ST. MARY'S UNIVERESTY SCHOOL OF GRADUATE STUDIES

THE EFFECT OF REINSURANCE MECHANISM FOR THE PROFITABILITY PERFROMANCE OF PRIVATE INSURANCE COMPANY IN ETHIOPIA

BY

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ADDIS ABABA, ETHIOPIA

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STATEMENT OF DECLARATION

I, Yonas Debebe Tekelehimanot, declare that this thesis entitled *"THE EFFECT OF REINSURANCE MECHANISM FOR THE PROFITABILITY PERFROMANCE OF PRIVATE INSURANCE COMPANY IN ETHIOPIA"* submitted by myself for the award of M.Sc. Degree in Development Economics at St. Mary's University School Of Graduate Studies is my original work and has not been previously submitted for the award of any degree or diploma at this or any other University or College, and that all the reference materials contained therein have been duly acknowledged.

Name: Yonas Debebe Tekelehimanot

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ACRONYMS AND ABBREVIATION

ABBR	Abbreviations
CII	Chartered Insurance Institute
CR	Commission Ratio
CS	Company Size
ETB	Ethiopian Birr
ER	Expense Ratio
GDP	Gross Domestic Product
GNRPI	Gross Net Written Premium Income
GRP	Gross Written Premium
LR	Loss Ratio
RCCCP	Ratio of Ceded Claim to Ceded Premium
REINS	REINSURANCE
ROA	Return on Asset
ROE	Return on Equity
RR	Retention Ratio
IAIS	International Associations of Insurance Supervisors
IR	Investement Ration
UNCTAD	United Nations Conferences of Trade and Development
UNISDR	United Nations Office for Disaster and Risk Reduction

ABSTRACT

Reinsurance is mainly the concept of transferring underwriting risks and creating capacity to make available for insurance companies to assume risks where there are beyond their capability to shoulder within the given available capital. The objective of this study was to find and examine the relationships and the effect of reinsurance arrangements or techniques on the insurance companies' performance taking a proxy variable return on investement (ROI) assuming as dependent variable. The study used panel data that were drawn from five years quantitative secondary data from ten insurance companies' audited annual financial statement. The study used random effect regression analysis model after taking the necessary testes to choose the best model from Random effect, fixed effect and ordinarily list square model by applying lagragian Multiplier test and Hausman test method. The study examined the effect of specific reinsurance variables (retention ratio and the ratio of ceding claim to ceding premium) and other specific control variables (company size, investement ratio, underwriting risk/loss ratio/, expense ratio and commission ratio) on the private insurance companies' profitability performance by assuming as independent variables. The outcome of the findings showed that the reinsurance techniques explanatory variables; retention ratio has positive sign but insignificantly affect profitability performance while the ratio of ceding claim to ceding premium has negative sign but significantly affect the insurance profitability performance. Other explanatory variables: loss ratio has negative sign with high significance, company size has negative sing with moderate significance, expense ratio and commission ratio have negative sign and insignificantly affect while investement ratio has positive sign with moderate significance affects the insurance companies profitability. The result gave us some understanding that there are interdependency between reinsurance and insurance profitability performance. But it is unclear that how the effect of the ratio of ceding claim to ceding premium on profitability performance showed negatively because the ratio represent to denote the relative reinsurance benefit (ceded claim) per reinsurance cost (ceding premium).

Keywords: *Private Insurance, Reinsurance, Retention Ratio, ceded premium, ceded claim, and Ethiopia*

CHAPTER ONE

1.1 Back ground of the study

Financial institution's roles in the economy of a country in general and insurance companies in particular are facilitating the efficient and effective financial system through risk transfer, saving mobilization and intermediation (Das et al., 2003). Financial institutions channel funds and transfer risks from one economic unit to another economic unit so as to facilitate trade and resources arrangement (James and Joan, 2003). Insurance companies like other financial institutions share financial, operational and strategic risk; however, the insurance companies are exposed to specific risk which is related to their underwriting activities (James and Joan, 2003)

Insurance underwriting activities risk incorporates the deviation of actual losses from those assumed in time of insurance pricing (Marijana et al., 2014). Furthermore, some of the risks that insurers underwrite are too big and catastrophic to assimilate under their capacity. So that insurance companies transfer part of the risks to other risk underwriters in order to minimize the risk exposure. The most important way insurance companies manage the risk is by transferring it to reinsurers.

Insurance companies perform integral part via saving, collecting resources for big capital spending, treat allocation and safeguarding the economy in the nations (Hailegebreal, 2016). They offer financial protection to an individual or firm against the monetary losses which are suffered from unforeseen circumstances (Kihara, 2012). Haiss and Sumegi (2008) noted that the availability of the insurance companies is highly essential in the financial services industry almost in developed and developing countries, since they are contributing to economic growth, efficient resource allocation, reduction of transaction costs, creation of liquidity, facilitation of economics of scale in investment, and spread of financial losses.

Wehrhahn (2009) defines reinsurance as "a financial transaction by which risk is transferred (ceded) from an insurance company (cedant) to a reinsurance company (reinsurer) in exchange of a payment (reinsurance premium)". According to Wehrhahn, reinsurers are professional entities that exclusively deal with the activity of reinsurance. According to Patrik (2001), the reinsurer reciprocally agrees to indemnify the reinsured for a specified share of specified types of insurance claims paid by the cedant for a single insurance policy or for a specified set of policies.

IAIS (2012) defines reinsurance is insurance purchased by one insurer from another reinsurer. Buyer of reinsurance is commonly referred to as the ceding insurer, or cedant, and seller of insurance coverage is the reinsurer. Thus, the cedant "cedes" reinsurance to the reinsurer. Reinsurance is very important as the mechanism of reinsurance reduces the risk of insurers' bankruptcy in case of very high losses and, hence, protects policyholders (IAIS 2012).

Reinsurance is one of risk management tool, and also the primary source of interconnection within the insurance industry (Cummins et al, 2012). Reinsurance is insurance for insurers and appropriate level of reinsurance is one of the premises of the existence and functioning of a stable insurance market (Sojung et al, 2015).

Reinsurance transactions, Reinsurance arrangements, reinsurance programming and fixing insurers retentions are related to underwriting risk and capacity, and affect ceding insurers' performance and corporate growth. The same Calandro and Scott (2001), emphasizes that reinsurance usage should be added to the list of factors influencing insurer performance. Normally insurers manage risk by purchasing reinsurance because it reduces bankruptcy risk, expanding capacity, stabilization of loss experience and catastrophe protection. Previous studies show mixed results concerning the linkage between reinsurance and firm performance. Ma and Elango (2008) the study where confirms that reinsurance is positively related to firm performance, indicating that firms purchasing more reinsurance experience more stable performance that contributes to higher risk-adjusted returns. On the other side some insurance literatures dictates the reinsurance activities may increase cost, leading to higher prices and/or lower profits. Thus, reinsurance transactions are related to underwriting risk and capacity, and affect ceding insurers' performance. Cole and McCullough (2006), the same but in the other way dictates firms that are more profitable should be better able to absorb large unexpected losses and therefore use less reinsurance. As noted by Malik (2011) profitability is one of the most important objectives of financial management since one goal of financial management is to maximize the owner's wealth. Thus it is highly substantial to undertake the study of the effect of reinsurance arrangement/techniques on the insurance companies performance/ profitability and the same also necessary should understand the how profitability in reverse will affect insurance companies' reinsurance arrangements/techniques. Because dealing with insurance companies' reinsurance techniques, arrangements, programming and fixing retention means dealing with insurance companies underwriting risk and capacities that are profoundly determines the performance of insurance companies.

1.2. Reinsurance Company in Ethiopia

Despite Ethiopia has long years practice and lots have been enriched with knowledge and experiences in insurance business, there is no any domestic Reinsurance company has been established until 2015. Under the provision of the insurance business proclamation No 746/2012, the licensing and supervision of reinsurance business, reinsurance company establishment directives no. SRB/1/2014 has been issued with the objectives of establishment to promote financial resource mobilization and to reduce costs related to cross boarder reinsurance transaction, to enhance underwriting capacity and solvency of direct insurers further to provides technical support and cover against accumulated and catastrophic losses and to simplifies treaty negotiation, settlement of claims and payments of ceded premium in domestic currency. As per the directive Local Reinsurance company shall be established as a share company stipulated in the commercial code of Ethiopia and the minimum paid up capital required to obtain license for a reinsurance company shall be Birr 500 million, which ought to be fully paid up in cash and deposited in blocked account in the name of the reinsurer under formation.

As a result Ethiopian Reinsurance S.C. (Ethio-Re) has come and started its operation and commenced its operation on 1st July 2016.It has a subscribed capital of Birr one billion and half a billion of paid capital. The company's ownership is dominated by seven private and state financial institutions, who own 65 percent of the total share. Five private insurance companies own a quarter of the one billion subscribed capital, while state financial firm, Commercial bank of Ethiopia and Ethiopian Insurance Corporation have subscribed 200 million birr each. Among 18 insurance companies 17 insurance companies have bought shares of Ethiopian Re. Five of the insurance companies have bought maximum amount allowed. Africa insurance, NIB insurance, Nyala Insurance, Nile Insurance and Awash insurance have bought a maximum of birr 50 million each and accounted major shareholders with a quarter ownership of total shares. However the offer has been given to other financial institutions to be part of the company, six private banks – Abyssinia bank, Wegagen Bank, Awash bank, Buna bank, NIB Bank and Dashn Bank have bought shares at reinsurance but none of the banks have bought maximum of share amount allowed.

1.3 Statement of the problem

As the severity and potential losses become upraised, the insurers will insure the insured for those unfavorable damages and financial stresses through the reinsurance which is the basic future of property and casualty insurance (Alip and Wilcox, 2015). The insurers purchase reinsurance to protect themselves, reduce insolvency risk and increasing the capacity against the risks of averse above certain thresholds (Bresan, 2018 and Duloju and Ajemunigbohun, 2017). Reinsurance is an activity of accepting risks ceded by an insurance company (Kramaric and Galetic, 2013).

According to Adebowale & Adebayo (2018), insurance companies perform relatively low because they rely heavily on reinsurance protection as their main source of risk management technique. As Duloju and Ajemunigbohun (2017) and Lee (2012) states that the insurers which have high performance and growth rate have low reinsurance transaction which reflect its relation underwriting risk and the capacity of the insurers. The insurance companies can't survive in long run under the current complex business world, without distinguishing the linkage between profitability and factors influence it (Borlea and Achim, 2010) Thus, their profitability and financial soundness must need a primary concern to perform their function well (Sidhu and Verma, 2017).

As many theoretical and empirical studies confirmed that among many determinant factors reinsurance arrangements, utilization and dependency in general called reinsurance mechanisms are deemed to be considered one of the significant factors that influence the insurance company's profitability either positively or negatively. However, that many of them have come to the conclusion with contradictions among others concerning the linkage and the relationships between reinsurance mechanisms and insurance companies' profitability.

According to Ma and Elango (2008) study internationalizations and the performance of the property-liability insurance industry and founds that reinsurance is positively related to firm performance, indicating that firms purchasing more reinsurance experience more stable performance that contributes to higher risk-adjusted returns. Berger et al. (1992) argues that reinsurance transactions affect primary market profit and show that current profitability is improved by the ceding of reinsurance. (Aduloju & Ajemunigbohun, 2017) also carried out a case study and come up with the conclusion that, different reinsurance covers provided by the real market makes the insurance companies able to identify the most appropriate strategic planning which can help serve as a very key tool to enhance their growth and development. Also, Augustine and Lukmon (2019) in their study carried out on reinsurance and the performance of the ceding company and concluded that, there is a strong positive relationship between reinsurance capacity and gross written premium of insurance companies in Nigeria. Mazviona, Dube & Sakahuhwa (2017) the study conducted to identify the determinate factors affecting the profitability of insurance companies in Zimbabwe using panel data of 20 insurance companies from 2010-2014 Thus, the result sowed that expense ratio, underwriting risk and the extent of a firm significantly and negatively affects profitability of insurance companies whereas retention ratio, leverage and liquidity affect positively affect profitability.

To the contrary, Boyjoo & Ramesh (2017) the study conducted to analysis the factors affecting the performance of general insurer's works in Mauritius and the result showed that the reinsurance dependency and company's development index negatively and insignificantly affect the profitability of the firm. Choi and Weiss (2005) investigate market structure, efficiency and performance in the U.S. property-liability insurance industry and find that the relationship between profit and reinsurance is unclear; thus, no firm conclusions should be drawn from this study. Choi (2010) studies approaching firm growth and size in the U.S. property and liability insurance industry and indicates that insurers using more reinsurance grow slower than those who ceded less or assumed more reinsurance from the primary companies. In addition, Gatzlaff (2009) further investigates insurer performance and supports a non-linear relationship between reinsurance ceded and performance. Choi and Elyasiani (2011) suggested that reinsurance utilization is negative in revenue efficiency, showing that ceding companies may have to share their profits with the reinsurers, and therefore the revenue side of their operation will be compelled to down. The study that shows the interaction between reinsurance utilization and performance of insurance companies by Iqbal, Rehman and Shahzad.(2014) on non-life insurance sector of Pakistan and the study suggests that for insurance companies to increase their underwriting capacity and stabilize their earnings, they must depend less on reinsurance and further indicates that increased dependence on reinsurance arrangement will decrease profitability as leverage level has a significant negative impact on the profitability. Ambrose (2020) carried out a study on reinsurance analysis with respect to its impact on the performance of non-life insurance companies in Pakistan and recommends that insurance companies should try to reduce their dependence and exposure on reinsurance because the increased reliance exposes them to the potential risk of declined performance.

In the case of our country, Debala (2017) the empirical study conducted to identify factors that affects the profitability of insurance companies in Ethiopia in twelve Ethiopian insurance companies for the period of six years (2011- 2016) using panel data and multiple liner regression analysis method. ROA used as proxy to measure profitability of insurance companies. The study revealed that industry concentration ratio and leverage of a company affect profitability positively and it is statistically significant. Instead, diversification, loss ratio and reinsurance dependency show negative impact on profitability and statistically significant. Kebede (2016) the study conducted to assess the determinant factor that affects the profitability of nine insurance companies in Ethiopia for the period of ten years 2006-2015. The study uses linear regression model to see the effect of independent variables, which were the factors under study, on dependent variable profitability proxy by ROA. The findings of the study showed that Size of company, Loss ratio and leverage are the significant variables. Have statistically significant relationship with insurers' profitability. Reinsurance dependence has affected negatively but with insignificant effect. Lire and Tegegn (2016) indirectly with the title " Determinates of profitability in private insurance companies in Ethiopia" that constituent of firm specific and macro variable (Underwriting risk, Reinsurance Dependence, Solvency Ratio, Premium growth, Company Size and macro factor Growth rate of GDP, Inflation and Interest Rate) analysis was made to investigate the determinants of private insurance company profitability and the study shows that private insurers' profitability is statistically significantly affected by firm specific factor which is underwriting risk negatively, company size positively, premium growth positively, and solvency ratio negatively and reinsurance dependency has no influence on profitability and statistically insignificant.

As discussed above and referring many studies that have been carried out providing the assessments to identify the effect of reinsurance dependency and other factors that determine the profitability in Ethiopia and overseas insurances companies such that they came up with dissimilar conclusions.

As a result this study has been initiated to fill the gap and to answer the question how reinsurance mechanisms and utilization (represented by different variables like retention ratio and ratio of ceded claim to ceded premium) assuming as measurements. So that the study has made to analysis and determine how reinsurance mechanism and utilization affect and the relationships influences private insurance companies' profitability (assuming ROA as proxy profitability measurement) in Ethiopia.

1.4 Objectives

1.4.1 General Objectives

The general objective of this study is to review and analyze the effect of insurance companies' reinsurance mechanism and to identify the determinant factors of private insurance companies' profitability performance in Ethiopia.

1.4.2 Specific Objectives

1. To assess how reinsurance mechanisms like retention ratio and ratio ceded claim to ceded premium affects the profitability performance of private insurance companies
2. To identify the determinate factors of profitability performance of insurance companies

1.5 Research Questions

Based on the objectives of the study and the research problems provided in the previous sections, the following research questions and hypotheses/propositions are set out.

1. Does the retention ratio affects and have a relationship with the profitability performance of insurance companies?

2. Does the ratio of ceded claim to ceded premium affects and have relationships with the profitability performance of insurance companies?
3. Do other determinant factors affects and have relationship with the profitability performance of insurance companies?

1.6 Significance of the Study

The study of reinsurance mechanisms in general and its applicability specifically are very important as it one of the composite factors that determines the overall insurance companies profitability performance.

Thus, this study will signify to fill this gap and inspire researchers and students to undertake in-depth and rigorous studies and further to contributes some ideas to insurance company's management to consider their companies reinsurance mechanisms and applications.

1.7 Scope of the Study

The scope of the study was limited in terms of space and time. The study has taken to identify the relationships between various explanatory variables that are identified based on the relevant theories and concepts and the profitability performance of private insurance companies in Ethiopia. Out of seventeen private insurance companies the study took ten (10) insurance companies based on five years average volume of gross written premium (GWP). It used secondary data accessed from the annual audited financial statement of the insurance companies. The study is limited to companies' gross written premium, net premium retention, ceded premium, loss ratios, ceded claim, investments, company size, and expense and commission ratios covering for the period of five years from 2017/118 up to 2021/22.

1.8. Organizations of the study

This paper has been organized in to five chapters: Chapter one is the introduction part, chapter two is the theoretical and empirical literature review, chapter three is discussed the methodology of the study, chapter four is analyzed and presented the empirical findings of the study and the final Chapter have been presented conclusion and recommendation of the study.

Chapter two
Theoretical Foundation and Literature Review

2.1 Insurance Overview

The insurance industry in general (including reinsurance) plays a crucial role as commercial and infrastructural businesses. It encourages the economic stability in general and promotes financial and social stability, mobilizes and channels investments and savings, supports trade, commerce and entrepreneurial activity and improves the quality of the lives of individuals and wellbeing of a country. Insurance is also highly aligned to the macroeconomic, social, governance, and cultural factors such as inflation, currency, exchange rate, national income, regulations, supervisions strategies, and national objectives of a country (UNCTAD, 2007).

According to UNCTAD (2007), the insurance industry in Africa is a phenomenon of the twentieth century, following independence in the 1960's. South Africa has a longer insurance history followed by Egypt. In Africa there are about 650 companies, many of them small and medium-sized enterprises.

Later after the independence in the 1970s and 1980s the establishment of local reinsurance in Africa is a more recent practice and is related to the development of insurance. The primary aim of establishing local reinsurance companies in Africa was to keep retained profitable reinsurance premium ceded out of their countries and indirectly to advance and control locally the operations of the international reinsurance.

Generally, Africa's industry is very much underdeveloped, and should grow faster than in the developed countries. According to UNCTAD (2007), the performance and growth of the industry in general and the reinsurance companies in particular has been challenged by a number of factors mainly lack of adequate capitalization, shortage of qualified or professional staff, outdated insurance legislation, non-existence of information system and national insurance statistics, and lack of confidence in their security by the majority of insurance that they try to serve.

Hence, African countries realize the importance of being part of the global insurance market and almost all African countries committed themselves to bring their respective country's insurance industry to international standard with the assistance of UNCTAD.

2.2 Concept of Reinsurance

Insurance, as a business, has emerged following the growth and development of trade and commerce and economics of business in general. Insurance is said to be a channel of economic growth by promoting long term savings, encouraging accumulations of capital, and channeling those funds to productive investments (Fatula, 2007). One of the reasons for a growing relevance of insurance is the role it plays in mitigating sudden and devastating occurrences that can disable financially of individuals and corporate organizations (Yinusa and Akinlo, 2013).

Initially, the concept of reinsurance was applied in the transport sector, particularly marine insurance, at a comparatively late date (14th or 15th centuries) (Swiss Re, 1996). According to Hansell (1999), the cost of single ships and their cargoes in ancient times often had a value extremely large to other private holdings, and the whole of the private wealth of an insurer often hung on the outcome of a single voyage or marine adventure. In addition to the huge cost the perils of the sea were greater also, because of the aforementioned reason an insurer would become worried and try to sell parts of his contract to others (reinsurer) and essentially at a higher rate (Hansell, 1999). In the year 1370 in Europe, an insurer covering a maritime shipment from Genoa to Slyus purchased insurance for itself to cover the most dangerous segment of the journey, from Cadiz to Slyus, which is often referred to as “insurance for insurance companies”(Leichtling and Pardes, 2005).

In the modern period, risk aware individuals and organizations with high risk profile seek adequate protection against the negative outcomes that may arise due to the presence of risk. And Insurance Company also need protection in order to reduce its heavy obligations, seeks to transfer part of its risk burden to other organizations which is reinsurers (Garven et al., 2014; Jirsarael, 2013).

Fire insurance business is primarily accountable for the development of modern reinsurance business (Kopf, 1929). Then airliners and satellites have replaced the risks associated with early sailing vessels, hurricanes, earthquakes and terrorisms and sea pirates. Reinsurance will be of long and continuing importance not only to the insurance business itself but also to risk management worldwide (Holland, 2009).

According to Holland, 2009 the first modern fire reinsurance company was officially established in April 1846 in Germany under the name "Cologne Re". The benefits became evident following the loss of the Great Fire in Hamburg. Swiss Re and Munich Re were then founded in 1863 and 1880 respectively (Holland, 2009).

2.3 Definition of Reinsurance

As Wehrhahn (2009) simply defines, Reinsurance is the transfer of part of the risks that a direct insurer assumes from an insured, to a second insurance carrier, the reinsurer, who has no direct contractual relationship with the insured, in exchange of a payment called reinsurance premium (Wehrhahn, 2009). Wehrhahn (2009) defines reinsurance as "a financial transaction by which risk is transferred (ceded) from an insurance company (cedant) to a reinsurance company (reinsurer) in exchange of a payment (reinsurance premium)". Wehrhahn, mentioned that reinsurers are professional entities that exclusively deal with the activity of reinsurance. Park (1799) describes the definition of reinsurance as: "re-insurance, as understood by the law of England, may be said to be a contract, which the first insurer enters into, in order to relieve himself from those risks which he has incautiously undertaken, by throwing them upon other underwriters, who are called re-assurers". According to Patrik (2001), the reinsurer reciprocally agrees to indemnify the reinsured for a specified share of specified types of insurance claims paid by the cedant for a single insurance policy or for a specified set of policies. Outreville (2002) also defined that reinsurance as the transfer of liability from the primary insurer, the company that issued the insurance contract, to another insurer, the reinsurance company. As Outreville (2002) positioned the business that placed with a reinsurer is called a cession of an insurance company. An insurance company's policyholders have no right of action against the reinsurer, even though the policy holder is probably the main beneficiary of reinsurance arrangements and further the mentioned that a reinsurance contract therefore deals only with the original insured event or loss exposure, and the reinsurer is liable only to the ceding insurance company (Outreville ,2002).

2.4 Type of reinsurance

Reinsurance is divided into two main types namely: Facultative and Treaty reinsurance (Outreville, 2002; The Chartered Insurance Institute, 2004; Wehrhahn, 2009).

Facultative reinsurance involves individual single risks (insurance policy) the insurer wishes to insure and where the original insurer and the reinsurer reach a common agreement on the terms and conditions to enter into the contract (Outreville, 2002).

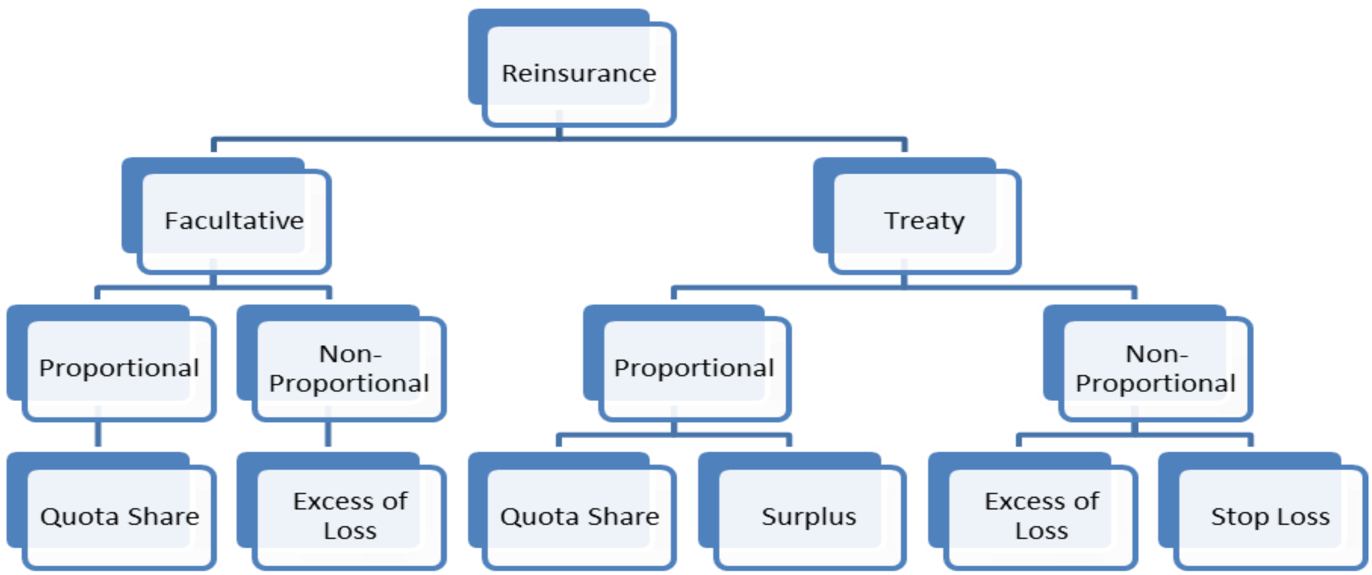
Facultative reinsurance relates to large risks in terms of capital and hazardous nature but risks are few and require some degree of adverse selection for the reinsurer. It is useful when the insurer is less experienced, and requires the professional reinsurers' assistance (Outreville, 2002).

According to African-Re annual training documents in 2010, Facultative means optional the power to act according to free choice. The Insurer is free to offer a risk to Reinsurer but is not compelled to cede the business. The Reinsurer is also free to accept or reject the business offered in accordance with his own underwriting judgment and such other consideration as are important to its financial or marketing position. Each risk is offered individually with full details provided, to enable the Reinsurer make a decision whether not to accept the risk, or he may state the terms on which he will accept the risk. Facultative reinsurance is arranged at the point of risk acceptance by the insurer and is for that individual risk.

Treaty reinsurance, unlike the optional type, provides an obligatory contract by both parties where the insurer is bound to cede in advance a fixed amount of its business and the reinsurer to accept to the type, terms and conditions of reinsurance (Outreville, 2002). Treaty reinsurance establishes a more stable contractual relationship between the two parties. Most insurers prefer treaty reinsurance because it is less expensive and easier to manage and administer, while facultative is less practical when dealing with a single business class or line, although the choice generally depends on the distribution of risks between the parties (Outreville, 2002).

An obligatory or treaty type of Reinsurance provides an automatic facility agreed before the original risks are accepted. They are usually annual contracts, whose terms are negotiated at the beginning of the contract period between the ceding company and Reinsurer to provide reinsurance protection for all the business of a certain type or class. Once agreed, the cedant is bound to cede a fixed amount of his business, and the Reinsurer is obliged to accept. The Insurance Company is free in the underwriting of its business i.e. it can select and rate, and also settles its claims on his will. For this part, the Reinsurer cannot intervene in insurers' underwriting and claim activity except in the case of grave negligence or fraud. The type of reinsurance has been further described by Outreville (2002) and The Chartered Insurance Institute (2004) under the two major reinsurance categories as presented in the chart as follows.

Figure 2.1: Reinsurance categories



2.4.1 Proportional Reinsurance:

1. Proportional Re- insurance is an arrangement where sums insured is equal to Liabilities, premiums and losses are divided up between direct insurer and reinsurer according to pre-agreed respective share of the risk. i.e. proportionally
2. In a quota share of the proportional facultative, the insurer cedes every potential exposure underwriting (liability of a risk) to one or more reinsurers, by sharing the premium (ceded less commission) and in the event of a loss recovers the same share of the claim from the reinsurers.
3. In quota share of the treaty, all the risks are shared between the ceding and the reinsurer in a fixed percentage, where the insurer would get some percent from the share of the reinsurer, as benefit of ceding commission for the cost of acquiring and managing the underwriting business.
4. In Surplus Treaties, the insurer would be interested to cede only those risks over a certain size, or surplus to its retention.

2.4.2 Non- proportional Reinsurance

In Non-proportional reinsurance, the sums insured, premiums, losses are not proportionately divided out but the reinsurer contributes to losses when they exceed a certain limit. In non-proportional reinsurance method, the insurer or cedant undertakes payment of all losses up to pre-agreed amount which includes three ceding forms: excess of loss facultative, excess of loss treaty, and stop loss as the loss treaty. It is therefore based on losses.

1. In Excess of Loss of Facultative method, the reinsured company selects a fixed amount on a particular risk to retain and arranges excess of loss protection contract with reinsurers; for any claim that exceeds that fixed retention or amount the reinsurer reimburses.
2. In Excess of Loss Treaty, unlike the proportional reinsurance method, no insurance amount is ceded, and the reinsurer is not directly concerned about the original rates. Reinsurer has the right to share the part of original premium and no commission is paid to the reinsured company. Reinsurer pays the ceding only when the original loss exceeds some agreed limit. Excess of Loss Treaty, in turn, is divided into two: Risk Excess of loss and Catastrophe Excess of Loss.
3. In Stop Loss Treaties, the reinsurer aggregates losses arising in respect of a specific class or classes of businesses rather than individual losses, and the protection applies after the benefit of all other prior reinsurance. The contract limits are expressed in percentage amounts of the ceding company gross net retained premium income (GNRPI).

2.5 Optimal reinsurance arrangement between insurer's retention and reinsurer's cession

Reinsurance has a worldwide nature as it has been 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 has a secondary market nature and is the main feature of the non-life insurance in the insurance business industry (Plantin, 2006).The insurer has considers the reinsurer as sources of capital and it includes in their total asset as a capital structure mix, which may also be assumed as a cross border source. Primary insurers rather use reinsurance mainly to cede risks, and rarely trade risk with each other. As Jean- Baptiste and Santomero (2000) states regarding the behavior of the two parties they expound that long- term relationship between cedant and the reinsurer allows stability between them and further for information symmetry and inclusion of new ideas in pricing of the products of the reinsurance services.

According to Hoerger et al. (1990) and Garven and Lamm-Tennant (2003), reinsurance purchase is a capital structuring decision to substitute capital, so as to keep optimal level of risk to the level of the insurer's capitalization. Reinsurance promotes relationship with clients without increasing insolvency risk, though both insurer and reinsurer may share a larger unexpected loss (Weiss and Chung, 2004; Meier and Outreville, 2006).

According to CII (chartered Insurance Institute 2004), fixing the limit of the liability between the insurer and the reinsurer is one of the most crucial aspects of the development of any underwriting portfolio. The insurer's limit of retained liability is known as the retention or net premium, usually expressed as a percentage share of a monetary amount of the underwriting premium, whereas the reinsurers' liability is referred as cession (cession rate), expressed as a percentage of the underwriting premium .

According to the CII (Chartered Insurance Institute 2004), a higher cession rate indicates that much of the gross written premiums are ceded to the reinsurer, meaning a significant portion of the risk is transferred to the reinsurer. This in return, implies that, the higher the premium ceded, the higher is the risk transferred, and the higher is the ceded to be claimed.

According to Outreville (2002), the challenge for an insurer is to obtain an optimal level which can maximize profit on the one hand and to protect the insured from severe losses that may lead to bankruptcy on the other. Hence, the initial step should be arranging the reinsurance program where they can choose the optimal point for retention and cession amount (rate). Otherwise, use of capital and retention is ineffective if retention is too low and on the other hand the insurer may run a risk of wide swings (or tenuous situation) and financial ruin in extreme cases if retention is too high.

According to (Outreville, 2002) some of the factors that influence the decision for retention includes the company Creditworthiness (solvency (assets structure including insurer's own resources), Heterogeneity of portfolio, risks dispersion in terms of area, type and class of business, intensity and frequency of losses, Reinsurance type(method and forms),and further Local regulations and foreign exchange controls, and Company Corporate strategy.

Each technique has its own merit and demerit in terms of technical operation (expertise, knowledge and experience), administration, information management, cost, type of reinsurance, reinsurance cover, accounting procedure, and location. Insurance business operates in the law of large number and its portfolio is structured in a homogeneous context that includes similar and equivalent risks. Such structuring helps insurers to set their strategy of reinsurance methods (The Chartered Insurance Institute, 2004, and Wehrhahn, 2009).

Number of insurance experts have examined on the manners of the different risks and reinsurance methods and proposed methods and parameters that can be benefit two parties out of the reinsurance treaty agreements.

According to Holzheu & Lechner (2005), commercial lines of insurance have usually higher cession rates than motor (personal lines). In general, the non-life insurance segment of the insurance industry has higher rates; whereas the Life insurance has much lower cession rates.

Doherty and Dionne (1993) underscore that insurers can provide coverage for large number of policyholders without having larger amount of costly capital for insurance markets where risks are statistically independent, such as automobile collision insurance. The expected losses from a large pool of risks are highly predictable and loss per claim is moderate.

As Wang, 2003 and Irukwu,1987 states that however, insurers are subject to the supervisory and regulatory authority to comply with specified solvency and reserve requirement as a minimum ratio (to retain a certain capital base) regardless of the wishes of capital providers. Such solvency requirements are attached to the premium income, that an increase to the portfolio requires an increase in the asset or reserve

2.6 Impact of reinsurance on insurance company performance

As an International Association of Insurance Supervisors, (2012) discussed that Reinsurance is an integral part of the insurance market and plays the vital role regarding the financial stability of the global insurance markets. According to Iqbal and Rehman (2014), the practice of reinsurance primarily shares the risk of direct insurer and provides several benefits by way of providing advices and services based on its expertise knowledge and specialized skills in the field. The author also asserts that reinsurance provides monetary benefits by way of providing incentives for investment, by optimal sharing of risk, by reducing financial distress and bankruptcy cost, by reducing volatilities in cash flows and by increasing capital and capacity to write more business. Reinsurance transactions are related to underwriting risk and capacity, and affect ceding insurers' performance and corporate growth (Lee and Lee, 2012). So that reinsurance with no doubt is important to the performance of insurance companies.

However, Lee and Lee (2012) stats that Reinsurance activities may increase cost, leading to higher prices and/or lower profits. Lee and Chen-Ying Lee (2012) Thus, reinsurance transactions are related to underwriting risk and capacity, and affect ceding insurers' performance and conduct. He therefore, noted that a better reinsurance arrangement decisions can create value for insurance companies, in order to support for any potential financial requirements and stability. On the other side , Cole & McCullough, (2006) expressed that the reinsurance literature has suggested that firms that are more profitable should be better able to absorb large unexpected losses and therefore use less reinsurance.

2.7 Why insurance companies use Reinsurance?

Insurance companies, which assume the risk of loss from their policyholders, advance the spread of the risk of loss to reinsurance companies by entering into reinsurance agreement. Some of the premiums the insurance company collects from its policyholders are essentially paid to the reinsurance companies as the premiums for the insurance companies' purchase of a reinsurance contract. Both insurance and reinsurance help spread the risk of loss among a wide group of company, which helps to mitigate the potentially financially destructive effect of over-accumulation of risk.

Thus the purposes for buying reinsurance are to provide underwriting assistance. As Meir and Utreville (2006) states that reinsurance allows primary insurers to boost the underwriting revenue more than what would otherwise be possible. As a result, insurance companies would be more competitive in the insurance market as they have been empowered in their underwriting aspect. Second as to give leveraging capacity; the primary object of reinsurance is to protect the primary insurer or the ceding company from being crippled by large losses beyond its financial capacity (Oluoma, 2014). Third as to create financial stability: Capital provided under a reinsurance payout is an external source to the local economy: it is not redistribution but an injection, helping to stabilize the financial situation in the wake of an economic shock (UNISDR, 2009). Fourth, as to keep Stabilization; Reinsurers help the primary insurers by way of stabilization or smoothing of losses and Portfolio or entire range of risks management (Woldegebriel, 2010). On top of that reinsurance uses as a tool of marketing (woldegebriel, 2010) and controlling (UNISDR, 2009)

2.8 Empirical Literature Review

Ma and Elango (2008) carried out study on internationalization and the performance of the property-liability insurance industry and find that reinsurance is positively related to firm performance, indicating that firms purchasing more reinsurance experience more stable performance that contributes to higher risk-adjusted returns.

Moro & Anderloni (2014) the study conducted to analysis the factores affecting profitability of the general insurance industry in the European market from 2004-2012. Appling OLS regression model for data analysis by assuming the variables: the size of the asset, company size, reserve dimension, combination ratio, Financial input, Investment yield, premium to asset ratio, reinsurance ratio measured by the premium and reserve, Internationalizations, diversifications, financial market indicator, Insurance market relative dimension, insurance market growth, and firm position as explanatory variables whereas ROA and ROE used to measure the profitability of the insurance companies. Based on that the finding revealed; Total asset & underwriting negatively affect ROA; however, internationalization, diversification, reserves' size and asset turnover ratio have a positive effect on ROA.

Lee (2014) examines the firm-specific factors and macroeconomics that affect the profitability of Taiwanese property-liability insurance companies. The study run over the period from 1999 to 2009 measured profitability by operating ratio and ROA. The findings of the study shows that underwriting risk, reinsurance usage, input cost, return on investment, and a member of a financial holdings group affect operating ratio and ROA significantly. Also, the study shows that there is significant relationship between economic growth rate and operating ratio. The result further shows that the market share has a negative significant effect on operating ratio, while financial leverage negatively significant correlated with ROA. Finally, firm size, firm growth, diversification, and inflation rates are not significantly correlated with operating ratio and ROA of Taiwanese property-liability insurance companies.

Datu (2016) studied considering the factors that affects profitability of general insurance business in Philippines specified from 2008-2012, using panel data. Using OLS to analysis the data the study assumed ROA and operation ratio to measure profitability whereas risk diversification, market share, real GDP growth rate, reinsurance dependency, loss ratio, inflation, input cost and leverage as independent variables. The study founds that Leverage of a firm, loss ratio, reinsurance dependence, and input cost found to be significant however, the macro economy factors and diversification found to be insignificant. From the independent variables loss ratio, real GDP growth rate and market share affect negatively profitability, but other variables remains to affect positively on ROA.

Jibran, Samen, Kashif & Nouman (2016) the study made to assess factors that affect the profitability of general insurance firms in Pakistan on 20 insurance companies for the period 2005 to 2013.OLS model was implemented to analysis the panel data. The study used ROA and ROE to measure profitability whereas the size of the company, liquidity ratio, inflation and real GDP growth rate used as independent variables. The finding showed that Current assets found to be significant to ROA, but it is insignificant to ROE. Current ratio, size of the company and premium growth have positively affected profitability.

Mazviona, Dube & Sakahuhwa (2017) the study condected to identify the determinate factors affecting the profitability of insurance companies in Zimbabwe using panel data of 20 insurance companies from 2010-2014 by assuming expense ratio, underwriting risk, the extent of a company, liquidity rate, leverage of a company, real GDP growth rate, inflation rate, retention rate and equity capital as explanatory variables applying factor analysis and multiple linear regression models to analyze the data. Thus, the result sowed that expense ratio, underwriting risk and the extent of a firm significantly and negatively affects profitability of insurance companies whereas leverage and liquidity affect positively affect profitability.

2.8.1 Studies in Ethiopia

This section reviews studies conducted in Ethiopia in order to reach at the knowledge gap in this study.

Mehari and Aemiro (2013) examined the impact of firm-specific factors (size of the company, leverage, tangibility of assets, loss ratio, growth in writing premium, liquidity, and age of the company) on the ROA of nine Ethiopian insurance companies during the period from 2005 to 2010. According to the findings of the study, the financial performance of Ethiopian insurance companies is significantly influenced by the size of the company, tangibility of assets, and leverage positively, while loss ratio significantly influenced financial performance negatively. The results also show that the age of the company, growth in writing premium, and liquidity are not significantly correlated with financial performance.

Gashaw & Sambasivam, (2013) investigate about factors affecting profitability of nine insurance companies from 2003 to 2011 through panel data. The study used such as operational period of the company, size of company, volume of equity, leverage ratio, liquidity ratio, premium growth and tangibility of assets. ROA used as proxy to measure profitability and the study use Ordinary Least Square (OLS) multiple regression methods to analyze the panel data. The result revealed that firm growth rate, leverage of a company, volume of capital, firm size, and liquidity ratio are the most significant factors to the performance of the insurance companies. Firm Growth, firm size, and volume of capita have positive effect on profitability. In the contrary, liquidity ratio and firm leverage are negatively but significantly affected profitability. In addition, age of company and tangibility of assets are not significant factor to profitability.

Meles (2014) investigate the factor that affects profitability of ten insurance companies from 2008-2013 through panel data. The study used explanatory variables such as firm size, leverage of a firm, underwriting risk, tangibility of assets,firm growth rate, managerial efficiency, and economic growth and inflation rate. ROA utilized to calculate profitability. The finding shows that size, leverage of a company, tangibility of asset, underwriting risk, company development index and managerial efficiency affect significantly profitability of insurance companies. In the contrary, leverage of a company and underwriting risk have negative and significant effect profitability of insurance companies. Liquidity ratio, inflation rate, and firm growth have insignificant effect on profitability of insurance companies. The study recommends that the top management of insurance companies to provide company specified factors rather than macro economy factors because of the effect which happens due to macro-economic factors seen in long term.

Sisay (2015) investigates about factors affecting of profitability of insurance sector in Ethiopia, specifically in nine Ethiopian insurance firms from 2003-2014 via panel data. In the study explanatory variables used such as age of companies, size of companies, leverage of a firm, tangibility of assets, liquidity ratio, premium growth rate, loss ratio, reinsurance dependence, solvency margin and GDP growth rate. The finding of the research showed that underwriting risk and leverage ratio is significant and negatively affects profitability, however the remaining variables affect positively and significantly the profitability of the firms. The study suggests that top managements in the insurance industry must give priorities like the way to improve the asset, control the level of leverage in the companies and investing in human resource by putting different strategies.

Reshid (2015) as the study conducted to identify the determinant factors affecting profitability in nine insurance companies in Ethiopia for the period 2004 – 2014 using a panel data. The study used explanatory variables such as underwriting risk, technical provision, solvency ratio, reinsurance dependence, liquidity, company size, premium growth, economic growth rate and inflation. The result showed that loss ratio, technical provision and liquidity ratio are significant variables to the profitability insurers whereas underwriting risk, technical provision and solvency ratio significantly and negatively affects profitability. On the other hand, reinsurance dependency affect insurance companies profitability negatively but insignificantly and Liquidity, company size and premium growth have a positive and statistically significant effect on profitability.

Kebede (2016) the study conducted to assess the determinant factor that affects the profitability of nine insurance companies in Ethiopia for the period of ten years 2006-2015. The study uses linear regression model to see the effect of independent variables, which were the factors under study, on dependent variable profitability proxy by ROA. The study assumed the variables such as liquidity ratio, leverage of a company, reinsurance dependency, underwriting risk, size of company and motor insurance as explanatory varibles. Market share used as industry factor and two-macro factor used GDP and Inflations. The findings of the study showed that Size of company, Loss ratio and leverage are the significant variables. Have statistically significant relationship with insurers' profitability. Reinsurance dependence has affected negatively but with insignificant effect. On the other hand, explanatory variables like Motor insurance, market share have positive and statistically insignificant relationship with insurers' profitability. In addition; economic growth rate and inflation have negative and insignificant effect on the profitability of the insurance company.

Haile Gebriel (2016) the study conducted the factors affecting profitability of selected nine during the period from 2004-2014. The study used company based variables such as operational period of the company, size of firm, leverage ratio, liquidity ratio, premium growth, technical provision, loss ratio, solvency margin, re-insurance dependency and tangibility of assets and GDP and Inflation considered as macroeconomic factors. The finding showed that loss ratio, technical provision, leverage ratio and significantly over the company's profitability. However premium growth rate, age of a firm, solvency ratio and real GDP affect significantly and positively profitability of insurance companies. Liquidity, reinsurance dependency, tangibility of assets and firm size doesn't affect profitability.

Lire & Tegegne (2016) studied about factors affecting profitability of eight Ethiopian private insurance companies from 2005- 2015 through panel data. Multiple linear regressions model used to analyze the panel data. In the study, the explanatory variables are loss ratio, reinsurance dependency, solvency ratio, premium growth rate, firm size, real GDP growth rate, Inflations and interest rate. The finding of the study revealed that profitability is significantly affected by firm specific factor underwriting risk negatively, company size positively, premium growth positively and Solvency ratio and reinsurance dependence have significant and negative effect on profitability. In the contrary inflation and interest rate is affecting insignificantly profitability.

Debala (2017) the study conducted to identify factors that affects the profitability of insurance companies in Ethiopia in twelve Ethiopian insurance companies for the period of six years (2011- 2016) using panel data and multiple liner regression analysis method. ROA used as proxy to measure profitability of insurance companies. The study assumed the variables as the industry factor such as liquidity, leverage, reinsurance dependency, underwriting risk, Level of diversification and industry concentration whereas GDP and Inflations considered as macroeconomic factors. As the finding revealed that industry concentration ratio and leverage of a company affect profitability positively and it is statistically significant. Instead, diversification, loss ratio and reinsurance dependency show negative impact on profitability and statistically significant.

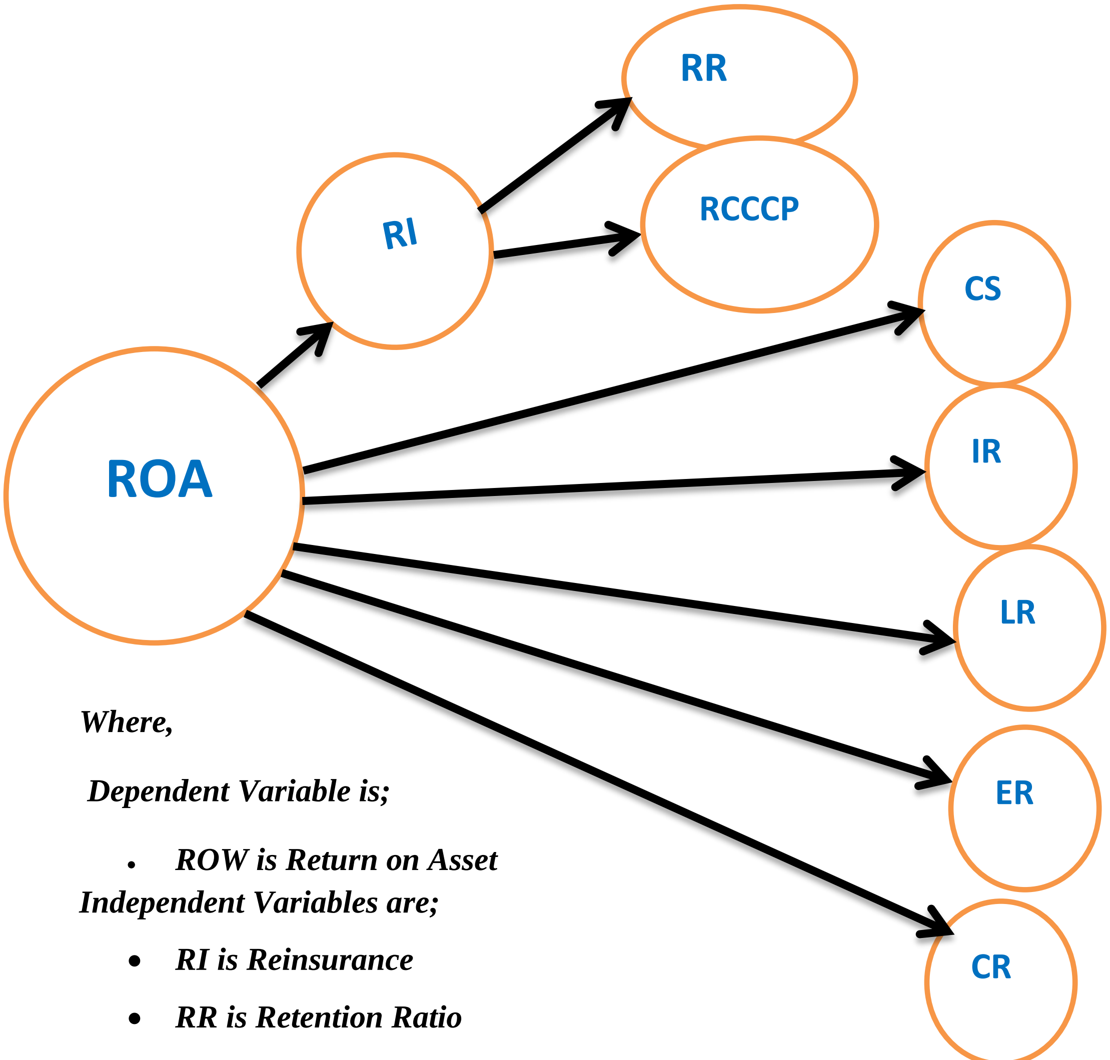
Atsbeha & Kaur (2017) studied about factors affecting profitability of insurance industry from 2006-2016 using panel data of 17 insurance companies. The explanatory variables are firm size, capital adequacy, and leverage of a company, liquidity ratio, underwriting risk, market share, real GDP growth rate and inflation. Hausman test applied to analyze the panel data. The finding showed that firm size, capital adequacy, liquidity ratio and real GDP growth rate were the significant variables that affect the profitability positively. On the contrary, leverage of the company, underwriting risk, market share and inflation rate have significant negative effect on profitability of insurance companies.

Horas (2019) the study using panel data and Multiple liner regression analysis the data for the period 2009-2018 in nine selected insurance companies in Ethiopia to investigate the determinants of profitability. The study assumed liquidity ratio, leverage of a company, volume of capital, managerial efficiency, company size, growth rate, Market share, GDP and Inflations as explanatory variables. Thus it revealed the market share, volume of capital, real GDP growth rate, inflation, and managerial efficiency are the significant variable in the study and Liquidity is positively related with profitability but it is insignificant. Whereas firm size, leverage of a firm, growth rate of premium has negative effect but it is insignificant to the profitability of insurance companies

Debala(2020) The study intends to investigate the nexus between reinsurance dependency and profitability in Ethiopian insurance sector with special reference to Property and Causality insurance on basis of data covers six years (2011-2016) period. The study selected sample of twelve (12) insurance companies to investigate them for six consecutive years (2011-2016) with total of 72 observations through panel data. The reinsurance dependence is considered as an explanatory variable and its influence on profitability measured by return on asset (ROA) from the prominent previous studies were considered as dependent variable. The OLS were tested and the residual was found to be free of Multicollinearity. The results of panel least square regression analysis indicate that reinsurance dependence has a negative and statistically significant relationship with general insurance companies' profitability. Based on this finding, the study suggests that, the management bodies of the insurance companies should give high attention on reducing the amount of premium ceded by the insurers since it will reduce the profitability by better internal control to achieve superior profitability.

2.9 Conceptual Framework

Figure 2.2: Conceptual Framework



Where,

Dependent Variable is;

- ***ROW is Return on Asset***

Independent Variables are;

- ***RI is Reinsurance***
- ***RR is Retention Ratio***
- ***RCCCP is Ratio of Ceded Claim to Ceded Premium***
- ***CS is Company Size***
- ***IR is Investement Ratio***
- ***LR is Loss Ratio***
- ***ER is Expense Ratio***
- ***CS is Company size***

CHAPTER THREE

RESEARCH DESIGN AND METHODOLEGY

3.1. Research Description

Ethiopia's financial sector includes banks, insurance companies, microfinance institutions and pension funds, with banks dominating the sector (African Economic Outlook, 2016). Insurance companies perform integral part via saving, collecting resources for big capital spending, treat allocation and safeguarding the economy in the nations (Hailegebreal, 2016). They offer financial protection to an individual or firm against the monetary losses which are suffered from unforeseen circumstances (Kihara, 2012). Haiss and Sumegi (2008) noted that the availability of the insurance companies is highly essential in the financial services industry almost in developed and developing countries, since they are contributing to economic growth, efficient resource allocation, reduction of transaction costs, creation of liquidity, facilitation of economics of scale in investment, and spread of financial losses.

Ethiopia can be characterized as a least developed economy the same also the financial sector is not that much developed in Ethiopia. Hence, the financial system needs to be developed to support the economy well (Abebaw, 2014). Ethiopian insurance sector are also remains underdeveloped and focusing on general insurance. It accounts about 0.47 percent of GDP for non-life insurance, and 0.03 percent of GDP for life insurance (Gieger and Moller, 2015).

The number of insurance companies remained at eighteen (18), of which seventeen (17) were private and one state owned. Out of eighteen (18} insurance companies currently operate in Ethiopia eleven (11) insurance companies are composite (Life plus general insurance) and seven (7) are general insurer. As of June, 2022, the total branches of insurers increased to 691 from 635 a year ago, showing modest growth of about 9%. Most of the branches are situated in Addis Ababa. The total asset of insurance industry increased by about 5% to reach ETB 40.858 billion (ETB 3.04 billion for life and ETB 37.815 billion for non-life) as that the year ended June 30,2022. The market gross written premium, life and non-life combined ,grew by about 20% to reach ETB 16.666 billion at end of June 30,2022 from 13.874 billion in 2020/2021. Life business increased markedly from ETB 959 million in 2020/21 to ETB 1.352 billion in 2021/22, increased by nearly 41%, while non-life also grew by close to 19% to reach ETB 15.314 billion from ETB 12.915 billion of the preceding year. The market average loss ratio in respect of non-life insurance decreased to 56% in the year under report from 57% in 2020/2021.(United Insurance Company annual report , 2021/2022)

Ethiopian insurance industry is characterized by cut-throat and brutal completion in which all competitors are engaged in protracted price wars that are mutually destructive to profitability. The battle for market is so vigorous that the profit margins of most industry members remained very thin. There is low product innovation and differentiation in Ethiopia insurance market. Almost all insurance companies in the industry sell similar products and this caused heightened price competition. Where the products of competitors are virtually indistinguishable, the price is the sole basis for competitions and competitors are plagued by price wars and low profits. (United insurance company annual report, 2021/2022)

3.2. Research Design and approach

This chapter deals with discussions of the major research design and methods to be employed to conduct the research. It covers research approach, sampling techniques, measuring instrument(s), and data analysis techniques. In addition to that this also considers validation of research method and research code of models.

This research applies quantitative research approaches. Quantitative research is the process of collecting, analyzing numerical data. Quantitative research is used to find patterns and averages, makes predictions, test relationships and generalizes results to wider populations. The objectives of quantitative research are to develop and employ mathematical models, theories and hypothesis pertaining to phenomena (Alen, 2012). This research is uses secondary panel data. Panel data is a combination of cross section data and time series, where the same unit of cross sections are measured at different times. In other words, panel data is data from some of the same individuals /entities observed in a certain period of time. This research thus collects five years quantitative data (2018/2019 up to 2021/2022) from ten sample private insurance companies' audited financial statement that is collected from National Bank of Ethiopia (NBE).

3.3. Sample and sampling techniques

There are 18 insurance companies in Ethiopia including one government insurance company called Ethiopian Insurance Corporation (EIC). For this research propose the researcher excludes EIC as it is out of this research scope. Out of 17 private insurance companies one insurance companies called Zemen insurance company has also excluded from the population as it has only three years being in to operation in the market. This research has taken ten sample insurance companies out of sixteen private insurance companies using stratified random sampling method. The strata assigned based on the five years average gross premium that are classified into four groups called large, semi medium, medium and small having the respective average five years premium production ranges from birr 900 up to 700 million, 700.to500 million , 500 up to 300 million and 300 up to 100 million. As per the average data each strata group accounts one, five, six and four insurance companies respectively. Then the researcher select samples randomly (1 insurance Co from the first group, 3 insurance Co from the second group, 4 insurance Co. from third group and 2 insurance Co. from the final group) keeping their proportions number of insurance companies in to considerations. Based on this procedure AWASH, UNITED, GLOBAL, NILE, NICE, AFRICA, NIB, ABBAY, BEREHAN AND BUNNA insurance companies have been selected as a sample

3.4. Definition of Variables, Hypotheses and Variable Measurement

There are important issues need to be dealt with in specifying an empirical model. These include choice of suitable dependent and explanatory variables, measurement of these variables, and model specifications. The following sections presents considering this issues

3.4.1 Definition of Dependent Variable and its Measurement

Based on the insurance theories and earlier researches with the objectives to investigate the determinants factors of Insurances' companies performance, that are commonly employed to measure insurance companies profitability performance, return on asset(ROA), are uses as proxy dependent variable. Return on total assets (ROA) is calculated as net profit before tax over total assets. This means that the amount of profit that insurance companies owns per one birr of the asset employed. This is probably the most important ratio in comparing the efficiency and financial performance of insurance companies as it indicates the returns generated from the assets that Insurers owns. The formula for the performance measure is given as follows:

ROA = Net profit before tax (t) / Total Assets (t)

3.4.2 Definition of Explanatory Variables, their Measurement and Hypothesis

The choice of explanatory variables is based on their theoretical relationship with the dependent variable. Primarily to address the main objectives of this research retention ratio(RR) and the ratio ceded claim to ceded premium(RCCCP) are chosen as explanatory proxy variables directly represents the reinsurance arrangements that are expected to partly explain the variation of the dependent variable. Other variables are used as control variables that consider affecting the profitability performance of insurance companies.

Table 3.1: Definitions of Variables and Measurements

VARIABLES	DESCRIPTIONS	MEASUREMENT
REINSURANCE TECHNIQUES/ ARRANGEMENT (PROXY VARIABLE)		
X1	RETENTION RATIO (RR)	NET PREMIUM/GROSS PREMIUM
X2	RATIO CEDED CLAIM TO CEDED PREMIUM(RCCCP)	CEDED CLAIM / CEDED PREMIUM
CONTROL VARIABLES		
X3	COMPANY SIZE (CS)	NATURAL LOGARITHM OF INS. COMPANIES TOTAL ASSETS
X4	INVESTEMENT RATIO (IR)	RATIO OF INVESTEMENT INCOME OVER EARNED PREMIUM
X5	LOSS RATIO(LR)	RATIO OF NET INCURRED CLAIM/NET EARNED PREMIUM
X6	EXPENSE RATIO	RATIO OF TOTAL EXPENSE /EARNED PREMIUM
X7	COMMISSION RATIO	RATIO OF TOTAL COMMISSION PAID /GROSS WRITTEN PREMIUM

3.5. Research Hypotheses

Based on prior theoretical and empirical literature the study tested the following research hypotheses.

HO1: Retention ratio will have no relationship with and effect on the profitability of insurance companies

HO2: Ratio ceded claim over ceded premium will have no relationship with and effect on profitability of insurance companies

HO3: The size of the company will have no relationship with and effect on the profitability of insurance companies

HO4: Investement ratio will have no relationship with and effect on the profitability of insurance companies

HO5: Loss ratio will have no relationship with and effect on the profitability of insurance companies

HO6: Expense ratio will have no relationship with and effect on the profitability of insurance companies

HO7: Commission ratio will have no relationship with and effect on the profitability of insurance companies

3.6. Model specification

The model used a panel data that has been collected from ten Ethiopian Private insurance companies taken as a populations with the respective five years data (Source Audited financial stamen). The model has used generalized least square method (GLS) taking the necessary tests methods using Breush and pagan Lagrangian multiplier test (LM test) and Hausman test. Based on the tests it has selected the random effect model as an appropriate model

$Y = \beta o + (\beta X)it + (\beta X)it + (\beta X)it + (\beta X)it + (\beta X)it + (\beta X)it + (\beta X)it + \epsilon it$

Where:

Y = profitability (ROA)

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

X1 = Retention Ratio (RR)

X2= Ratio of Ceded claim over ceded premium

X3= Size of the company (CS)

X4= Investement ratio (IR)

X5= Loss Ratio (LR)

X6=Expense Ratio (ER)

X7= Commission Ratio (CR)

βo= Constant

β 1, 2, 3, …..7 are parameters to be estimated;

i = Insurance company i = 1,2,3,……. 10 and t = the index of time periods and t = 1, 2….7

CHAPTER FOUR
DATA ANALYSIS AND RESULT DISCUSSION

4.1 Introduction

This chapter presents, analyzes and discusses data in detail manner to respond research hypothesis and accomplish the objectives of the study. It includes the finding of the study that was designed to show how the reinsurance techniques/ arrangements affect the profitability of private insurance companies in Ethiopia. Out of the 16 registered private insurance companies, 10 insurance companies have been taken as a sample. The data was reviewed for the period of five years effective from 19117/18 up to 1921/22.

This chapter also includes model specification, descriptive statistic, model specification test, regression analysis and finally summary of findings

4.2. Descriptive Statistics

This section concerns with the overall summary of all the Variables involved in the model aimed to understand their distinct behavior independently through computing their mean value and standard deviation with their relative minimum and maximum value. This part of the analysis aimed in providing supportive evidences for the econometric model as well as simultaneously checks if there exist unusual values such as out layer in the data

Summaries the mean, maximum, minimum and standard deviation of each variable as follows.

Table 4.1: Summary of descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
ROA(Return on Asset)	0.069	0.028	-0.04	0.13
CS(Company size)	13.77	0.64	12.62	15.12
IR(Investement Ratio)	0.23	0.051	0.14	0.32
LR(Loss Ratio)	0.61	0.115	0.46	1.04
RR(Retention Ratio)	0.76	0.069	0.63	0.91
RCCCP(Ratio of ceded Claim to Ceded Premium)	0.397	0.415	-0.25	2.33
ER(Expense Ratio)	0.317	0.076	0.14	0.45
CR(Commission Ratio)	0.072	0.026	0.02	0.13.

The mean values, standard deviation, the minimum values and the maximum values for each variable under consideration was computed aimed to measure the extent of the deviations (disparities) of the insurance companies under investigation, in terms of their company specific variables.

The variables with the respective values were collected from audited financial statements of selected insurance companies. The one that represent the profitability of insurance companies as a dependent and proxy variable are return on asset (ROA) and on the other hand the independent variables were Retention ratio (RR) and Ratio of ceded claim to ceded premium(RCCCP) represented directly the reinsurance techniques or arrangements and others were independent variables used as controlling variables company size (CS), investment ratio (IR), underwriting risk/loss ratio (LR), expense ratio (ER) and commission ratio(CR)

The mean values of all the variables involved in the model were limited within the range of 0.068 to 13.77. The lowest minimum value registered by return on asset whiles the highest maximum value by company size. ROA (Return on asset) was computed by net income before tax over total asset. Its mean and standard deviation for the ten private insurance firms was 0.069 and 0.028 respectively. It illustrates insignificant variation in the values of ROA across the private insurer's included in this study. The maximum and minimum ROA through the periods were 0.13 and - 0.04 respectively. This means that on average private insurance companies has earned a maximum of 13 % and minimum 4% of profit before tax for each birr invested out of the total asset.

Company size(CS) was measured by natural logarithm of total asset of the insurance company. The average value of size of a company and its standard deviation were 13.77 and 0.64 respectively. It means that there exists significant variation across the sample insurance companies. The maximum and minimum values of company's size were 15.12 and 12.62 respectively. Investment ratios (IR) were computed by net investment income over earned premium. The mean value of investment ratio and its standard deviation is 0.2296 and 0.0570 respectively; it indicates that significant deviation in the amounts of investment ratio across the private insurers. The maximum and minimum investment ratios through the period were 0.32 and 0.14 respectively. Firm loss ratio (LR) is measured by total of annual net incurred claim over net earned premium. The mean value and a standard deviation is 0.6166 and 0.1149 respectively. It indicates that the presence of significant variation in the firms loss ratio over the years. The maximum and minimum loss ratio/underwriting risk of the company throughout the periods were 1.04 and 0.46 respectively. In general the loss ratio with minimum of 46% shows by far less than and can be considered as healthy trend comparing with the industry average loss ratio that is 70%.

Retention ratio was measured by the total annual premium ceded to the reinsurance companies over the total annual gross written premium. The mean value for retention ratio was 0.7604 and a standard deviation was 0.06898. The result reveals that the presence of insignificant dispersion in retention ratio between insurance companies retention ratio. The minimum and the maximum retention ratio were 0.63 and 0.91 respectively. This means that out of the total gross written premium insurance companies retained the same percentage amount of maximum and minimum risk from the total written gross premium . The ratio of ceded claim to ceded premium is simply shows the ratio the amount of ceded calm over ceded premium to the reinsurances companies. The mean and the standard deviation of ceded claim over ceded premium were 0.397 and 0.4149 respectively. This reveals that significant dispersion between the ratios. The minimum and the maximum value of the ratio of ceded claim over ceded premium were - 0.25 and 2.33

.Expense ratio is measured by the total amount of annual expense over the total amount of annual earned premium. The mean and the standard deviation of the expense ratio were 0.3166 and 0.0764 respectively. This reveals that insignificant dispersion between insurance companies expense ratio. The minimum and the maximum amount of expense ratio were 0.14 and 0.45 respectively. The last variables were applied in this study are commission ratio is measured the ratio total annual commission paid to the intermediaries over the gross written premium. The mean of and the standard deviation of commission ratio were 0.0724 and 0.0259 respectively this shows that there are insignificant dispersion in insurance companies expense ratio. The minimum and the maximum amount of expense ratio were 0.02 and 0.13 respectively.

4.3 Correlation analysis

According to Pjanic etal, (2013) correlation coefficient indicates the strength of the relationship between the two observed variables. It depicts the joint behavior of each variable with the rest of the variables. The sign with the respective values shows that the direction of an individual variable that is going to move with respect to the change directions of the other variables. The negative sign implies that the variables under consideration move to the opposite direction whereas the positive sign implies the variables the same under consideration move to the same directions. The study presents the result of Pearson correlation analysis of explained and explanatory variables in the model, since the correlation analysis shows only the degree of association. Pearson’s correlation coefficients are used to determine the strength of the relationship between dependent and independent variables. The Pearson correlation scale ranges from -1 to +1, any value greater than zero indicates a positive direct relationship between the two variables, which implies that every increase in the independent variable led to the increase dependent variable whereas, any value less than zero indicates a negative relationship between the two variables, that means that every increase in the independent variable could led to the decrease in dependent variable. The correlation among the variables in the model is computed in order to give a supportive evidence for the relationship between different variables like explanatory variables that are expected to influence the profitability of firms. Generally, when the value of the coefficient is zero, then there is no correlation between two observed variables. The coefficient value of +1.0 indicates that the correlation is perfect and positive, while the coefficient -1.0 indicates that the correlation is perfect and negative. The correlation coefficients show the extent and direction of the linear relationship between profitability of insurance companies and firm Size, underwriting risk/Loss ratio/, investment, rate of retention, the ratio of ceded claim to ceded premium, commission and administrative expense.

Table 4.2: Correlation Matrix

	roa	cs	ir	lr	rr	rcccp	er	cr
roa	1.0000							
cs	-0.1623	1.0000						
ir	0.2554	0.4119	1.0000					
lr	-0.8266	0.1419	-0.3888	1.0000				
rr	-0.0676	-0.3943	-0.5869 0	.2322	1.0000			
rcccp	-0.3575	-0.1645	-0.0892	0.1929	0.080	1.0000		
er	0.1056	0.2048	0.5218	-0.2688	-0.2147	0.1049	1.0000	
cr	0.2118	0.2511	0.4435	-0.3157	-0.8211	-0.1821	-0.1417	1.0000

Based on the above correlation result shows that insurance company's profitability (ROA) to on the one side has a positive and moderate relationship with the investment ratio, expense ratio and commission ratio with the correlation coefficient of 0.25, 0.1 and 0.21 respectively.

To the other side insurance companies profitability (ROA) has negative relationship with company size (0.16), underwriting risk /loss ratio (0.83), retention ratio (0.06) and ratio of ceded claim to ceded premium(0.36). Of which company's loss ratio and ratio of ceded claim to ceded premium have strong and significant relationship with return on asset.

4.4 Model Specification Test and Regression Result

4.4.1 Model Specification Test

A panel data regression model estimated in different ways depending on the assumptions made about the intercept, regression coefficients, and error term. Accordingly, the pooled regression model, the fixed effects model, and the random effects model were widely used models in panel data analysis. The researcher used to select appropriate model using Lagrangian multiplier (LM test) and Hausman test. Based on that random effects model was selected which was the most appropriate in the variation of the dependent variable (ROA) through the variation of the independent variables.

"...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...[like culture, religion, gender, race, etc]. One side effect of the features of fixed-effects models is that they cannot be used to investigate time-invariant causes of the dependent variables. Technically, time-invariant characteristics of the individuals are perfectly collinear with the person [or entity] dummies. Substantively, fixed-effects models are designed to study the causes of changes within a person [or entity]. A time invariant characteristic cannot cause such a change, because it is constant for each person." [Kohler, Ulrich, Frauke Kreuter, Data Analysis Using Stata, 2nd ed., p.245]

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: "...the crucial distinction between fixed and random effects is whether the unobserved individual effect embodies elements that are correlated with the regressors in the model, not whether these effects are stochastic or not" [Green, 2008, p.183] If you have reason to believe that differences across entities have some influence on your dependent variable but are not correlated with the predictors then you should use random effects. An advantage of random effects is that you can include time invariant variables (Eg. gender).

Based on the above discussion the researcher therefore used Hausman test method to test whether random effect or fixed effect model is appropriate for this study. According to (Green, 2008). The Hausman-test tests whether the individual characteristics are correlated with the regressor. The null hypothesis is that they are not (random effects).

Defining the Null and Alternative hypothesis:

Ho: The appropriate model is Random effect. There is no correlation between the error term and independent variables in the panel data. Cov(αi, xit)=0

H1: The appropriate model is fixed effect. The correlation between the error term and the independent variables in the panel data model is statistically significant. Cov(αi ,xit)≠0

Table 4.3: Hausman Fixed Random

	---- Coefficients ----			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
cs	-.0239714	-.0112069	-.0127645	.006741
ir	.1491299	.122768	.0263619	.0346386
lr	-.2077344	-.1908763	-.0168581	.0213964
rr	-.0019899	.0371569	-.0391467	.0462372
rcccp	-.0107831	-.0114961	.000713	.0014358
er	-.0849367	-.0499959	-.0349409	.0333916
cr	-.0288545	-.0168421	-.0120125	.0689035

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(7) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 4.83

Prob>chi2 = 0.6802

As Hausman test the Prob.>chi2 =0.6802 > 0.05 the random effect is appropriate than fixed effect. Its due to the error term is not significantly correlated with any of the explanatory variables involved in the model or any variation in the error term is subject to chance.

Following that the researcher was taken the LM test as to decide between a random effects regression and a simple OLS regression. The null hypothesis in the LM test is that variances across entities are equal to zero. There is no significant difference across units (i.e. no panel effect).

Table 4.4: Breusch and Pagan Lagrangian multiplier test for random effects

Roa[company,t] = Xb + u[company] + e[company,t]		
Estimated results:		
Var	**sd = sqrt(Var)**	
roa	.0008026	.0283304
e	.0001517	.0123185
u	.0001904	.0137984
Test:	**Var(u) = 0**	
chi2(1) =	**3.97**	
Prob > chi2 =	**0.0231**	

As Prob. > chi2 =0.0231 < 0.05 thus it failed to accept the null hypothesis and concludes that random effect is appropriate Thus, the regression analysis was done by using random effect model..

4.4.2 Regression Result

The regression analysis examines the relationship between the profitability of insurance industry as a dependent variable and independent variables. Regression is actually a statistical technique that predicts the value of a dependent variable based on one or more independent variables.

Table 4.5: Estimated result of Random effect Model

No	Independent Variables	Coefficient of Depnt. Variable (ROA)	Standard Deviation
1	CS (Company Size)	-0.0112*	0.0059
2	IR (Investement Ratio)	0.123*	0.0683
3	LR (Loss Ratio)	-0.191***	0.0278
4	RR (Retention Ratio)	0.0372	0.0702
5	RCCCP (Ratio of ceded claim to ceded premium)	-0.0115**	0.0048
6	ER(Expense Ratio)	-0.0500	0.0468
7	CR(Commission Ratio)	-0.0168	0.1790
	Constant	0.306**	0.1230
	Observations	50	50
	Number of company	10	10

Note: *** p<0.01, ** p<0.05, * p<0.1

Based on the regression result, profitability of insurance companies in Ethiopia (ROA) was explained by model variables where R- square of 71%. This indicates 71% of variation in Return on Asset was explained by explanatory variables of the model and the remaining 29% was explained by other variables which is not included in the model. The result showed that Prob > chi2 = 0.0000 and as this number is < 0.05 then model is ok. This is an Ftest to see whether all the coefficients in the model are jointly different than zero. The model assumed that (corr(Ui, X) = 0) that the between entity errors Uit are uncorrelated with the regressors in the random effects model.

4.5 Hypothesis Test and Result Discussion

The findings from the regression results of the effect of reinsurance arrangements and other factors affecting profitability of private insurance companies in Ethiopia. Based on random effect regression result the model was as follow:

ROAit=0.306-0.0112CS+0.123IR-0.191LR+0.0372RR–0.0115RCCCP–0.05ER-0.0168CR

The factors that influence profitability of insurance industry were identified as company size, investments, underwriting risk/loss ratio, ratio of ceded claim to ceded premium, expense ratio and commission ratio. Based on above regression result that the report shows only retention ratio and investement ratios were positively associated with return on investment (ROI). However, the former was highly insignificant than the later that was moderately insignificant.

Others, company size, loss ratio, ratio of ceded claim to ceded premium, expense ratio and commission ratio were negatively associated with return on asset (ROA). Of which loss ratio and the ratio of cede claim to ceded premium had statistically negative associations from return on asset and the rest had statistically insignificant associations from return on asset.

4.5.1. Hypothesis Test

Table 4.6: Summary of Hypothesis Test

Independent Variables	Abbr.	Expected Result	Regression Result	Status of Null Hypothesis
I. Reinsurance Techniques				
Retention Ratio	RR	No R/S and effect	Positive and insignificant	Accepted
Ratio of ceded claim to ceded premium	RCCCP	No R/S and effect	Negative and Highly Significant	Rejected
II. Other variables				
Company Size	CS	No R/S and effect	Negative and moderately significant	Rejected
Investement Ratio	IR	No R/S and effect	Positive and Moderately significant	Rejected
Loss Ratio	LR	No R/S and effect	Negative and highly significant	Rejected
Expense Ratio	ER	No R/S and effect	Negative and insignificant	Accepted
Commission Ratio	CR	No R/S and effect	Negative and Insignificant	Accepted

4.5.2. Result discussions

To give the priority to the main objectives of this study the researcher primarily discussed the effect and relationships of reinsurance mechanisms (retention ratio and the ratio of ceded claim to ceded premium as proxy variables) over the profitability of insurance companies. Then, other explanatory variables that were considered as controlled variables; Company size, Investement ratio, Underwriting risk/ Loss ratio/, expense ratio and commission ratio were discussed their relationships with and effect on the insurance company's profitability.

Retentions Ratio (RR)

Retention ratio is measured the ratio net premium over the gross premium. This means that the amount of gross written premium retained in insurance companies account. The rest after retaining out of the gross written premium called cession ratio. It is the amount gross written premium ceded to the reinsurance. These are generally called the reinsurance arrangement /techniques means that fixing the liability between the insurer and the reinsurer. According to

Outreville (2002), the challenge for an insurer is to obtain an optimal level which can maximize profit on the one hand and to protect the insured from severe losses that may lead to bankruptcy on the other. Hence, the initial step should be arranging the reinsurance program where they can choose the optimal point for retention and cession amount (rate). Otherwise, use of capital and retention is ineffective if retention is too low and on the other hand the insurer may run a risk of wide swings (or tenuous situation) and financial ruin in extreme cases if retention is too high. Reinsurance transactions are related to underwriting risk and capacity, and affect ceding insurers' performance and corporate growth (Lee and Lee, 2012). So that reinsurance with no doubt is important to the performance of insurance companies. However, Lee and Lee (2012) stats that Reinsurance activities may increase cost, leading to higher prices and/or lower profits. Lee and Chen-Ying Lee (2012) thus, reinsurance transactions are related to underwriting risk and capacity, and affect ceding insurers' performance and conduct. He therefore, noted that a better reinsurance arrangement decisions can create value for insurance companies, in order to support for any potential financial requirements and stability. So that it is a critical aspects and challenges for insurers to obtain the optimal level where can maximize profit on the one hand and to protect the insurer from severe losses that may lead to bankruptcy on the other hand

Considering the above theoretical facts, the regression result shows that retention ratio affects insurance companies' profitability positively but with statistically insignificant as the (P value is 0.59). The coefficient of retention ratio shows that 0.0372 which implies a 1% changes (either increasing or decreasing} in retention ratio causes 3.7% change on the insurance company's profitability keeping with the same direction. Likewise, the previous empirical findings like Moro & Anderloni (2014). Ma and Elango (2008). Haile Gebriel (2016) and Sisay (2015) have found to be in line with the study findings; the retention ratio has positively affects the insurance company's profitability. But others like Datu (2016), Debala (2017), Kebede (2016) and Lire & Tegegne (2016) have differently finds that retention ratio has negatively affects firms profitability. The researcher concludes that the retention ratio affects the insurance company's profitability insignificantly.

Accept the Null hypothesis since there is no relationship between the retention rate and insurance company's profitability

Ratio of ceded claim to ceded premium

Ration of ceded claim to ceded premium is the ratio of ceded claim that is the amount of claim ceded to the reinsurance over ceded premium, this considered as cost of insurance companies as to avail the reinsurance service. The ratio shows that how much of the claim amount ceded or recovered from the reinsurance (Benefit) over the premium amount ceded to the reinsurance (Cost). This means that how much of the cost of reinsurance (ceded premium) will be recovered in terms of claim that is ceded(Ceded Claim) to the reinsurance. According to the Association of Chartered Insurance Institute (2004), a higher cession rate indicates that much of the gross written premiums are ceded to the reinsurer, meaning a significant portion of the risk is transferred to the reinsurer. This in return, implies that, the higher the premium ceded, the higher is the risk transferred, and the higher is the ceded to be claimed. Based on that the ratio of ceded claim to ceded premium refer to the relative benefits of reinsurance through ceded claim to the costs of reinsurance through ceded premium.

However, the regression result shows that the ratio of ceded claim to ceded premium affected the insurance company's profitability negatively and significantly as the (P value is 0.016). The coefficient of the ratio of ceded claim to ceded premium is -0.0115 that implies 1% change (either increasing or decreasing) on the ratio of ceded claim to ceded premium causes a 1.15% change in insurance company's profitability to the opposite direction.

Reject the Null hypothesis since there is statistically significant relationship between the ratio ceded claim to ceded premium and Insurances Company's profitability.

Company Size

Size of the company is measured in the natural logarithm value of total asset of insurance industry that was negatively with moderate significance affected (the p value is 0.06) the profitability of insurance company. The regression result of coefficient -0.0112 implies that one percent increase (either increasing or decreasing) in the size of the company causes 1.12% change insurance company's profitability respectively with the opposite direction. The finding was not in line with both theory and expectation supporting the fact that both economies of scale and market power would be built as size increases ultimately supports insurances companies' profitability performance. Thus, The finding was supported by the previous empirical literature of Gashaw & Sambasivam, (2013), Mehari and Aemiro (2013), Kebede (2016), Horas (2019), Mwangi, and Murigu, (2015) in Kenya, Simon, (2016), Cudiamat and Siy, (2017), Mazviona etal, (2017) were found that company size has negative impact on profitability of company due to difficulty to manage larger company efficiently and effectively. There are also the previous empirical literatures against the finding that were Meles (2014), Reshid (2015), Burca and Batrinca, (2014), Lee (2014) in Taiwan, Bahilu (2016), Asrat and Tesfahun (2016), Aster and Meseret, (2017) found that positive relationship between size and insurance company's profitability . The researchers conclude that size of the company has moderately negative effect on profitability of insurance industry in Ethiopia.

Reject the Null hypothesis since there was moderately significant relationship between the company size and Insurances Company's profitability.

Investement Ratio

Investement ratio is measured by the ratio of investement income over net earned premium. It shows that how the insurance company's investement income contributes to the total company's income per one birr of earned premium. As most of theoretical and empirical literatures confirms the ratio of investement income positively relates with the insurance company's profitability the same also the result of this study confirms with the coefficient of the 0.1228 with positive and moderate significance as the P-value is 0.07. This implied that a one percent change (either increase or decrease) caused 12.28% change to the same directions on the insurance company's profitability

Reject the Null Hypostasis since there was moderately significant relationship between the ratio of investement income and insurance company's profitability.

Loss ratio /Underwriting Risk/

Loss Ratio is measured by the ratio of incurred claim over net earned premium which shows the productivity of the underwriting activity undertaken in insurance company. As most of the theories of insurance confirm that Underwriting risk or loss ratio effects negatively and statistically significance impact on profitability of insurance companies in Ethiopia. The regression result shows negative coefficient (-0.1909) and statistically significant with the p value of (0.000). This indicated that underwriting risk increased by one percent would cause

19.09 percent decline on insurance company's profitability. This finding was consistent with previous findings of Aster and Meseret, (2019); Gemachis, (2017); Moro & Anderloni (2014). Ma and Elango (2008). Haile Gebriel (2016) and Sisay (2015), Datu (2016), Debala (2017), Kebede (2016) and Lire & Tegegne (2016) were found negative and significant relationship between profitability and underwriting risk. Thus, the researcher concluded that underwriting is negatively affect profitability of insurance company in Ethiopia because higher underwriting risk leads the insurers to pay higher unexpected payments or expenses. Usually, high loss ratio implies the premium rates are too low for the level of risk and the company's profitability would be endangered. Therefore, reducing loss ratio leads to increase the profitability of insurance firms in Ethiopia as result of its negative relationship with loss ratio.

Reject null hypothesis since there was statistically significant relationship between underwriting risk and profitability of insurance industry.

Expense Ratio

Expense Ratio is measured the ratio total expense over net earned premium. It means that how much amount of cost is expensed to get one birr amount of net earned premium. As the theories confirm that expense in general affects negatively the profitability of any business organization also the same is true for insurance companies. The regression result showed that expense ratio affects the profitability of insurance companies negatively but insignificantly as the P value is 0.28. The coefficient of the expense ratio is -0.05 that implies a one percent change (either increase or decrease) in the expense ratio affects 5% to opposite direction of either (decrease or decrease) in the insurance companies profitability. The previous empirical literatures like Lee (2014) and Malik(2011) also confirms that expense ratio affects the insurance companies profitability negatively since it has cost implications directly

Accept the Null Hypothesis since there are statistically insignificant relationship between expense ratio and insurance company's profitability

Commission Ratio

Commission Ratio is measured the ratio of commission paid to the intermediaries (brokers and sales agent) over the gross written premium. This means that the commission paid to get one birr amount of premium amount. As insurance theories and other empirical literatures that commission expense has direct cost implication so that has negatively affects insurance companies profitability. The regression result shows that the relationship between insurance commission and insurance company's profitability are negatively but statistically insignificant as the P value is 0.92. The coefficient of commission ratio is -0.017 which shows that a one percent change (either increase or decrease) in commission expense affects the profitability of insurance companies negatively by 1.7%,

Accept the Null Hypothesis since there was insignificant and negative relationship between commission expense and insurance companies profitability

CHAPTER FIVE
CONCLUSION AND RECOMMENDATION

5.1. Conclusions

From the result findings the researcher has concludes that taking the reinsurance arrangements/ techniques with proxy variables; retention ratio(RR) has positive but insignificant relationship with the insurance company's profitability (ROA).It indicates that the change in either of increasing or decreasing in RR would have insignificantly effected ROA towards the same directions. The variable, the ratio of ceded claim to ceded premium (RCCCP) has negative and significant relationship with ROA, this implies that the more the insurance companies cedes the amount of the claim over one birr of ceded premium the lesser oppositely and significantly affected the ROA. This result has a contradictions with the theories of the fact that it has expected that the more the claim cost ceded(the reinsurance benefit) to the reinsurance means that it is an additions that contributes directly to insurance companies profitability through minimizing the insurance companies claim costs but ceded premium (reinsurance cost) is cost of insurance companies paid for reinsurance so that the more the premium ceded to the reinsurance companies the more the insurance companies incurred costs as a result the net ratio of nominator to denominator effect would be expected to have positive relationship with the ROA. Accordingly the researcher has expected from the result to get the profitability (ROA) would have been related or effected positively like the same direction with the variations of the ratio of ceded claim to ceded premium

Others controlling independent variables; company size, loss ratio/ underwriting risk, expense ratio and commission ratio have negative relationship but investement ratio has positive relationship with the insurance companies profitability(ROA). Loss ratio(underwriting risk) has negative and highly significant relationship or effect on insurance company's profitability. The company size and investement ration have moderate significance but with the respective negative and positive relationship with insurance companies profitability.The rest variables expense ratio and commission ratio have negative and highly insignificant relationships with the insurance company's profitability (ROA).

5.2 Recommendations

Based on the study regression findings the researcher forwards his recommendations as follows.

The major activity of insurance company is to generate revenue mainly from underwriting operations. So that insurance companies should reduce the impact of underwriting risk (amount of losses). To reduce underwriting risk one, insurance companies improve their underwriting performance through implementing paramount techniques of risk selection system and avail diversified insurance products to maintain high returns relatively. Two, Insurance companies should execute sound claim handling practice with continues improvement on claim leakage management in both side, which is from the company employee (the engineering, inspection and claim management department) and from the customer side, to do this the company should develop immediate investigation mechanism on reported claim with crossed confirmation mechanism. Three, Insurance companies should gather sufficient and important information and make analysis based on the risk to readjust the existing risk price. It helps to get details and knowhow about subject matter to make assessment before issuing the insurance policy. In addition insurance companies need to avoid a practice of price cutting competition, risk concentration and moral hazard. Insurance companies should also maintain an optimum level retention ratio making thoroughly continuous assessment of the relative scenarios to what extent the company should retain the risk out of the total risk by considering the company relative retention and liquidity capacity and the probability of existing of catastrophic risks. Insurance companies should also controls and minimizes costs so that commissions and other admin expenses need to properly managed to maximize their profitability. Finally the researcher has recommended for further studies to address the effect and the relationship between other reinsurance arrangement's variable factors and how the ratio of ceded claim over ceded premium would affect negatively on the insurance company's profitability (ROA) as the finding contradicts with technical theoretical facts.

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Annexes

Annex 1: List of Insurance companies In Ethiopia

No	Insurance companies	Type	Date of establishment
1	Ethiopian Insurance Corporation S.C	Composite	1976
2	National Insurance Company of Ethiopia S.C	General	23/09/1994
3	Awash Insurance Company S.C	Composite	1/10/1994
4	Africa Insurance Company S.C	Composite	1/12/1994
5	Nyala Insurance Company S.C	Composite	6/1/1995
6	Nile Insurance Company S.C	Composite	11/4/1995
7	Global Insurance Company S.C.	General	11/1/1997
8	The United Insurance S.C	Composite	1/4/1997
9	NIB Insurance Company S.C	Composite	1/5/2002
10	Lion Insurance Company S.C	Composit	1/7/2007
11	Ethio-Life & General Insurance S.C	Composite	23/10/2008
12	Oromia Insurance Company S.C	Composite	26/1/2009
13	Abay Insurance company S.C	Composite	26/7/2010
14	Berhan Insurance Company S.C	General	24/5/2011
15	Tsehay Insurance Company S.C	Composit	28/3/2012
16	Lucy Insurance Company S.C	General	1/10/2012
17	Bunna Insurance Company S.C	General	21/5/2013
18	Zemen Insurance Company S.C	General	5/6/2020

(Source: National Bank of Ethiopia)

Annex 2: Sampling

Range b/n 900,000- 700,000						Africa	
Ins Co	**Five y. Avg. GWP**	**Ins Co**	**Five y. Avg. GWP**	**Ins Co**	**Five y. Avg. GWP**	**Ins Co**	**Five y. Avg. GWP**
Awash	854,943.00	Unic	600,991.00	Nile	489,299.20	Global	125,010.60
		ormia	585,837.00	lion	394,609.00	berehan	153,062.40
		Nyala	537,172.00	tsehay	384,045.20	ELGI	177,547.52
				nice	300,129.68	buna	284,650.60
						lucy	155,854.20
Sample selected Randomly from Ranges							
awash		unic		nile		global	
		africa		nice		abay	
				nib		berhean	
						buna	

Annex 3: Raw Data Analysis Result

	Awash	Global	Nile	Nice	Africa	Nib	Unic	Abay	Berhan	Bunna	Total
2018											
ROA	0.06	0.08	0.06	0.09	0.04	0.03	0.07	0.13	0.07	0.07	0.05
company size	14.59	12.62	13.83	13.11	13.79	14.05	14.11	13.32	12.66	12.77	16.64
Investement Ratio	0.25	0.20	0.20	0.15	0.17	0.24	0.14	0.24	0.26	0.18	0.19
Loss Ratio/underwriting risk/	0.60	0.57	0.75	0.62	0.89	0.82	0.68	0.56	0.58	0.63	0.71
Retention ratio	0.75	0.71	0.81	0.91	0.79	0.80	0.81	0.74	0.82	0.76	0.75
Ratio of ceded claim to ceded premium	0.34	0.19	0.39	0.58	0.33	0.57	0.10	0.39	1.04	0.54	0.23
Expenses Ratio	0.36	0.31	0.24	0.29	0.21	0.27	0.28	0.24	0.41	0.32	0.26
Commission ratio	0.08	0.09	0.05	0.02	0.07	0.05	0.07	0.09	0.05	0.09	0.06
2019											
ROA	0.06	0.05	0.07	0.09	-0.04	0.06	0.06	0.08	0.06	0.07	0.07
company size	14.61	12.83	14.06	13.15	13.70	14.18	14.09	13.48	12.92	12.95	16.97
Investement Ratio	0.22	0.25	0.21	0.15	0.20	0.25	0.17	0.19	0.25	0.18	0.20
Loss Ratio/underwriting risk/	0.56	0.70	0.59	0.59	1.04	0.67	0.60	0.59	0.51	0.62	0.62
Retention ratio	0.75	0.76	0.82	0.91	0.86	0.82	0.77	0.73	0.79	0.75	0.70
Ratio of ceded claim to ceded premium	0.29	0.17	0.37	0.49	0.75	0.31	0.39	0.40	2.33	0.18	1.09
Expenses Ratio	0.39	0.32	0.31	0.33	0.24	0.29	0.33	0.29	0.45	0.34	0.31
Commission ratio	0.07	0.07	0.06	0.02	0.05	0.07	0.06	0.09	0.05	0.07	0.07
2020											
ROA	0.07	0.10	0.07	0.10	0.03	0.09	0.08	0.08	0.08	0.03	0.07
company size	14.76	12.95	14.16	13.16	14.02	14.30	14.16	13.63	13.00	13.36	17.16
Investement Ratio	0.32	0.22	0.26	0.21	0.18	0.31	0.29	0.26	0.27	0.17	0.20
Loss Ratio/underwriting risk/	0.61	0.49	0.58	0.54	0.84	0.58	0.61	0.54	0.51	0.67	0.46

Retention ratio	**0.69**	**0.80**	**0.76**	**0.87**	**0.80**	**0.65**	**0.69**	**0.63**	**0.75**	**0.74**	**0.64**
Ratio of ceded claim to ceded premium	**0.30**	**0.08**	**0.13**	**0.24**	**1.11**	**0.07**	**0.12**	**0.88**	**0.17**	**0.84**	**0.16**
Expenses Ratio	**0.43**	**0.14**	**0.28**	**0.34**	**0.31**	**0.37**	**0.35**	**0.31**	**0.44**	**0.22**	**0.28**
Commission ratio	**0.09**	**0.11**	**0.08**	**0.04**	**0.04**	**0.11**	**0.08**	**0.13**	**0.06**	**0.07**	**0.05**
2021											
ROA	**0.07**	**0.10**	**0.08**	**0.10**	**0.03**	**0.08**	**0.08**	**0.07**	**0.08**	**0.05**	**-0.05**
company size	**14.94**	**13.11**	**14.39**	**13.33**	**14.08**	**14.42**	**14.27**	**13.84**	**13.24**	**13.55**	**17.44**
Investement Ratio	**0.31**	**0.25**	**0.21**	**0.19**	**0.18**	**0.32**	**0.26**	**0.21**	**0.30**	**0.17**	**0.16**
Loss Ratio/underwriting risk/	**0.58**	**0.46**	**0.52**	**0.55**	**0.79**	**0.50**	**0.61**	**0.57**	**0.48**	**0.66**	**1.17**
Retention ratio	**0.68**	**0.74**	**0.81**	**0.88**	**0.73**	**0.69**	**0.72**	**0.64**	**0.75**	**0.76**	**0.66**
Ratio of ceded claim to ceded premium	**0.28**	**0.39**	**0.15**	**-0.25**	**0.16**	**0.65**	**0.39**	**0.00**	**0.07**	**-0.02**	**0.13**
Expenses Ratio	**0.41**	**0.16**	**0.30**	**0.36**	**0.30**	**0.38**	**0.34**	**0.31**	**0.45**	**0.22**	**0.32**
Commission ratio	**0.09**	**0.08**	**0.07**	**0.02**	**0.06**	**0.08**	**0.08**	**0.12**	**0.06**	**0.07**	**0.04**
2022											
ROA	**0.07**	**0.09**	**0.08**	**0.12**	**0.00**	**0.07**	**0.09**	**0.08**	**0.07**	**0.04**	**0.11**
company size	**15.12**	**13.28**	**14.70**	**13.52**	**14.04**	**14.56**	**14.45**	**14.18**	**13.51**	**13.86**	**17.46**
Investement Ratio	**0.32**	**0.22**	**0.26**	**0.21**	**0.18**	**0.31**	**0.29**	**0.26**	**0.27**	**0.17**	**0.20**
Loss Ratio/underwriting risk/	**0.61**	**0.49**	**0.58**	**0.54**	**0.84**	**0.58**	**0.61**	**0.54**	**0.51**	**0.67**	**0.46**
Retention ratio	**0.69**	**0.80**	**0.76**	**0.87**	**0.80**	**0.65**	**0.69**	**0.63**	**0.75**	**0.74**	**0.64**
Ratio of ceded claim to ceded premium	**0.30**	**0.08**	**0.13**	**0.24**	**1.11**	**0.07**	**0.12**	**0.88**	**0.17**	**0.84**	**0.16**
Expenses Ratio	**0.43**	**0.14**	**0.28**	**0.34**	**0.31**	**0.37**	**0.35**	**0.31**	**0.44**	**0.22**	**0.28**
Commission ratio	**0.09**	**0.11**	**0.08**	**0.04**	**0.04**	**0.11**	**0.08**	**0.13**	**0.06**	**0.07**	**0.05**

Annex 4: Insurance Companies Five Years Annual Gross Written Premium

No	Year	2018	2019	2020	2021	2022	Total	Average GRP
1	EIC	638,369.00	3,300,298.00	4,807,430.00	5,878,053.00	6,339,356.00	4,192,701.20	838,540.24
2	Awash	604,584.00	690,797.00	775,109.00	952,345.00	1,251,882.00	854,943.40	170,988.68
3	Global	88,300.00	109,777.00	118,154.00	146,202.00	162,620.00	125,010.60	25,002.12
4	Nile	406,921.00	393,636.00	446,574.00	539,149.00	660,216.00	489,299.20	97,859.84
5	Nice	255,856.00	279,847.00	292,250.40	323,829.00	348,866.00	300,129.68	60,025.94
6	Africa	552,456.00	536,038.41	552,740.37	583,818.00	557,972.00	556,604.96	111,320.99
7	Nib	440,207.00	416,297.00	427,713.00	505,900.00	644,648.00	486,953.00	97,390.60
8	Nyala	700,748.00	412,426.21	464,314.70	565,153.00	723,220.00	573,172.38	114,634.48
9	Unic	437,784.00	494,709.00	551,594.00	660,034.00	860,834.00	600,991.00	120,198.20
10	Oromia	392,348.00	444,050.00	495,848.00	671,677.00	925,262.00	585,837.00	117,167.40
11	Lion	350,852.00	376,809.00	386,045.00	395,241.00	464,100.00	394,609.40	78,921.88
12	Abay	226,713.00	240,483.00	259,752.00	350,154.00	399,396.00	295,299.60	59,059.92
13	Berhan	104,284.00	121,860.00	139,820.00	156,763.00	242,585.00	153,062.40	30,612.48
14	Tsehay	285,695.00	300,186.00	322,953.00	426,463.00	584,929.00	384,045.20	76,809.04
15	ELIG	110,577.00	127,613.60	154,997.00	220,509.00	274,041.00	177,547.52	35,509.50
16	Bunna	166,053.00	204,020.00	249,206.00	335,124.00	468,850.00	284,650.60	56,930.12
17	Lucy	135,265.00	136,964.00	134,427.00	159,837.00	212,778.00	155,854.20	31,170.84
	Total	5,897,012.00	8,585,811.22	10,578,927.47	12,870,251.00	15,121,555.00	10,610,711.34	2,122,142.27

(Source: National Bank of Ethiopia)

Annex 5: Random effect regression Estimation Model Result

```
Random-effects GLS regression                   Number of obs      =        50
Group variable: company                         Number of groups   =        10
R-sq:  within  = 0.6065                         Obs per group: min =         5
       between = 0.7738                                        avg =       5.0
       overall = 0.7120                                        max =         5
Random effects u_i ~ Gaussian                   Wald chi2(7)       =     73.72
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000
```

roa	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
cs	-.0112069	.00598	-1.87	0.061	-.0229275	.0005137
ir	.122768	.0682572	1.80	0.072	-.0110137	.2565497
lr	-.1908763	.0277541	-6.88	0.000	-.2452733	-.1364792
rr	.0371569	.0702043	0.53	0.597	-.1004409	.1747547
rcccp	-.0114961	.0047906	-2.40	0.016	-.0208855	-.0021066
er	-.0499959	.0467892	-1.07	0.285	-.141701	.0417093
cr	-.0168421	.1790353	-0.09	0.925	-.3677448	.3340607
_cons	.3060306	.1228667	2.49	0.013	.0652163	.5468449
sigma_u	.01379843					
sigma_e	.01231847					
rho	.55648552	(fraction of variance due to u_i)				

(Source: STATA Output)