to excessive cash or lack of cash that is needed to be financed. As per Amal (2012), liquidity risk measured through current asset over current liabilities that refer to the degree to which debt obligations coming due in the next 12 months can be paid from cash or assets that will be turned into cash. Rely on Emine

(2015) explanation, liquidity risk arise while the lack to pay liabilities, which include operating expenses and payment for losses/benefits under insurance policies, when due. In accordance with Amoah et al. (2010), sufficient liquidity allows an institution to meet its obligation as they come due. The inability to accommodate an increased in funding sources (i.e. deposits or borrowings), make the institution very risky as well as inability to meet margin calls, which in the long-run clients loose trust in the institution.

LR = Current Assets / Current liabilities

Solvency risk (SR): As per Elmehti (2014), solvency risk occurred while there is inability of a financial institution to meet its short, middle and long term financial obligations and also defined as the inability of a financial institution to meet its obligations in the event of cessation of activity or liquidation. It is calculated as ratio of total liabilities to total assets and represented that when there is inability existed for a company to meet its long-term fixed expenses and to accomplish long term expansion and growth (Sommer, 1996).

SR=Total assets/Total liabilities

Technical provisions risk (TPR): As per Giovanni (2001) explanation, technical provision risk concerns the impossibility on the part of the companies to meet their commitments towards the insured and the claimants due to insufficient technical provisions. Additionally, as referred by Jasmina (2003) it is a risk of holding insufficient technical provisions or holding unjustifiably excessive provisions, where provisions are set at a lower level than actually required then this could present the company's financial position in a better light than it actually is. This could result in inappropriate underwrite. Clearly from the perspective of financial safety and soundness, the concern is with possible understatement of liability because any such understatement can result in the insurer being unable to discharge all of its obligations to the public (NBE, 2010).

TPR= Outstanding of claims/Equity

Reinsurance risk (RR): Insurance companies reinsure a certain amount of the risk underwritten in order to reduce bankruptcy risk in the case of high losses. Although reinsurance improves the stability of the insurance company through risk dispersion, achievement of

solvency requirements, risk profile equilibration and growth of the underwriting capacity, it involves a certain cost (Ana-Maria et al., 2014).

$$\text{RR} = \text{Premium ceded} / \text{Total assets}$$

Underwriting risk (UR) :According to Andreas et al. (2014), underwriting risk may be primarily generated from the inadequacy of the premiums in the form of underestimation of the premiums or insufficient diversification of insurance portfolio. Underwriting risk which is present at the time the policy is issued and before the insured event occurs. That is a risk that the costs and claims will be higher than the premiums received. When calculating the sufficient premium, it may happen that the calculated premium is insufficient for the underwritten risks. As per Arif et al. (2015) employed underwriting risk as variable of financial risks and its measurement to examine the effect on financial performance. Similarly, according to Ana-Maria et al. (2014) underwriting risk emphasizes the efficiency of the insurer's underwriting activity and the study used the same measurement. As the result, underwriting risk has a negative influence on the insurer's financial performance, since taking an excessive underwriting risk can affect the company's stability through higher expenses.

$$\text{UR} = \text{Claim incurred} / \text{Premium earned}$$

Firm Size (FS): According to Meanza (2014) larger companies are competitive than their smaller companies in exploiting economies of scale, this results to high levels of profitability. When size of a company increases, its performance is likely to increase (Alchian & Harold, 2011). However, Berger and Ofek (2015) indicates that for large companies, the impact of their size might be adverse due to bureaucracies, company structure among other factors. As the size of an organization increases, the scope of risks is likely to differ in nature timing and extent. The need for having a more effective enterprise-wide risk management system will increase with the size of the firm. Large firms may have greater resources allowing for greater ability to implement an enterprise risk management system. Multiple studies have shown that large firm has a higher enterprise risk management implementation level than smaller firms (Colquitt, Hoyt & Lee, 1999; Beasley et al., 2005; Hoyt & Liebenberg, 2011). Additionally, Eikenhout (2015) have conducted study on risk management and its impact on performance of insurance companies.

$$\text{FS} = \text{Natural logarithm of total asset}$$

3.6. Method of data analysis

Once the data is collected, it analyzed by using descriptive statistics, correlations analysis and multiple linear regression analysis. Mean values and standard deviations are used to analyze the general trends of the data from 2007 to 2018 based on the sector all insurance companies and a correlation matrix is also used to examine the relationship between the dependent variable and explanatory variables. In addition, ordinary least square (OLS) is conducted using statistical package “STATA software” to determine the most significant and influential explanatory variables affecting the financial performance of the insurance industry in Ethiopia.

In analyzing, the relationships between the independent variables and dependent variable factor analysis, correlations and multiple regressions performed. A factor analysis carried out to determine the actual factor loading of the items and the contribution of each factor to the different variables. Regression analysis used to determine the predictability (contribution) of the independent variable to the dependent variables.

3.7. Operationalization of study variables

The following table presented the summary of variables, their measurement and expected sign for the effect of financial risk (independent variables) on insurance performance (dependent variable).

Table 3.1 Description of variables and their expected relationship

Variables		Definition/Measure	Expected result
Dependent	Financial Performance (ROA)	Net profit before tax/Total asset	
Independent	Credit risk	Premium debtors +Due from reinsure +Other receivable/Net asset	-ve
	Liquidity risk	Current assets/current liabilities	+ve
	Solvency risk	Total Assets /Total Liabilities	+ve
	Technical provisions risk	Outstanding of Claims/Total equity	-ve
	Reinsurance risk	Premium ceded/Total assets	-ve
	Underwriting risk	claim incurred/premium earned	-ve
Control	Firm size	Natural logarithm of total asset	+ve

Source: Compiled by the researcher based on earlier studies

3.8. Model specification

According to William et al. (2010), model building involves specifying relationships between two or more variables; perhaps extending to the development of descriptive or predictive equations. In order to succeed the objectives of this study, the panel data regression model issued to identify the relationship between the financial performance of private insurance companies and explanatory variables credit risk, liquidity risk, solvency risk, technical provision risk, reinsurance risk, underwriting risk and company size. This is because previous studies; the collected panel data is analyzed using descriptive statistics, correlations and multiple linear regression analysis. Mean values and standard deviations are used to analyze the general trends of the data from 2007 to 2018 based on the sector sample of 8 insurance companies and a correlation matrix is also used to examine the relationship between the dependent variable and explanatory variables. Moreover, ordinary least square (OLS) is lead using statistical package “STATA” to determine the most significant and the effect of explanatory variables on the financial performance of the private insurer’s in Ethiopia.

Modeling is based on panel data techniques. Panel data, comprises of both cross-sectional elements and time-series elements; the cross-sectional element is reflected by the 8 different Ethiopian private insurance companies and the time-series element is reflected the period of study (2007-2018). Panel data is favored over pure time-series or cross-sectional data because it can control for individual heterogeneity and there is a less degree of multi-linearity between variables (Altai, 2005).

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

In light of the above, to examine the effect of financial risk on Ethiopian private insurers’ financial performance, the following general multiple regression models is adopted from different studies conducted on the same area.

The equation that account for single explanatory variables which are specified for this particular study is given as follows.

$$ROA_{it} = \beta_0 + \beta_1 CR_{it} + \beta_2 LR_{it} + \beta_3 SR_{it} + \beta_4 TPR_{it} + \beta_5 RIR_{it} + \beta_6 UR_{it} + \beta_7 FS_{it} + \epsilon_{it}$$

Where:

ROA= Return on asset;

CR= Credit risk

LR= Liquidity risk

SR= Solvency risk

TPR= Technical provision risk

RIR= Reinsurance risk

UR = Underwriting risk

FZ = Firm Size

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

β_0 = Constant

$\beta = 1, 2, 3 \dots 7$ are parameters to be estimate;

i = Insurance company i = 1. . . 8; and t = the index of time periods and t = 1. . . 12

CHAPTER FOUR

DATA ANALYSIS AND RESULT DISCUSSION

Introduction

This chapter analyzes the effect of financial risk on financial performance of insurance companies, using the balanced panel data, where all the variables are observed for each cross-section and each time period. The study has a time series segment covering from the period 2007 to 2018 and a cross section segment which considered eight Ethiopian private insurance companies. The chapter is structured into five sections. Section one discusses descriptive statistics, Section two is about classical linear regression model assumptions and diagnosis test. In the section three and four Correlation analysis and model specification discussed respectively. Finally regression analysis is presented in section five.

4.1. Descriptive Statistics

In this section, the researcher presents the descriptive statistics of dependent and independent variables which used in the study. The dependent variable used is financial performance of insurance company which measured by return on asset and explanatory variable are credit risk, liquidity risk, solvency risk, Technical provision risk, reinsurance risk, underwriting risk, financial leverage and firm size. The total observation for dependent and independent variable was 96 which were collected from 8 insurance companies for the period of 2007 to 2018. The overall descriptive statistics that computed in the study includes mean, maximum, minimum and standard deviation of all study variables. Each result of the descriptive statistics was summarized and represented in the following tables 4.1.

Table 4.1: Summary of descriptive statistics

. sum ROA CR LIQ SOL TCH RIN UNDR FRS						
Variable	Obs	Mean	Std. Dev.	Min	Max	
ROA	96	.1073716	.07437	-.0265281	.3939856	
CR	96	.5475749	.3951314	.066304	2.0618	
LIQ	96	.9621875	.2204455	.26	1.63	
SOL	96	1.524388	.1857813	1.21588	2.08663	
TCH	96	.8214618	.3855294	.129195	2.36196	
RIN	96	.1792701	.2047342	-.00172	1.68827	
UNDR	96	.2738052	1.69188	-14.2392	6.46208	
FRS	96	8.426147	.377793	7.56417	9.33748	

Source: Financial statement of sample private insurance companies in Ethiopia

Financial Performance

As indicated above in table 4.1, the firms' performance measured by return on asset (ROA) shows that eight sampled of Ethiopian private insurance companies over last twelve years (2007 to 2018) achieved 10.74% on average profit before tax. The mean ROA 10.74% indicated that the sampled general insurers were out performed as it was more than the most common international practices 5%. For the total sample, ROA had a minimum -2.6% and a maximum 39.4%. That means the most successful insurers among the sampled earned 39.4 cents of profit before tax for a single birr (1.00) invested in the assets of firm. On the other hand not profitable insurers of the sampled lost 2.65 cents of profit before tax for each single birr (1.00) invested in the assets of the firm. The standard deviation was 7.44% of the selected general insurers; it means the value of ROA deviate from its mean by 7.44% which indicate there was low variation from the mean. The lower standard deviation is a good indication that most of the observations are concentrated around the mean,

Credit risk

As presented in table 4.1, the first explanatory variable of the study, the average value for credit risk as measured by ratio of premium debtors plus due reinsurer and other receivables to net asset of insurance company was 54.76% with a minimum and maximum of 6.6% and 206% respectively. These indicate that the average rate of credit risk was 54.76% which is more than the standard rate of national bank of Ethiopia NBE (2010) which is 50%. It implies that there is

large amount of uncollectable balance which tends to have default risk. In addition, sampled of Ethiopian insurance companies who have less uncollected amount has 6.63 cents from the total receivable birr (1.00) in the firm which is below the standard rate. On the other hand, sampled of Ethiopian insurance companies who have excess uncollected amount has 2 birr and 0.06 cents from the total receivable birr (1.00) which is above the standard rate and the value of credit risk deviate from its mean by 39.51%.

Liquidity risk

This test measures the proportion of liabilities covered by cash and quickly convertible investments. It indicates a company's ability to meet its maturing obligations without requiring the sale of long term investments or the borrowing of money. As presented in table 4.1 above the average value of the liquidity risk measured by current ratio was 0.96 that was less than the required standard of 1.05 .The average values indicates that for each single birr (1.00) current liability, there was 96.22 cents current asset to meet obligation. The maximum value and minimum value were 1.63 and 0.26 respectively for the study period. It means that the most liquid Ethiopian general insurance company has 1.63 birr to meet obligation which is more than the standard rate. However, Ethiopian general insurance companies who have less liquid have 26 cents to meet obligation which is less than the standard rate. The value of standard deviation 0.22 indicates a little bit high dispersion from the mean value of liquidity in the case of Ethiopia general insurance companies.

Solvency risk

The average value of the solvency risk measured by total asset over total liabilities was 152.4%. It implies that there is 1.52 birr total assets to cover 1.00 birr of liabilities. The maximum and minimum values were 208.66% and 121.59% respectively for the study period. As regards the standard deviation, the value of solvency risk deviate from its mean by 18.58%.

Technical provisions risk

The outputs of the descriptive statistics indicate that the mean of technical provisions risk as proxy by claims outstanding to net asset was 82.15%. It refers that there is 1 birr of net asset to meet 82.15 cents of claims outstanding. The maximum value of claims outstanding to net asset

ratio was 236.2% and a minimum value of 12.92% respectively for the study period. It indicates that the highest claim outstanding to equity for a company in a particular year was 236.2% which is nearest to the maximum standard of 250%. With regard to the standard deviation, the value of technical provisions risk deviate from its mean by 38.55%.

Reinsurance risk

The outputs of the descriptive statistics indicate that the mean of reinsurance risk as proxy by premium ceded to total asset was 17.93%. This means that on average 17.93% of gross premium collected as percentage of total asset was ceded to reinsurance which is below the standard rate of 30% that implies most of sampled Ethiopian general insurance companies have less reinsurance dependency. The maximum value of premium ceded to total asset ratio was 168.83% which is above the standard rate and a minimum value of -0.17% that is below the standard rate and the value of reinsurance risk deviate from its mean by 20.47%.

Underwriting risk

In relation to explanatory variables arranged in table 4.1 above underwriting risk variable, as proxies by losses or claims incurred by annual premium earned, the mean of incurred claims to earned premium ratio was 27.38%. This implies that on average, most insurance companies from the sample paid 27.38% loss incurred out of the total premium earned per year which was below as compared with acceptable standard of around 70%. The maximum and minimum values of the underwriting risk are 646.20% and -142.39% respectively. With respect to standard deviations, the ratio of losses incurred to earned premium deviate from its mean by 169.18%.

Firm size

Size of company which is also another variable of the study, as presented on the table 4.1 has an average mean value of $10^{8.43}$ which clearly displays the average. The maximum and minimum size of company was recorded and reported during the year of 2007 to 2018 which is $10^{9.34}$ and $10^{7.56}$ respectively. The table 4.1 also presents large percentage of the standard deviation which is $10^{0.38}$. This shows that there is large variation across the private insurance companies in Ethiopia for the past twelve years. Hence, the highly deviated size may have significant impact

on the financial performance of insurance firms in Ethiopia as this reflected in our regression result.

4.2. Multicollinearity test

According to Gujarati (2004), multicollinearity is other very important assumption of the classical linear regression model that test existence of multicollinearity among the explanatory variables. Multicollinearity exists when one independent variable is correlated with another independent variable and also one Independent variable is correlated with a linear combination of two or more independent variables (Gujarati D, 2004). If there is correlations among the independent variables are strong, it misleadingly inflates the standard errors. Thus, it makes some variables statistically insignificant while they should be otherwise significant. According to Gujarati, (2004) multicollinearity could only be a problem if the pair-wise correlation coefficient amongst repressors is above 0.80. In addition, (Hair JF, 2006) argued that correlation coefficient below 0.9 may not cause serious multicollinearity problem. Therefore, the correlations between the variables in the study models are provided in table 4.5 below.

Table 4.2: Correlation Matrix

. cor CR LIQ SOL TCH RIN UNDR FRS
(obs=96)

	CR	LIQ	SOL	TCH	RIN	UNDR	FRS
CR	1.0000						
LIQ	-0.0020	1.0000					
SOL	-0.5274	0.3587	1.0000				
TCH	0.2106	-0.4409	-0.7072	1.0000			
RIN	-0.1895	0.0806	0.0796	0.0306	1.0000		
UNDR	0.0228	0.0146	0.0636	-0.1762	0.0060	1.0000	
FRS	-0.3892	-0.2297	-0.0953	0.3438	-0.0798	-0.0833	1.0000

Source: Financial statement of sampled private insurance companies in Ethiopia

As exhibited in the above table 4.2, since the highest correlation coefficient is 0.78 between size of company and management competency index, it can be concluded using the rule of both Gujarati, (2004) and Hair JF (2006), that all variables have low correlation power, which is below 0.8 implies no multicollinearity problem in the explanatory variables of this study. If there is no relationship between the explanatory variables (independent variable), they would be said

to be orthogonal to one another. If the explanatory variables were orthogonal to one another, adding or removing a variable from a regression equation would not cause the values of the coefficients on the other variables to change (Chris B, 2008).

Table 4.3: variance inflation factor result

. vif

variable	VIF	1/VIF
SOL	2.95	0.338961
TCH	2.66	0.375821
CR	2.08	0.479943
FRS	1.61	0.620450
LIQ	1.31	0.761183
RIN	1.12	0.892331
UNDR	1.05	0.955288
Mean VIF	1.83	

Source: Financial statement of sampled private insurance companies in Ethiopia

Multicollinearity can also treat using variance inflation factor (VIF). The VIF for the given independent variable shows how correlated with other independent variables. For most of financial sectors VIF cutoff of is 10, each variable that has a VIF higher than 10 is considered to be multicollinear and is dropped from the model. The result of VIF in above table 4.6 indicates all independent variables have VIF which is below 10, since VIF of all variables are even below 4, we can conclude that there is no multicollinearity problem.

4.3. CLRM assumptions and Diagnostic tests

The diagnostic tests were undertaken to ensure that the assumptions of classical linear regression model are concerned, the coefficient estimators of both α (constant term) and β (independent variables) that are determined by ordinary least square (OLS) will have a number of desirable properties and usually known as Best Linear Unbiased Estimators (BLUE). The diagnostic test is made in order to make sure that the classical linear regression model assumption is violated or not. Therefore, in this study, an attempt is made to check by testing error term have mean value zero value, Heteroscedasticity, Autocorrelation, Normality and Multicollinearity. The result of tests applied for CLRM Assumptions presented and discussed on the following section.

4.3.1. The Errors have zero mean

According to Brooks (2008), the second assumption of CLRM required that the average value (not expected) value of the error term is zero. If we do not expect the sum of the errors to be zero, we obtain a line that is biased. That is, we have a line that consistently over or under estimate the true relationship. If the constant term is included in the regression equation, the assumption will not be violated and if the regression did not include an intercept and the average value of the errors was non-zero. Thus, since the regression model used in this study included a constant term, this assumption was not violated.

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

4.3.2. Tests of Heteroscedasticity

This assumption can be used to check whether the variance of error is constant or not. If the assumption of constant variance is violated, the standard error could be wrong and any inference made from them became misleading. In other word, if the errors do not have a constant variance, they are said heteroskedastic (Brook, 2014). To check heteroskedasticity there are a number of methods are used, but, **the white's test for checking for heteroskedasticity** problem were applied in this study. The following hypothesis was set for the heteroskedaskticity test.

H0: There is no Heteroskedasticity problem in the model.

H1: There is Heteroskedasticity problem in the model.

$\alpha = 0.05$

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

Table 4.4: Heteroskedasticity test 4.2

```
. estat imtest, white
White's test for H0: homoskedasticity
    against Ha: unrestricted heteroskedasticity
      chi2(9)      =      5.78
    Prob > chi2    =      0.7613
Cameron & Trivedi's decomposition of IM-test
```

Source	chi2	df	p
Heteroskedasticity	5.78	9	0.7613
Skewness	10.77	3	0.0130
Kurtosis	4.34	1	0.0371
Total	20.90	13	0.0749

Source: Financial statement of sample private insurance companies in Ethiopia

Table 4.4 indicated in the above, tests of White's test with P-values of these test statistics 0.76 is considerably excess of 0.05, based on this statistic result we do not reject the null hypothesis that indicated model is homoscedastics. Therefore, we can conclude that the variance of disturbance term is constant and there is no Heteroscedasticity problem.

4.3.3. Test for autocorrelation

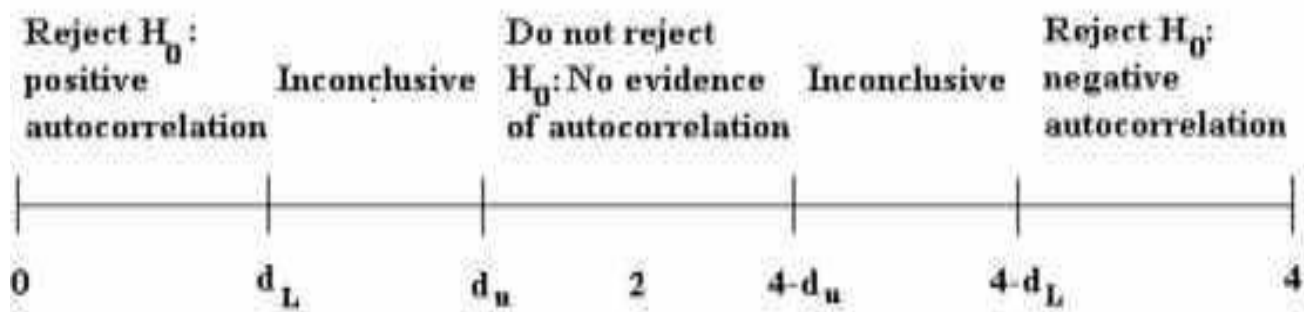
According to Gujarati (2004), autocorrelation is correlation between members of series of observations ordered in time as in time series data or space as in cross-sectional data. The classical linear regression model assumes that the disturbance term relating to any observation is not influenced by the disturbance term relating to any other observation. As noted in Brooks (2008) this is an assumption that the covariance between the errors terms over time is zero. In other words, it is assumed that the errors are uncorrelated with one another. If the errors are not uncorrelated with one another, it would be stated that they are "auto correlated" or that they are serially correlated. Figure 4.1 below presented the Durbin Watson test for autocorrelation in panel data of this study; the null hypothesis being there is no autocorrelation. Considering the fixed effect regression result and Durbin-Watson 5% significance with 96 observations and 7 explanatory variables (excluding the constant term), the DW is 2.159. The relevant critical lower and upper values for the test are $dL = 1.512$ and $dU = 1.827$ respectively. The values of $4 - dU = 4 - 1.827 = 2.173$.

Hypothesis to test serial correlation:

H_0 : There is no autocorrelation

H_1 : There is autocorrelation

Table 4.5: Rejection and Non-Rejection Regions for Durbin-Watson Test



0	1.550	1.803	2.159	2.173	2.488	4
---	-------	-------	-------	-------	-------	---

Brook (2008) recommended that not to reject the null hypothesis of no autocorrelation, if the DW test statistic would be in the non-rejection region of the upper limit d_u and $4-d_u$. Thus the DW test statistic of 2.159 is between the upper limit d_u which is 1.827 and the critical value of $4-d_u$ i.e. 2.173 indicating that there is no evidence for the presence of autocorrelation and fail to reject the null hypothesis that states there are no serial correlations between the error terms.

4.3.4. Test for Normality

The classical linear regression model (CLRM) assumes that each residual is distributed normally with zero mean and constant variance (Brooks, 2012). If the residual are normally distributed, the histogram should be bell-shaped and the Bera-Jarque statistic would not be significant. This means that the p-values given at the bottom of the normality test screen should be greater than 0.05 to not reject the null hypothesis of the normality at the 5% level (Brooks, 2012).

The hypothesis of normality test is presented as follows:

H0: The residuals are normally distributed.

H1: The residuals are not normally disturbance

Table 4.6 the result of Jarque-Bera normality test

jbresi

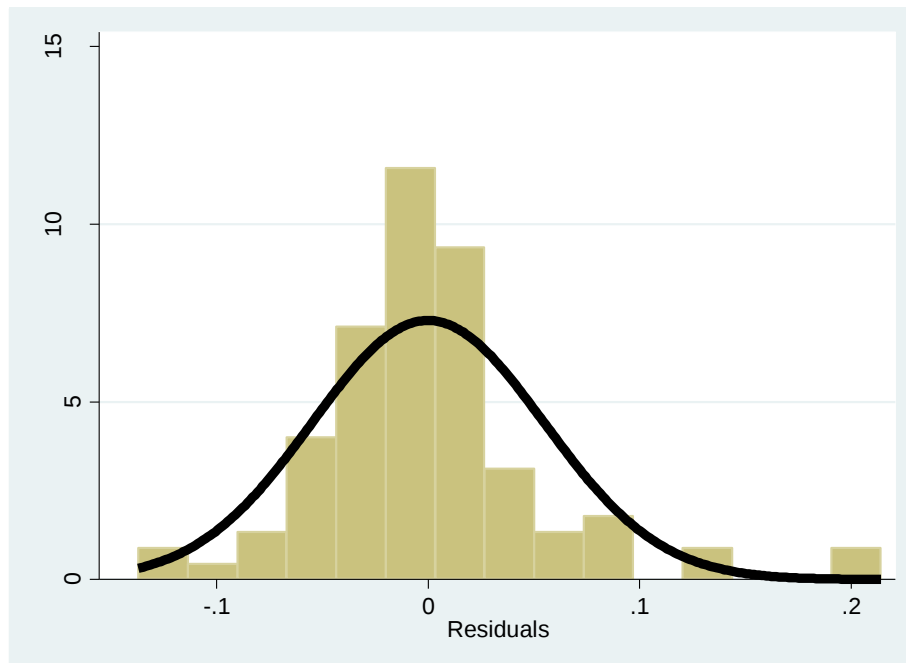
Jarque-Bera normality test: **2.047 Chi(2)** **.2123**

Jarque-Bera test for Ho: normality:

Source: Financial statement of sample private insurance companies in Ethiopia

The result of Jarque-Bera normality test for this study as shown above table 4.6, statistic has a chi(2) value of 0.2123 which is considerably greater than p value of 0.05, then the study failed to reject the null hypothesis of normality at the 5% significance level. This indicates that the residual is normally distributed and the data is consistent with a normal distribution assumption.

Graph 4.1. Histogram graph



Source: Financial statement of sample private insurance companies in Ethiopia

In addition to the formal tests for normality, we also examined the data graphically through histogram. The condition is that when a histogram's shape approximates a bell-curve it suggests that the data may have come from a normal population. In this case the graph 4.1 shows the graph has bell-curve and the researcher conclude that the residuals appears to be reasonably normal distributed.

4.4. Correlation Analysis

As noted in Brooks (2008), correlation between two variables measures the degree of linear association between them. Values of the correlation coefficient are always ranged between positive one and negative one. A correlation coefficient of positive one indicates that a perfect positive association between the two variables; while a correlation coefficient of negative one indicates that a perfect negative association between the two variables. A correlation coefficient of zero, on the other hand, indicates that there is no linear relationship between the two variables.

The correlation result in Table 4.7 shows credit risk, and liquidity risk has negative correlation with return on asset for measurement of Ethiopian private insurance companies' performance. It refers that when these risks increases, performance of Ethiopian insurance companies will be go down. However, Liquidity risk, Solvency risk, reinsurance risk, underwriting risk, and firm size has positive correlation with return on asset which indicates that while these explanatory variables decrease, at the same time performance of Ethiopian insurance companies will be increase.

Table 4.7 Correlation Matrix Table

. pwcorr ROA CR LIQ SOL TCH RIN UNDR FRS, sig star (0.11)

	ROA	CR	LIQ	SOL	TCH	RIN	UNDR
ROA	1.0000						
CR	-0.3325* 0.0009	1.0000					
LIQ	0.2927* 0.0038	-0.0020 0.9845	1.0000				
SOL	0.2162* 0.0344	-0.5274* 0.0000	0.3587* 0.0003	1.0000			
TCH	-0.2701* 0.0078	0.2106* 0.0395	-0.4409* 0.0000	-0.7072* 0.0000	1.0000		
RIN	0.5045* 0.0000	-0.1895* 0.0644	0.0806 0.4351	0.0796 0.4406	0.0306 0.7676	1.0000	
UNDR	0.0080 0.9383	0.0228 0.8256	0.0146 0.8877	0.0636 0.5385	-0.1762* 0.0860	0.0060 0.9541	1.0000
FRS	0.0841 0.4151	-0.3892* 0.0001	-0.2297* 0.0244	-0.0953 0.3557	0.3438* 0.0006	-0.0798 0.4397	-0.0833 0.4195
FRS		FRS					
FRS	1.0000						

Source: Financial statement of sampled private insurance companies in Ethiopia

From the above table 4.7 we can conclude that, at 0.1 levels of significances, the explanatory variables liquidity risk, solvency risk, reinsurance risk, and firm size are significant and positive correlation with ROA. Credit risk and technical provision risk are significant and negative correlation with ROA however; underwriting risk is not significant correlation with ROA.

The coefficient of correlations between reinsurance risk and financial performance of insurance firms is 0.50. This implies that reinsurance risk is positively related to financial performance up to the tune of 50%. The result therefore revealed a direct relationship between reinsurance risk and return on asset.

Analysis of liquidity risk shows that correlation coefficient of 0.29 which is significant at 1% significant level. The variable is positively and significantly correlated with financial performance of private insurance firms in Ethiopia. This implies that the liquidity risk of private insurance company increase, the financial performance also increases and the relationship is significant at 1% level of significance.

There is positive correlation between ROA and solvency risk with correlation coefficient of 0.22 which is significant at 5% significant level. ROA has correlation with explanatory variables firm

size, technical provision risk and credit risk is correlation coefficient of: 0.08, -0.27, and -0.33 respectively. Underwriting risk is insignificant at 10% level.

4.5. Model specification

There are broadly two classes of panel estimator approaches that can be employed in financial research: random effects models (REM) and fixed effects models (FEM) (Brooks, 2008).

Random Effect Model: The rationale behind random effects model is that, unlike the fixed effects model, the variation across entities is assumed to be random and uncorrelated with the predictor or independent variables included in the model. Random effect model assume that the entity's error term is not correlated with the predictors which allows for time-invariant variables to play a role as explanatory variables (Oscar, 2007).

Redundant Fixed Effects: The fixed-effects model controls for all time-invariant differences between the individuals, so the estimated coefficients of the fixed-effects models cannot be biased because of omitted time-invariant characteristics. One side effect of the features of fixed effects model is that they cannot be used to investigate time-invariant causes of the dependent variables (Oscar, 2007). The pooled regression assumes that the intercepts are the same for each firm. This may be an inappropriate assumption, and Brooks (2008) recommended that we could instead estimate a model with firm fixed effects, which will allow for latent firm specific heterogeneity. The simplest types of fixed effects models allow the intercept in the regression model to differ cross-sectional.

As noted in Gujarati (2003) if T [the number of time series data] is large and N [the number of cross-sectional units] is small, there is likely to be little difference in the values of the parameters estimated by fixed effect model and random effect model. Hence, the choice here is based on computational convenience. On this score, fixed effect model may be preferable than random effect model (Gujarati, 2003). Since the number of time series (i.e. 12 year) is greater than the number of cross-sectional units (i.e. 8 insurance companies). However, Jean & Michel (2006) suggested that the fixed effects model is preferred in cases where conclusions have to be made on the sample and if the observation (panel data) is less, fixed effects will be more efficient than random effects, while the interests of random effects model are on the overall population.

Hence, based on the above discussion the fixed effect model is preferable for this study.

4.6. Regression Results and Analysis

This section presents the overall results of the regression analysis on the effect of financial risk on the Ethiopian insurance companies' financial performance. In this study ROA were used as proxy for financial performance.

4.6.1. Regression Results

According to Brooks (2008) the standard error of the estimate is sometimes used as a broad measure of the fit of the regression. It is a measure of how confident one is in the coefficient estimate obtained in the first stage. If a standard error is small, the value of the test statistic will be large relative to the case where the standard error is large. Large standard error is undesirable; everything else being equal, the smaller this quantity is the closer is the fit of the line to the actual data.

Table 4.8 below reports regression results between the dependent variable (ROA) and explanatory variables.

$$ROA_{it} = \beta_0 + \beta_1 Cr_{it} + \beta_2 Liq_{it} + \beta_3 Sol_{it} + \beta_4 Tch_{it} + \beta_5 Rir_{it} + \beta_6 Undr_{it} + \beta_7 Frs_{it} + \varepsilon_{it}$$

$\beta_0 = \text{Constant}$

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 \text{ and } \beta_7 = \text{Coefficients of independent variables}$

$I = \text{Insurance company and } i = 1, 2, 3, \dots, 8$

$T = \text{The index of time periods and } t = 1, 2, 3, \dots, 12$

$\varepsilon_{it} = a_i + u_{it}$ when a_i all unobserved, time constant factor that affect ROA_{it}

u_{it} is often called the idiosyncratic error or time-varying error

Table 4.8 Result of regression

```
. reg ROA CR LIQ SOL TCH RIN UNDR FRS
```

Source	SS	df	MS	Number of obs = 96		
Model	.240895789	7	.034413684	F(7, 88) = 10.64		
Residual	.284539203	88	.0032334	Prob > F = 0.0000		
				R-squared = 0.4585		
				Adj R-squared = 0.4154		
Total	.525434992	95	.005530895	Root MSE = .05686		

ROA	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
CR	-.0432855	.0213124	-2.03	0.045	-.0856393	-.0009316
LIQ	.0736318	.0303335	2.43	0.017	.0133504	.1339132
SOL	-.1235508	.0539375	-2.29	0.024	-.2307403	-.0163613
TCH	-.0837184	.0246843	-3.39	0.001	-.1327732	-.0346636
RIN	.1806843	.0301658	5.99	0.000	.1207362	.2406325
UNDR	-.001448	.003528	-0.41	0.682	-.0084592	.0055632
FRS	.0396673	.0196047	2.02	0.046	.000707	.0786275
_cons	-.0489002	.1995902	-0.25	0.807	-.4455438	.3477435

Source: Financial statement of sampled private insurance companies in Ethiopia

Table 4.8 shows the results of the independent variables from the random effect regression model and the overall model is very strongly significant (P-value = 0.000) with adjusted R² is about 41.54 %. This indicates that the variables which were considered in the study are capable of explaining about 41.54% of the variation on the insurer's financial performance. The rest 48.46% explained by others variables which are not included in the study. The result also shows that about six of the independent variables like credit risk, liquidity risk, solvency risk, technical reserve risk, reinsurance risk and Firm size have significant effect on performance of insurance company. Furthermore, the main findings of the study regarding the financial risks that affects the financial performance of insurance companies are discussed below.

The null hypothesis of F-statistic is that all the coefficients of independent variables equal to zero. The F-statistic 0.0000 is significant at 1% significance level which infers that financial performance and the financial risk effect related the selected in the study is

adequately fit the model and explanatory variables are jointly significant. This indicates that, all the explanatory variables have jointly statistically significant impact on the financial performance of general insurance business in Ethiopia and there is 99.9% probability that the relationship among the variables is not due to mere chance. The random effect estimation regression result in the above table shows that, coefficient intercept (α) is -0.0489002. This means, when all explanatory variables took a value of zero, the average value return on asset would take -0.0489002.

This section discusses in detail the analysis of the results for each explanatory variable and their effect on Ethiopian insurance companies' performance. Furthermore, the discussion examined the statistical findings of the study in relation to the earlier empirical evidences. Hence, the following discussions present the interpretation on the random effects model regression results.

As the above result showed the coefficient of credit risk is -0.0432855 and statistically significant with p-value of 0.045 which is less than 0.05. This implies there is significant and negative association between credit risk and return on asset. The above table depicted that, the coefficient of liquidity risk measured by current assets to current liability is 0.0736318 and its P-value is 0.017. There is significant positive relationship between liquidity risk and return on asset of Ethiopian insurance companies. The coefficient of solvency risk -0.1235508 was negative and statistically significant p-values 0.024. The regression coefficient is technical provision risk was -0.0837184 and p-value of 0.001. The result suggested negative and significant relationship between ROA and technical provision risk. The coefficient of reinsurance risk is positive 0.1806843 and statistically significant with p-value of 0.000 which is below 5% which is also significant even 1% significant level. The coefficient of underwriting risk is 0.001448, but insignificant with p-value 0.682 which is greater than 0.05. The coefficient of firm size is positive 0.489002 and statistically significant at 5% significance level with p-value of 0.046.

4.6.2. Discussion of research findings

Discussion of findings is focused on the result of the above multiple regression result table and based on the result the effect of each explanatory variable on the financial performance of private insurance companies in Ethiopia are discussed in the following part.

Credit risk and Return on asset

As implied from the above finding, credit risk is adversely affecting the performance of the private insurance companies during the study period in Ethiopia. Hence, the possible reason is associated with the sales of premium on credit bases to the customers who is likely fail to pay their debt to the insurance companies on due date. As the sale on credit of the premium increase their profitability decline significantly. Additionally, not tracking uncollectable who past due and aged plays their fair share in adversely affecting the performance of the insurance companies.

According to the regression result of credit risk has a negative relationship with Ethiopian insurance companies' performance by a coefficient estimate of -0.0432855. This means that holding other independent variables constant and when 1% increases in credit risk, consequently it reduces return on asset of Ethiopian insurance companies by 4.32% and the p value of credit risk is 0.045 reveals that it is statistically significant at 5% level of significance. It implies the increase in credit risk certainly lead to a decline in the performance of the insurance companies due to the likely hood of debtors failing to honor their obligation to the insurance company.

Accordingly, the result supports the working hypothesis that credit risk has negative and statistically significant effect on performance of private insurance companies in Ethiopia for the period of 2007 to 2018. Thus, this outcome is consistent with prior study of Jamal et al. (2014) and Daniel (2017) that point out the negative significant effect of credit risk on financial performance.

Therefore, the regression result is matching with the researcher's hypothesis that is credit risk has a significant and negative effect on Ethiopian insurers' financial performance. So the null hypothesis cannot be rejected.

Liquidity risk and Return on asset

The Liquidity of insurer is evaluated based on their current liabilities and the ratio of Liquid assets, defined according to different concepts, from cash and cash equivalents, up to short term securities. The study employed the liquidity ratio which can easily express the liquidity risk that is current asset is a base for current liability which computed as current liabilities to current asset.

As we can observe the regression result in this study indicates that the relationship between liquidity risk and financial performance is positive coefficient 0.0736318 this shows when liquidity ratio goes up 1 unit, an average return on asset will go up by 0.074 units provided that other independent variables are constant. Besides, this ratio is significant p-value 0.017 at 1% significant level. The results of a positive relationship between liquidity and profitability shows that private insurance company in Ethiopia that has more liquidity ratio will bring higher profits for their firms and increase overall performance of insurance companies' ability to pay claims incurred to policyholder and creditors. So, if claims and other liabilities of the insurance companies are paid on time for policy holders as well as for creditors; that insurance company will gain a trust of public and this will open a way for that companies to sell more policies in order to increase profit. Therefore, it is expected that insurers in Ethiopia with a more liquid asset will outperform those with less liquid assets.

The finding consistent with previous studies of (Arif et al. (2015); Amal (2012) and Suheyli (2015) concluded that liquidity risk has a positive and significant association with performance of insurance companies who argue that the more liquid insurance company can get the better they meet their claims. On contrary, Adrian (2014), Abate (2012) and Daniel (2017) concluded that liquidity risk has a negative and significant association with performance of insurance companies.

The fixed effect regression output is the same from the expected hypothesis that liquidity risk has a positive effect on Ethiopian insurers' financial performance. Thus null hypothesis cannot be rejected.

Solvency risk and Return on asset

The variable solvency risk is used as a proxy for financial risk and measured by total liabilities to total assets. The regression result of this study reveals that solvency risk has a negative relationship with return on asset and statically significant. Which implies increase in 1 unit solvency risk will decrease the performance of insurers' company by 0.12 units. The general assumption behind negative sign of this variable is that; an increase in solvency risk will certainly lead to a decrease in performance of Ethiopian insurance companies.

The result is consistent with the earlier studies of Arif et al. (2015), Adrian (2014) and Daniel (2017). This implies that an increase in solvency risk, certainly lead to a decrease in performance of Ethiopian insurance companies.

The result not supported the expected working hypothesis that solvency risk has positive and statistically significant effect on performance of private insurance companies in Ethiopia for the period of 2007 to 2018. Thus the null hypothesis can be rejected.

Technical provision risk and return on asset

The regression result of this study shows that the coefficient of technical provision which is measured by claims outstand to equity was negative coefficient -0.0837, which implies that if technical provision risk increase by 1 unit, return on asset will decrease by 0.0837 units assuming that the remaining independent variables are unchanged. The result of p- value=0.001 was statistically significant at a 1% significance level. It indicates holding insufficient technical provision for outstanding claim decline the insurers' performance. In line with this, understatement liabilities can results in the insurer being unable to discharge all of its obligations to the insured. Thus, if their exist a lack of strong guideline to assess for adequate comprehensive and effective control over outstanding liabilities consecutively leads to decline in profitability of the insurance companies.

The finding is consistent with earlier result of Suheyli (2015) and Daniel (2017). This implies that an increase in technical provision risk, certainly lead to a decrease in performance of Ethiopian insurance companies.

Consequently, the result supported the working hypothesis that technical provision risk has negative and statistically significant effect on performance of private insurance companies in Ethiopia for the period of 2007 to 2018 and so there is no evidence to reject the null hypothesis.

Reinsurance risk and Return on asset

From the regression result of reinsurance risk has a positive relationship with Ethiopian insurance companies' performance by a coefficient of 0.18068. This means that keeping other independent variables constant and when 1% increases in reinsurance risk, as a result it improves return on asset of Ethiopian insurance companies by 18% and the p-value of reinsurance risk is 0.000 reveals that it is statistically insignificant at 1% significance level. The result is consistent with prior studies of Mistre (2015), Suheyli (2015) and Daniel (2017). However, it is contradict with Shiu (2004) result that it has negative and statistically significant effect on performance of insurance companies, because low retention limits act as if they were the brokers of reinsurers, because a high proportion of their premiums have to be handed over to reinsurance companies, and to a great extent their performance would depend on that of their reinsurers.

On the other hand, the study finding implies that an increase in reinsurance risk, certainly lead to an increase in performance of Ethiopian insurance companies. The possible cause of the result is lack of large risk industries which require the involvement of reinsurers in indemnifying the insurance companies' customers. This is reflected on the economic structure and livelihood of the country as Omer (2016) explained the livelihood and economic composition citing CSA (central statics agency) indicate that 80% of the population are located in rural areas and are primarily engaged in subsistence agriculture still depends upon the vagaries of nature agriculture accounts for 45 percent of the GDP in 2014/15.

The fixed regression result doesn't support the workable hypothesis that reinsurance risk has negative and statistically significant effect on performance of private insurance companies in Ethiopia for the period of 2007 to 2019. Hence the null hypothesis is rejected.

Underwriting risk and Return on asset

The underwriting risk emphasizes the efficiency of the insurers' underwriting activity and the exposure to financial loss resulting from the selection and approval of risks to be insured. It is a

risk of losses from underpriced products, insufficient volume of premium, improper underwriting controls, and the development of new products that are not properly priced. As we can observe from the above regression result; the underwriting risk has a negative relationship with insurance companies' performance by a coefficient estimate of -0.001448. This means that holding other independent variables constant and when one percent increases in underwriting risk, consequently it reduces return on asset of insurance companies by 1.44% and the p-value of underwriting risk is 0.682 reveals that it is statistically insignificant at 10% level of significance.

The study finding is consistent with previous studies of Mirie (2015) and Arif et al. (2015) result showed that underwriting risk had insignificant effect on insurance company's performance. The possible reason for the result as observed by the researcher is that amount of premium earning was higher than the loss incurred during their study period, for this reason underwriting risk could not have significant effect on profit.

Thus, this study supports the hypothesis that underwriting risk has a negative effect on the performance of private insurance companies in Ethiopia however it was insignificant which is against the expected result.

Firm Size and Return on asset

Firm size is computed as logarithm of total assets of the insurance company. The regression result of the study revealed that there exist a significant and positive relationship between firm size and financial performance of private insurance companies in Ethiopia.

The result of regression output reveals firm size and performance have a positive relationship and statically significant at 5% significance level. This implies that; 1% increase in firm size will cause the performance of insurance company to increase by 3.96%. In this case, since the functional form between performance and firm size is lin-log; the coefficient on the beta should to be divided for 100 in order to make interpretation. The finding of this study is consistent with the finding established by *Woldemicael (2017)*.

The size of the firm can affects the financial performance of insurance companies in many ways. For example, large firms can exploit economies of scale and scope and thus being more efficient

compared to small firms. Larger insurers can achieve operating cost efficiencies through increasing output i.e. they are able to realize economies of scale especially in terms of labor costs, which is the most important factor for delivering insurance services.

Table 4.9 The summary of expected and actual signs of independent variables

Dependent variable		ROA		
Explanatory variables	Expected relationship	Actual relationship	Statistical significance Test	Hypothesis status
Credit risk	Negative	Negative	Significant 5%	Failed to reject
Liquidity risk	Positive	Positive	Significant 1%	Failed to reject
Solvency risk	Positive	Negative	Significant 5%	Failed to Reject
Technical provision risk	Negative	Negative	Significant 1%	Failed to reject
Reinsurance risk	Negative	Positive	Significant 1%	Failed to Reject
Underwriting risk	Negative	Negative	Insignificant 10%	Reject
Firm size	Positive	positive	Significant 5%	Failed to reject

From the above data analysis, Ethiopian private insurers' financial performance is highly affected by all variables included in this study except underwriting risk. The findings of the study showed that credit risk, solvency risk and technical provision risk have statistically significant and negative relationship with Ethiopian private insurers' financial performance. However, underwriting risk has negative and insignificant relationship with financial performance. On the other hand, variables Liquidity risk, reinsurance risk and firm size have a positive and statistically significant relationship with Ethiopian private insurers' financial performance.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1. Summary

This study examined empirically the effects of financial risk on financial performance of Ethiopian insurance companies. It studied by examining available empirical literature reviews conducted in Ethiopia and other different countries. This study was conducted by selecting 1 dependent variable and 7 explanatory variables considering the nature and data availability of the Ethiopian insurance sector. The study tried to highlight the critical financial risks that insurers should consider when setting their finest financial performance. The fixed effect model was adopted for secondary data obtained from audited annual report. To response the proposed main objective, descriptive statistics, diagnostic tests, selection of appropriate model, regression result and test of hypothesis have been run using statistical package data of STATA. Explanatory methods of research used to determine the relationship between financial performance of insurance companies and the financial risk. The study used secondary quantitative panel data during the period 2007-2018 and includes selected 8 insurance companies operates in Ethiopia. Based on the descriptive and regression analysis the major summary of the study findings are presented below:

- As descriptive analysis during the period of this study the Ethiopian insurance companies return on asset which the proxy of financial performance, mean value is 0.107. The mean value of credit risk, liquidity risk, solvency risk, technical provision risk, reinsurance risk, underwriting risk, and firm size was 0.55, 0.96, 1.52, 0.82, 0.18, 0.27, and 8.43 respectively.
- The result of the regression analysis showed a negative relationship between the return on asset, the credit risk, solvency risk and technical provision risks have coefficient estimate of -0.0432, 0.123, and 0.837 with p-value 0.045, 0.024 and 0.001 respectively at the statistical significant level. The liquidity risk, reinsurance risk and firm size has a positive relationship between the return on asset with statistical significance by coefficient of 0.0736, 0.181, and 0.0396 with p-value 0.017, 0.000 and 0.046 respectively. On the other

hand, underwriting risk is statistical insignificant by a coefficient -0.0014 with p-value 0.682.

5.2. Conclusion

The study specifically examines the effect of financial risk on performance of Ethiopia private insurance companies based on descriptive statistics, Pearson correlation matrices and fixed effect regression analysis.

- The result of the regression analysis showed a negative relationship between the credit risk return on asset with statistical significant. This indicates that as minimizing of the credit risk will certainly improve the financial performance of private insurers. On the other hand, it implies the increase in credit risk certainly lead to a decline in the performance of the insurance companies due to the likely hood of debtors failing to honor their obligation to the insurance company.
- Liquidity risk has a positive and significant relationship with Performance of Ethiopian private insurance companies. This indicates that an increase in liquidity risk, absolutely lead to an increase in performance of Ethiopian private insurance companies. It refers that holding of sufficient cash or liquid assets for covering current liabilities it leads to the consequence of gaining an opportunity of making additional profits.
- Solvency risk has a negative and significant relationship with Performance of Ethiopian private insurance companies. This indicates that an increase in solvency risk, definitely lead to a decrease in performance of insurance companies. It means that higher asset to debt ratio leads to a need of external funding and therefore the performance of insurers could be affected adversely.
- Technical provisions risk has a negative relationship between return on asset and significant effect on Ethiopian private insurance companies' performance. This indicates that an increase in technical provision risk, definitely lead to a decrease in performance of private insurers. This entails that companies holding insufficient provision for outstanding claim would have a negative effect on performance of Ethiopian insurance companies because understatement of outstanding claim could be a cause for insurers being unable to discharge their entire obligation to the insured.

- A positive and strong significant relationship between financial performance and reinsurance risk implies an increase of reinsurance risk certainly lead to an increase in insurance companies' financial performance. Also the result indicates that maximizing dependency on reinsurers or increasing of premium ceded will result in increased the performance of private insurers.
- Underwriting risk has a negative and insignificant relationship with Performance of private insurance companies in Ethiopia. This indicates that a decrease in underwriting risk, not lead to an increase in performance of insurance companies.
- The Firm size which is logarithm of total assets has a positive impact on financial performance of private insurers with significance coefficient. This indicates that as larger insurance companies of the country experience significantly increases in financial performance through economies of scale. This mean Larger insurers can achieve operating cost efficiencies through increasing output i.e. they are able to realize economies of scale especially in terms of labor costs, which is the most important factor for delivering insurance services.

Finally the study revealed that there was a joint significant relationship between financial risk variables and financial performance of private insurance companies however; underwriting risk has insignificant relationship with return on asset.

5.3. Recommendation

Based on the findings which are obtained from regression analysis, the researcher has drawn the following recommendations.

- The analysis indicated that credit risk had negative and significant effect on private insurance companies' performance in Ethiopia. Thus, Ethiopian private insurance companies should manage their receivable amount properly through providing payment arrangement for their debtors which is appropriate to pay their debt. For instance, for long period of outstanding receivable balance, insisting the debtors to pay their total debt in installment on certain period of time, it could be monthly, quarterly, semiannually or annually. Finally, the researcher recommends also the National Bank regulation to continue as it is restriction of policy issuance on credit

which is not applicable to federal or regional government organs. By doing so, Ethiopian private insurance companies can minimize the effect of credit risk for their performance.

- The analysis showed that Liquidity risk has a positive and significant relationship with Performance of Ethiopian insurance companies. Ethiopian private insurers should also properly use NBE's Directive No. SIB/25/2004 that commands the insurers to hold 65% of their admitted asset in the form of cash and short term securities. Whenever insurers want to invest their funds accordingly the above directive, they have to think twice before they put their funds in long term investment. Basically they should do internal rate of return (IRR) which help them to know the potential profitability the targeted investment. Moreover, the insurers should formulate policy and procedure and have to forecast their cash flows these can help them to utilize their working capital efficiently. Thus, the researcher encourages NBE's Directive No. SIB/25/2004 as it enforces the insurers to have substantial amount (65%) of their admitted asset in the form of cash and short term securities.
- The regression result revealed that solvency risk had negative and significant effect on the performance of Ethiopian private insurance companies. Therefore, Ethiopian private insurance companies should strive to attract more customers and lift their income through provision of improved estimation technique on insurance policy premium price to maximize their net premium earning and net asset. Hence, the researcher recommends to increase their paid up capital for those insurance companies who don't full fill NBE (SIB/34/2013) minimum paid up capital obligation by selling additional stock for the existing as well as new shareholders. Therefore, Ethiopian insurance companies should take these suggestions to maximize their return and asset through becoming solvent for their liability.
- The analysis determines that technical provisions risk had negative and significant effect on Ethiopian private insurance companies' performance. Therefore, the researcher recommends that Ethiopian private insurance companies should hold sufficient provision for outstanding claims by doing prerequisite adequate assessment on their liabilities and also referring their past experience to develop a

comprehensive procedure to efficiently monitor and control their outstanding claims. Thus, Ethiopian private insurance companies should take in to account these points to reduce the effect of technical provisions risk for their performance.

- Reinsurance risk had a positive and strong significant effect on Ethiopian private insurers' performance. The strong significant parameters indicates that the reinsurance risk does affect considerably Ethiopian private insurers' financial performance indicating that its influence is high on insurers' financial performance. Thus, the researcher recommends that regarding reinsurance risk insurers should retain as far as their capacity which usually measured by net risk and should be maximize dependency on reinsurers or should be increase premium ceded.
- Underwriting risk has a negative and insignificant relationship with Performance of private insurance companies in Ethiopia. This indicates that a decrease in underwriting risk, not lead to an increase in performance of insurance companies. For this reason, the growth rate of net premium was not influential factor of insurers' financial performance.
- The Firm size which is logarithm of total assets has a positive impact on financial performance of insurers with significance coefficient. The researcher recommends that as size of firm is the most important factor of insurer's performance, insurance companies should grow more and expand their activities to be improve their performance because large private insurance companies normally have greater capacity for dealing with adverse market fluctuations than small private insurance companies and have more economies of scale, complex information systems and a better expenses management.

Finally, this study tried to look financial risks that affecting financial performance of private insurance companies in Ethiopia. However, the variables used in the statistical analysis did not cover all financial risks that could affect performance of private insurance companies in Ethiopia. Thus, future research should focus on other dimensions such as can affect firms' performance by incorporation in addition internal and external specific and macro-economic factors.

References

- Abate G 2012, Determinants of insurance companies' profitability in Ethiopia. *Master's thesis. Addis Ababa University, Ethiopia.*
- Adams, M. & Buckle, M. (2003). The determinants of corporate financial performance in the Bermuda insurance market. *Applied Financial Economics*, Routledge, 13, 133- 143.
- Adrian, R. (2014). The Relationship between Financial Risk and Financial Performance insurance Companies in Kenya. *Unpublished Master's Project*. University of Nairobi
- Altai, Y. [2005]. Bank Ownership and Efficiency, *Journal of Money, Credit and Banking*, 33.
- Amal, Y. (2012). Factors Affecting the Financial Performance of Jordanian Insurance Companies Listed at Amman Stock Exchange. *Journal of Management Research*, 4(2), 266-289.
- Amoah, B., Ricky, O., Ebenezer, B., Amoko, L. & Angela, N. (2010). Risk management and its impact on profitability in microfinance institutions.
- Ana-Maria, B. & Ghiorghe, B. (2014). The Determinants of Financial Performance in the Romanian Insurance Market. *International journal of academic research in accounting, finance and management sciences*, 4(1), 300-308.
- Andreas, A., Nobuyasu, S. & Timo, B. (2014). Macro prudential Solvency Stress Testing of the Insurance Sector. *IMF working paper*. Monetary and Capital Markets Department.
- Andrieș, A. M., & Căpraru, B. (2014). Convergence of insurance company efficiency in emerging markets: The experience of Central and Eastern European countries. *Emerging markets Finance and Trade*, vol. 50(4), pp. 9-30
- Anthony, M. & David, F. (1997). Financial Risk Management by Insurers: An Analysis of the Process. *The Journal of Risk and Insurance*, 64(2), 231-270.
- Arena, M., M. Arnaboldi, and G. Azzone. 2010. The organizational dynamics of enterprise risk management. *Accounting, Organizations and Society* 35 (7): 659–675.

- Arif, A. & Showket, A. (2015). Relationship between Financial Risk and Financial Performance: An Insight of Indian Insurance Industry. *International Journal of Science and Research*
- Barges, A. (1963). The effect of capital structure on the cost of capital: a test and evaluation of the Modigliani and Miller propositions. Englewood Cliffs, NJ, Prentice-hall.
- Birla Nhe, Garg Vikas, Khandelwal Abhishek, Kumar Tarun, Chitlangesheetal and Bhatia Bhurmika (2008). Risk faced by General Insurers, 10th Global Conference of Actuaries
- Brooks, C. 2008. Introductory econometrics for finance, 2^{edn}, Cambridge University Press, New York
- Creswell, W. (2003). Research design, qualitative, quantitative and mixed methods approaches, 2nd edn, Sage Publications, California.
- Creswell, W. (2009). Research design: quantitative, qualitative and mixed methods Approaches, 3rd edn, Sage Publications, California.
- Cooper, D & Schindler, P. (2003). Business Research Methods. 8th edn, McGraw-Hill, New York.
- Daniel S (2017). The effect of financial risk on performance of Ethiopian insurance companies, *Master's thesis. Addis Ababa University, Ethiopia.*
- Elmehdi, F. & Mohammed, V. (2014). Liquidity and Solvency in the International Banking Regulation. University, Morocco.
- Emmett, J.V. & Vaughan, T.M. (2007). *Fundamental of Risk and Insurance* (10th ed.). John Wiley and Sons Inc
- Eremsmus, P. (2008). The relative and incremental information content of the value-based financial performance measure cash value added (CVA). *Management Dynamics, Journal of the southern African Institute for management scientists*, 17(1), 2-15
- Everis (2009). Risk management in the insurance Business sector, United Kingdom: Everis
- Fleming, M. (2004). The Determinants of Operational Performance and Mitigating the Risks Associated with the Insurance Market', *Applied Financial Economics*, 13, 133-142.

- Gerald, K. & Ulrike, O. (2001). Systemic Risk Factors in the Insurance Industry and Methods for Risk Assessment.
- Gujarat, N. (2003). Basic Econometric, 4th edn, USA: McGraw–Hill.
- Gujarati (2004): Basic Econometrics, Fourth Edition the MC Graw-Hill Companies. The McGraw–Hill Companies
- HailuZelege (2007). Insurance in Ethiopia: Historical Development, Present Status and Future Challenges. Addis Ababa: Master Printing Press.
- Hair, J., Black, W., Babin, B., Anderson, R., and Tatham, R., 1998. Multivariate data analysis. Pearson education, New Jersey.
- Hoyt, R. and Liebenberg, A. (2011). The Value of Enterprise Risk Management. *Journal of Risk and Insurance*, 78(4), 795-822.
- International Monetary fund (2005)
- International Monetary fund (2016) World Economic outlook; subdued Demand; Symptoms and Remedies. Washington, October
- International Monetary fund (2016). Financial sector Assessment; A hand book, Washington, September
- Irukwe, J. (1994). Insurance Management in Africa Cayton press (W.A) ltd, Ibadan, Nigeria.
- Kokobe SA, Gemechu D (2016). Risk management Techniques and Financial Performance of Insurance companies
- Jacques, K. & P. Nigro, (1997). Risk-Based Capital, Portfolio Risk and Bank Capital: A Simultaneous Equations Approach. *Journal of Economics and Business*,
- Jasmina, S. (2003). Actuarial estimation of technical provisions adequacy in life insurance companies. *School of Economics and Business in Sarajevo, Bosnia and Herzegovina*, 523-533.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of financial economics*, 3(4), 305-360
- J. Jonker and B. Pennink (2010), *Risk Management and Insurance*, 4th edition
- Kazeem, S, H. 2015. Firm specific characteristics and financial performance of listed Firms in Nigeria. *Master's thesis Ahmadu Bello University Zaria, Nigeria*

- Leedy, P. and Ormrod, J. (2005). Practical Research: Planning and design. 8th Ed. Pearson Merrill Prentice Hall.
- Lowe, (1999). Management Research, An introduction, Sage publications Ltd London. National Bank of Ethiopia Annual Report, 2017/2018.
- Markowitz, H.M. (1952): Portfolio selection, *Journal of Finance*, 7(1), 77-91.
- Meredith, L. (2004). The Ultimate risk manager: Boston. *CUSP Communications Group Inc.*
- Mikes, A. (2005). Enterprise Risk Management in action. Discussion paper published by the Center for Analysis of Risk and Regulation. *London School of Economics and Political Science*
- Mistire, S. (2015), The Determinants of profitability on insurance sector: Evidence from insurance companies in Ethiopia. *Master's thesis. Addis Ababa University, Ethiopia.*
- Mirie .W & Jane W. (2015) „Determinants of Financial Performance In General Insurance Companies in Kenya“, *European Scientific Journal*, 11, p. 1857-7881.
- Nandan, R. (2010). Management accounting needs of companies and the role of professional accounts: A renewed research agenda. *JAMAR*, 8(1), 65-78
- National Association of Insurance Commissions (NAIC), (2001). Insurance Regulatory Information System, Property/casualty.
- National Bank of Ethiopia (NBE), (2010). Draft paper for risk grading rate insurance Companies in Ethiopia.
- National Bank of Ethiopia (NBE), (2010). Risk Management Guideline for insurance Companies in Ethiopia.
- National Bank of Ethiopia (NBE), annual report for 2014/2015, Addis Ababa.
- National Bank of Ethiopia (NBE), investment of insurance directive (SIB/25/2004), Addis Ababa.
- National Bank of Ethiopia (NBE), reinsurance company establishment directive (SRB/1/2014), Addis Ababa.

- National Bank of Ethiopia (NBE), minimum paid up capital directive (SIB/34/2013), Addis Ababa.
- NBE proclamation, 746/2012. Addis Ababa.
- Oscar, T. (2007). Panel Data Analysis: Fixed and Random Effects, Princeton University, 4 (2).
- Plantin, G. (2006). “Does Reinsurance Need Reinsurance”. The Journal of Risk and Insurance, 73 (1), 153- 168.
- Rejda, E. (2003). Principles of Risk management and Insurance: New York, Pearson education Inc.
- Rejda, G. (2008). Principles of Risk Management and Insurance. 10th ed. New York, Pearson Education.
- Robert E. Hoyt and Andre P. Liebenbery, (2011). The value of Enterprise Risk management;
- Shields, N. (2013). A Playbook for Research Methods: Integrating Conceptual Frameworks and Project Management.
- Suheyli, R. (2015). Determinants of Profitability on Insurance Companies in Ethiopia. *Unpublished Master’s Thesis*. Addis Ababa University.
- Shiu, Y. (2004). Determinants of United Kingdom general insurance company performance. British Actuarial Journal, 10, 1079-1112.
- Singh, K. (2006). Fundamentals of research methodology and statistics, new age international limited, New Delhi.
- Sommer, D. (1996). The Impact of Firm Risk on Property-Liability Insurance Prices. Journal of Risk and Insurance, 63(3), 501-514.
- Thompson J. (2001). Risk Based Supervision of Insurance companies
- Vaughan J. Emmett and Vaughan M. Therese (2007). Fundamentals of Risk and Insurance Tenth Edition
- William, G. Zikmund, Barry, J. Babin, C and Mitch, G. (2010). Research Business Methods, 8 edn. Canada.

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

Yemane, A. A & Raju, M. L., (2015). The impact of corporate governance on firm's
Performance: Evidence from insurance companies in Ethiopian. *Research Journal of Finance
and Accounting*, 6(9), 225-231

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

Zinaye W. (2017). The effect of risk management on financial performance of Ethiopian non-life
insurance companies, *Master's thesis. Addis Ababa University, Ethiopia*.

Appendixes

Appendix A: List of Insurance Companies operating in Ethiopia

No .	Name	Establishment date
1	Ethiopian Insurance Corporation	1975
2	National Insurance Company of Ethiopia	1994
3	Awash Insurance Company	1994
4	Africa Insurance Company	1994
5	Nyala Insurance Company	1995
6	Nile Insurance Company	1995
7	Global Insurance Company	1997
8	United InsuranceCompany	1997
9	Nib Insurance Company	2002
10	Lion Insurance Company	2007
11	Ethio-Life and General InsuranceCompany	2008
12	Oromia Insurance Company	2009
13	Abay Insurance Company	2010
14	Berhan Insurance Company	2011
15	Bunna Insurance Company	2011
16	Tsehay Insurance Company	2012
17	Lucy Insurance Company	2012

Appendix B: Ratio Data Used for Analysis

Year	Company	ROA	CR	LIQ	SOL	TECH	REIN	UNDR	FMS
2007	AWASH	0.07	0.54	0.99	1.46	0.63	0.62	0.38	8.13
2008	AWASH	0.07	0.50	0.82	1.43	0.81	0.64	0.26	8.19
2009	AWASH	0.05	0.56	0.79	1.37	1.01	0.10	0.27	8.26
2010	AWASH	0.11	0.51	0.83	1.45	0.90	0.13	0.20	8.34
2011	AWASH	0.08	0.73	0.78	1.35	0.95	0.12	0.19	8.52
2012	AWASH	0.08	0.39	0.85	1.30	1.39	0.10	0.22	8.67
2013	AWASH	0.15	0.27	0.89	1.36	1.22	0.15	0.17	8.75
2014	AWASH	0.10	0.32	0.86	1.44	1.04	0.12	0.26	8.76
2015	AWASH	0.12	0.29	0.83	1.44	0.96	0.12	0.28	8.81
2016	AWASH	0.09	0.42	0.82	1.49	0.81	0.11	0.22	8.92
2017	AWASH	0.28	0.41	0.90	1.56	0.63	0.34	0.22	8.56
2018	AWASH	0.06	0.14	0.79	1.83	0.81	0.24	0.46	9.34
2007	GLOBAL	0.05	0.54	1.54	2.09	0.13	0.25	0.21	7.56
2008	GLOBAL	0.05	0.57	0.85	1.80	0.18	0.36	0.21	7.65
2009	GLOBAL	0.05	0.75	0.96	1.73	0.22	0.10	0.23	7.73
2010	GLOBAL	0.08	0.70	0.84	1.68	0.18	0.11	0.31	7.78
2011	GLOBAL	0.04	0.88	0.92	1.74	0.26	0.07	0.59	7.82
2012	GLOBAL	0.02	0.70	0.92	1.47	0.59	0.06	0.52	7.97
2013	GLOBAL	0.15	0.54	1.13	1.54	0.53	0.14	0.20	8.09
2014	GLOBAL	0.16	0.34	1.35	1.75	0.31	0.13	0.19	8.19
2015	GLOBAL	0.14	0.23	1.63	2.05	0.24	0.10	0.22	8.27
2016	GLOBAL	0.12	0.22	1.47	1.99	0.22	0.08	0.29	8.34
2017	GLOBAL	0.23	0.30	1.25	1.66	0.23	0.16	0.46	7.88
2018	GLOBAL	0.08	0.07	0.99	1.95	0.69	0.21	-0.44	8.48
2007	NILE	0.02	0.76	0.88	1.32	1.32	0.02	0.73	8.28

Year	Company	ROA	CR	LIQ	SOL	TECH	REIN	UNDR	FMS
2008	NILE	-0.03	0.74	0.68	1.30	1.50	0.02	0.79	8.28
2009	NILE	0.02	0.64	0.72	1.33	1.20	0.14	0.41	8.29
2010	NILE	0.14	0.47	0.93	1.55	0.62	0.19	0.55	8.35
2011	NILE	0.10	0.74	0.96	1.55	0.50	0.13	0.49	8.43
2012	NILE	0.10	0.17	1.09	1.56	0.50	0.15	0.36	8.56
2013	NILE	0.11	0.15	1.11	1.54	0.76	0.13	0.68	8.63
2014	NILE	0.12	0.14	1.09	1.51	0.75	0.12	0.81	8.69
2015	NILE	0.09	0.10	1.15	1.60	0.65	0.13	0.82	8.76
2016	NILE	0.03	0.14	0.85	1.50	0.61	0.09	1.24	8.81
2017	NILE	0.39	0.13	0.83	1.58	0.60	0.43	0.33	8.47
2018	NILE	0.06	0.20	0.69	1.58	1.27	0.37	0.58	9.01
2007	NICE	0.08	0.83	0.95	1.47	0.92	0.26	0.25	7.60
2008	NICE	0.06	0.91	0.93	1.50	0.73	0.28	0.41	7.64
2009	NICE	0.05	0.74	0.81	1.47	0.81	0.07	0.45	7.71
2010	NICE	0.06	0.82	0.99	1.42	0.84	0.08	0.39	7.80
2011	NICE	0.00	1.42	1.12	1.27	1.47	0.01	1.92	7.94
2012	NICE	0.17	1.16	1.05	1.33	0.79	0.19	0.11	8.16
2013	NICE	0.12	0.70	1.16	1.38	0.67	0.12	0.12	8.34
2014	NICE	0.07	0.57	1.12	1.36	0.84	0.05	0.02	8.41
2015	NICE	0.39	0.42	1.21	1.48	0.86	0.46	0.15	8.45
2016	NICE	0.10	0.54	1.07	1.39	0.98	0.16	0.65	8.53
2017	NICE	0.31	0.61	1.09	1.43	0.97	1.69	0.97	8.08

Year	Company	ROA	CR	LIQ	SOL	TECH	REIN	UNDR	FMS
2018	NICE	0.09	0.11	0.81	1.43	1.83	0.45	0.61	8.69
2007	AFRICA	0.02	1.49	1.08	1.34	0.88	0.03	0.74	8.24
2008	AFRICA	0.04	1.87	1.00	1.25	1.12	0.02	0.83	8.36
2009	AFRICA	0.05	1.57	0.94	1.27	1.29	0.02	0.91	8.38
2010	AFRICA	0.06	2.06	0.89	1.24	1.22	0.05	0.29	8.52
2011	AFRICA	0.05	1.70	0.83	1.22	1.39	0.05	0.35	8.63
2012	AFRICA	0.05	0.61	0.67	1.23	1.51	0.05	0.35	8.70
2013	AFRICA	0.06	0.46	0.54	1.28	1.52	0.05	0.49	8.70
2014	AFRICA	0.08	0.50	0.63	1.30	1.52	0.00	-14.24	8.74
2015	AFRICA	0.07	0.31	0.36	1.49	0.94	0.02	1.25	8.78
2016	AFRICA	0.06	0.24	0.26	1.56	0.69	0.01	3.74	8.81
2017	AFRICA	0.16	0.40	0.72	1.46	0.63	0.02	6.46	8.36
2018	AFRICA	0.07	0.45	0.62	1.41	1.67	0.46	0.88	7.99
2007	NIB	0.08	0.63	1.05	1.59	0.37	0.04	0.25	7.99
2008	NIB	0.11	1.00	0.86	1.36	0.64	0.04	0.24	8.10
2009	NIB	0.10	0.88	0.94	1.36	0.84	0.17	0.14	8.29
2010	NIB	0.09	1.04	0.98	1.33	0.87	0.16	0.15	8.40
2011	NIB	0.09	1.45	1.00	1.35	0.94	0.17	0.18	8.49
2012	NIB	0.09	0.64	0.97	1.27	1.08	0.14	0.25	8.68
2013	NIB	0.11	0.47	1.05	1.36	1.03	0.16	0.22	8.71
2014	NIB	0.11	0.40	1.11	1.43	0.92	0.13	0.35	8.81
2015	NIB	0.08	0.31	1.10	1.50	0.75	0.12	0.46	8.88

Year	Company	ROA	CR	LIQ	SOL	TECH	REIN	UNDR	FMS
2016	NIB	0.06	0.36	1.06	1.55	0.68	0.10	0.58	8.91
2017	NIB	0.16	0.33	1.03	1.51	0.74	0.24	0.69	8.49
2018	NIB	0.05	0.30	0.72	1.33	2.36	0.30	-0.76	9.10
2009	NYALA	0.10	0.42	0.91	1.76	0.67	0.15	0.21	8.18
2008	NYALA	0.06	0.62	0.97	1.58	0.82	0.15	0.42	8.16
2009	NYALA	0.13	0.42	0.91	1.76	0.67	0.15	0.21	8.18
2010	NYALA	0.14	0.58	0.98	1.67	0.63	0.15	0.24	8.27
2011	NYALA	0.16	0.49	1.02	1.74	0.54	0.17	0.47	8.33
2012	NYALA	0.18	0.40	1.10	1.68	0.42	0.22	0.34	8.49
2013	NYALA	0.16	0.44	1.14	1.62	0.63	0.19	0.14	8.63
2014	NYALA	0.14	0.22	1.22	1.66	0.60	0.13	0.51	8.73
2015	NYALA	0.12	0.17	1.24	1.60	0.75	0.12	0.13	8.87
2016	NYALA	0.12	0.54	1.17	1.56	0.73	0.12	0.15	8.94
2017	NYALA	0.38	0.15	1.27	1.62	0.80	0.70	0.96	8.62
2018	NYALA	0.09	0.07	0.84	1.59	1.18	0.18	0.22	9.23
2007	UNIC	0.10	0.44	1.11	1.66	0.66	0.18	0.31	8.05
2008	UNIC	0.17	0.47	1.11	1.61	0.74	0.10	0.16	8.17
2009	UNIC	0.05	0.67	1.03	1.45	1.00	0.10	0.35	8.24
2010	UNIC	0.14	0.31	1.17	1.59	0.70	0.14	0.24	8.33
2011	UNIC	0.09	0.72	1.19	1.53	0.79	0.10	0.33	8.41
2012	UNIC	0.12	0.54	1.25	1.54	0.68	0.15	0.21	8.55
2013	UNIC	0.17	0.37	1.27	1.61	0.65	0.19	0.17	8.64

Year	Company	ROA	CR	LIQ	SOL	TECH	REIN	UNDR	FMS
2014	UNIC	0.14	0.19	0.91	1.61	0.59	0.16	0.22	8.71
2015	UNIC	0.13	0.15	0.73	1.78	0.44	0.17	0.24	8.74
2016	UNIC	0.08	0.12	0.72	1.84	0.38	0.11	0.19	8.83
2017	UNIC	0.22	0.28	0.70	1.65	0.44	0.28	0.16	8.50
2018	UNIC	0.10	0.14	0.71	1.83	0.89	0.27	-0.55	9.13