Profitability Determinants in the Insurance Sector in Ethiopia: A Panel Evidence on Non-Life Insurance

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Statement of Declaration

I, Gemachis Debala Biru, have carried out independently a research work on "Profitability Determinants in The Insurance Sector in Ethiopia: A Panel Evidence on Non-Life Insurance" in partial fulfillment of the requirement of the M.SC program in Accounting and Finance with the guidance and support of the research advisor. This study is my own work that has not been submitted for any degree or diploma program in this or any other institution, and that all references materials contained therein have been duly acknowledged.

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This is to certify that the thesis prepared by Gemachis Debala Biru, entitled: Profitability Determinants in the Insurance Sector in Ethiopia: A Panel Evidence on Non-Life Insurance and submitted in partial fulfillment of the requirements for the degree of Master of Science in Accounting and Finance complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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Abstract

Addis Ababa University, November, 2017

This study intends to investigate the determinants of profitability in the insurance sector in Ethiopia with reference to general (non-life) insurance companies on basis of data covers six years (2011-2016) period. The study selected sample of twelve (12) insurance companies to study them for a period of six years (2011-2016) with total of 72 observations through panel data. Accordingly, the study used documentary analysis of companies' audited financial statements of general insurers which obtained from NBE and head office of each insurance companies. The key explanatory variables were selected to disclose their relationship and influence on profitability measured by return on asset (ROA) from the prominent previous studies. The CLRM assumptions needed to be fulfilled for OLS that were tested and the residual was found to be homoscedastic, free of Multicollinearity, free of autocorrelation and normally distributed. The results of panel least square regression analysis indicate that industry concentration ratio and leverage, have statistically significant and positive relationship with Non-life insurance business profitability. On the other hand, diversification, underwriting risk and 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 firm and industry related variables, particularly by adopting better risk management strategies and better internal control to achieve superior profitability.

Keywords: Insurance, Profitability, Firm specific, Macroeconomic, Ethiopia

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List of Acronyms

AIC Awash Insurance Companies

APT Arbitrage Portfolio Theory

CAPM Capital Asset Pricing Model

CLRM Classical Linear Regression Model

DIV Diversification

DW Durban-Watson

EIC Ethiopian Insurance corporation

ElIG Ethio-life and General insurance

ESH Efficient Structure Hypothesis

FEM Fixed Effect Model

GDP Growth Domestic Product

GMM Generalized Moment Method

HHI Herfindahl-Hiershman Index

IFRS International Financial Reporting standard

INF Inflations

LEV Leverage

LIQ Liquidity

MoFed Ministry of Finance and Economic Development

MPT Modern Portfolio Theory

MST Market Structure Theories

NBE National Bank of Ethiopia

NICE National Insurance companies

OLS Ordinary Least Square

RED Reinsurance dependence

REM Random Effect Model

RMP Relative Market Hypothesis

ROA Return On Asset

ROE Return On Equity

ROI Return On Investment

SCP Structural Conduct Performance

UNIC United Insurance Companies

UR Underwriting risk

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

In the current era, the financial institutions play a great role in economic development by helping the country's economic activities as an intermediary as well as the risk bearer (Kugler and Ofgohi, 2005). They are stabilizing prices, increasing the level of employment and stabilizing economic growth. According to Douglass (2011), financial sector is growing rapidly and gaining importance in the global financial development due to the impact of globalization and advancement of technology in all around the world for businesses, public enterprises and private corporations those have experienced with various limitations in order to achieve their organizational objective.

Ethiopia's financial sector includes banks, insurance companies, microfinance institutions and pension funds, with banks dominating the sector (African Economic Outlook, 2016). Insurance company is also one of the financial institution sectors which provide a unique financial services by serving the societies in managing risk (Hanna, 2015). They offer financial protection to an individual or firm against the monetary losses which are suffered from unforeseen circumstances (Kihara, 2012). The indemnification and risk pooling properties of insurance facilitates commercial transactions and provisions of credit by mitigating losses and management of non-diversifiable risk to promote economic activities (Ndalu, 2017). 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.

The insurance sector of any country can take major part in the economic growth and development (Brainard, 2008; Ward and Zurbruegg, 2000). They are providing the capital accumulation efficiently (Curack et.al., 2009). In context to the above, an overall understanding of insurance companies' relative performance compared to the market over a time serious analysis is more useful than analysis of individual financial statements.

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.

It indicates how well management of an enterprise generates earnings by using the resources at its disposal. According to Lee (2014), profitability of an insurers plays an essential role in persuading policyholders and shareholders by supplying funds into insurance firms through improvement of an insurer's solvency rate. Valuing the profitability of a non-life insurance company is difficult due to the unique format of financial statement which is used by the insurance companies (Boyjoo and Ramesh, 2017). Furthermore, the study on evaluation of companies' profitability in a majority of developing countries financial system is highly emphasized on the banking system than an insurance companies (Ayele and Sabasivam, 2013). But, the significance of analyzing profitability for both sectors can be valued at both micro and macro stage of the economy as a whole. It is of no doubt that, the share of banking and insurer sectors in the financial system boosts the function of those sectors in micro and macroeconomic steadiness and economic growth.

Ethiopia can be characterized as a least developed economy that is registering highest rate of economic growth. 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). Particularly, the Ethiopian insurance sector are also remains underdeveloped and they are targeted at the corporate market, focusing on general insurance and almost 90 percent of the population does not have any type of formal insurance. Insurance premiums represent about 0.47 percent of GDP for non-life insurance, and 0.03 percent of GDP for life insurance (Gieger and Moller, 2015). Therefore, this implies that the insurance sector in Ethiopia does not grow as expected, they are less profitable and they cannot take a major part for the economic development in comparison to the banking industry. As per reporting of NBE quarterly bulletin of 2017, the Ethiopian insurance sector have capital of 3.89 billion with the total branch of 482 across the countries in which 53.9 percent of their branches were concentrated in Addis Ababa currently.

In the current complex world, business will not survive in the long run, without identifying the factor determining their profitability. It is clear that, business is established and legitimated for the purpose of generating profit. Profitability is the essential condition to ensure business success of an economic entity (Borlea and Achim, 2010). Furthermore, it is measured by obtaining positive results after comparison of the financial effects with the

financial effort involved during the normal activities of the organizations (Ayele and Sambasivam, 2013). As noted by Suheyli (2015), the firm ability to earn profit is composed of two words. The first word is profit which represents the absolute figure of profit but an absolute figure alone does not give an exact idea of the adequacy or increase in performance as shown in the financial statement of the enterprise. The second word is ability which reflects the power of an enterprise to the earn that profits from their resource.

Therefore, it can be concluded that, in the current era of the business world; without effectiveness of financial institutions such as an insurer it is difficult to remain sustainable for an organization. The reason behind is that; some organizations are cost-effective and profitable while the other are lingered in insufficiency. By their nature insurance companies are risky business and they are in capable to have continued to operate their activities in the era of enormously unreliable environment if they are fail in their insurance protections and have inadequate profitability.

Therefore, considering the factors determining performance of financial institutions particularly in insurance companies that can affect economic growth and other private and public institutional insolvencies and systemic crises which have unfavorable consequences for the economy as a whole is very important in both developed and less developed countries. Thus, empirically investigating the factors affecting profitability of insurance companies will assist the concerned bodies to give attention on the relevant factors. A lot of studies are conducted concerning the profitability determinants of non-life as well as life insurance companies in different jurisdiction separately, and reach in different conclusions The general insurance companies are participating in risk bearing activities whereas life insurance business is considering the financial intermediation aspects. However, in the context of the insurance sector particularly in developing countries like Ethiopia little attention is given.

Furthermore, the current study is centered on investigating whether profitability of non-life insurance business operating in Ethiopia are likely to be influenced by their level of diversification, level of financial leverage, industry concentration ratio, firm liquidity, reinsurance dependency, underwriting risk, real GDP economic growth rate and change in inflation rate.

1.2 Statement of the Problem

In the current era, strong financial institution systems such as banks and nonbank financial institutions and insurance companies are playing a vital role in the economic development of a given country (Daare, 2016). Financial institutions serve as the lifeblood of the economy by facilitating the flow of capital among an organization. Insurance firms, in particular, reinforce monetary and investment activities by providing long-term funds for physical and social infrastructure while simultaneously boosting risk-taking abilities (Cudiamat and Siy, 2017). The risk transfer and indemnification functions of insurance is captured by its non-life insurance business component whereas the financial intermediation aspect is reflected in the life insurance business (Kugler and Ofoghi, 2005). In this context, it is crucial to know and insight the major drivers of insurance companies' profitability instead of solely measuring the financial performance of insurers and showing by figurative numbers since the identification of factors that determine profitability in the industry is a major problem to be studied.

Unfortunately, there is no common internationally accepted standard for accounting, reserve and provisioning to measure the profitability and capital adequacy of an insurance companies. Despite, the accounting system used by an insurance companies is complex and totally different from other corporate business (Davies *et.al.,* 2003). Therefore, assessing and valuing the performance of a non-life insurance company is difficult due to unique format of insurance company's financial Statement which does not lend itself to traditional financial accounting analysis (Boyjoo and Ramesh, 2017).

An investigation of major factors determine insurance company's profitability has always attracted the attention of academics, policy makers and practitioners. In this context, a lot of scholars are conducted studies on determinants of insurance companies' profitability and revealed in different conclusions. For instance, the insurance company's profitability can be affected by many exogenous factors including macroeconomic factors like real GDP growth rate and inflation (Doumpos *et.al.,* 2012 and Nyamu, 2015), industry related factors like diversifications and industry concentration ratios (Hussain, 2015; Moro and Anderloni, 2014; Datu, 2016 and Lee, 2014) and other endogenous variable like actual mortality experience, investment earning, capital gains or losses, the scale of policyholder dividends, and federal and state taxes (Wright, 1992).

A lot of studies have been conducted vis-à-vis determinants of profitability across different sectors for a century, and the issues of which factor determine profitability are still questionable and mysterious in finance literatures. Particularly, a study of Malik (2011) examines the impact of firm-specific factors on insurers profitability, and the result revealed that financial leverage and claim to premium ratio has negative and significant impact on profitability. Hussain (2015) also assesses the impact of macroeconomic and firm specific factors on profitability of Pakistan general insurance companies and their results indicate that financial leverage have negative and statistically significant determinants of the general insurers profitability. And other large number of studies are conducted in factor influencing insurers' profitability. For instance, Hussain (2015), Nyamu (2015), Datu (2016), Doumpos *et.al.,* (2012), Moro and Anderloni (2014), Jovovic *et.al.,* (2014), Boyjoo and Ramesh (2017), Lee and Lee (2012), Lee (2014), Burca and Batrinca (2014)) and they insight as both external and internal factor have direct relationship with that of general insurance company's profitability.

In Ethiopian financial sector as far as the knowledge of the researcher is concerned, there are a lot of researches that are conducted about factor influencing the profitability of banking sectors; but few studies are done on profitability determinants of insurance companies. Despite to that, the studies conducted by Simon (2016), Mehari and Aemiro (2013) and Ayele and Sambasivam (2013) on determinants of insurance companies' profitability mostly focus on firm specific factors and fail to consider the macroeconomic and overall industry related variables affecting the profitability of insurers. Teklit and Jasmindeep (2017), Asrat and Tesfahun (2016), Demis (2016), Suheyli (2015), Hanna (2015), Mistire (2015), Meaza (2014) and Hadush (2015) all are considering both firm specific and macroeconomic variable, but their studies are ignoring the industry specific related variable which have an impact on profitability of the selected sectors.

As per National Bank of Ethiopia report of (2016), the Ethiopian insurance sectors growth rate of revenue from gross premium of insurance sector exhibits decline over time. The amount of revenues collected from the general insurance was low in comparison to revenue collected from life insurance service. Most of non-life insurance business have taken a hit on their profitability in the previous fiscal year. For instance, National insurance companies, Nile insurance companies and Nyala insurance companies have suffered net

profit decline by 10.5%, 57% and 24%, respectively in the year end of 2016 on their policies underwritten by non-life insurance business. Despite, Lion insurance companies, United insurance companies and Awash Insurance Companies are also report low amount of profit on their policies underwritten by the non-life insurance business. But, few of them were profitable companies in the period of year-ago. As a whole the premium portfolio of insurance companies operating in Ethiopian were dominated by general insurance line, but more revenues are collected from the policies written by long-term insurance companies.

Particularly, the Ethiopian insurance sector are also remains underdeveloped and they are targeted at the corporate market, focusing on general insurance and almost 90 percent of the population does not have any type of formal insurance (Gieger and Moller, 2015). Despite, an identification of all external and internal factors affecting insurers profitability is the largest and unsolved problem in every corporate finance areas and it is still not sufficiently investigated as expected in developing countries like Ethiopia. In this context, this study is different from the previous studies that it has included industry specific factors affect the profitability of non-life insurance industry particularly in Ethiopia. Furthermore, the rationale behind motivating the researcher to conduct this study was*: first*, the concentration of previous studies conducted in Ethiopia was largely on whole insurance service; they did not look at the non-life and life insurance services particularly provided by the Ethiopian insurance industry. A little effort was made to investigate the performance of the general insurance companies in Ethiopia context. Therefore, this study investigating what mostly determine the profitability of non-life insurance business from endogenous and exogenous variables in Ethiopian. *Second,* identifying and knowing the perceived determinants of profitability is a burning question for executives, in all industries of insurance managers to maintain their companies' financial soundness. The rationale behind is that, insurance companies are responsible for risk bearing activities, risk transfer and indemnification functions in the forms of financial losses. Therefore, an insurance business is risky business. Lastly, using empirical econometric methodology to help the corporate managers with insight on major factors influencing profitability and provide them with reference information that they can use in their policy formulation.

However, considering factors like industry concentration ratio and diversifications, those have not used in previous studies conducted in Ethiopia will be more important to

investigate factors determine the profitability of the non-life insurers. Furthermore, the studies that have been conducted in Ethiopian insurance company lacking to investigate the financial performance determinants of life and non-life insurance business separately. Therefore, this paper coming up with these two variables and extends previous study by adding its own contribution to the determinants of profitability and literatures which was not included in the previous studies in Ethiopia.

Based on the forgoing research gap, the management bodies need to know the prime factors that affect profitability; thus the research needs to be conducted so as to help managers and stakeholders to make appropriate decisions. Despite to that, determination of major problem and an assessment of prime factors affecting profitability is an important for this emerging sector in Ethiopia. Therefore, the present study was an attempt to fill the aforementioned research gap by providing information about the endogenous, industry specific and macroeconomic factors influencing the profitability of Ethiopian General insurance companies particularly.

1.3 Objectives of the Study

The major objective of this study was to investigate the factors influencing the profitability of Ethiopian non-life insurance companies. Based on firm specific, industry specific and macro-economic factors that are found to significantly influence profitability in the prior studies, this study investigate the determinant factor that Ethiopian insurance companies must consider in improving their profitability.

Specifically, the study investigated whether profitability of Ethiopian general insurance companies is affected by the firm underwriting risk, reinsurance dependency, liquidity ratio, firm financial leverage, industry concentration ratio, real GDP growth rate, inflation and diversification.

1.4 Hypothesis Development

To achieve the objective and solve above stated problem, the study was developing all of the following eight research hypotheses. These hypotheses were developed based on related previous empirical studies conducted in different countries concerning the issue under investigation.

H_{o1}: Underwriting risk is negatively and significantly related to insurance companies'

profitability in Ethiopia.

Ho_2: Reinsurance dependence is negatively and significantly related to profitability of insurance companies in Ethiopia.

Ho3: Liquidity ratio is positively and significantly related to profitability of insurance companies in Ethiopia

Ho4: Firm financial leverage has negatively and significantly related to profitability of insurance companies in Ethiopia.

Ho5: Industry concentration ratio positively and significantly related to profitability of insurance companies in Ethiopia.

Ho6: Gross domestic product is positively and significantly related to profitability of insurance companies in Ethiopia.

Ho7: Inflation is negatively and significantly related to profitability of insurance companies' in Ethiopia.

Ho8: Diversification is negatively and significantly related to profitability of insurance companies in Ethiopia.

1.5 Scope of the Study

The profitability determinants that were used in this study are those frequently described in conventional to different studies and literatures. In this study, the profitability was measured by consideration of the firm specific, industry specific and macroeconomic variables respectively. The research was bound to focus on profitability determinants of non-life insurance companies operating in Ethiopia. The necessary data pertaining to the study was gathered from the annual reports of the selected insurance companies. The factors were depicted based on trend, experience and the degree of influence on the profitability of the non-life insurance companies operating in Ethiopia from the empirical literatures. Thus, the intent of this study is fully academic and the extension in the period of analysis may tend to further study and only six consecutive years' data is used in this research.

Even though, the scope of this study was focused on assessment of the internal and external factors affecting profitability of selected insurance companies registered by National bank of Ethiopia (NBE) particularly from general insurance business and those have at least six (6) years' operational data from period of 2011-2016. As a result, the scope of the study was bounded to 12 leading insurance companies in the country in terms of their branch, operational period and type of insurance business they underwrite such as AIC, GLOBAL, NILE, AFRICA, NICE, NIB, NYALA, UNIC, LION, OROMIA and ABAY and includes only one large governments owned insurance companies namely EIC. Therefore, the scope of the study is focusing 12 insurance companies operating in Ethiopia particularly general insurance.

1.6 Limitation of the Study

As with any other study, this study has its own limitations. In this study the considered sample insurance companies were on bases of non- probability purposive sampling method based on the selection criteria used by researcher such companies' operational period, branch expansion and the type of insurance business they underwrite. This may introduce bias inherent with non-probability sampling method. Therefore, the generalization of finding would somewhat be limited since the non-random sampling approach used in the study.

Another major limitation that hinder the current study were resource constraint. The rationale behind is that, the financial statements used by the life assurance business is complex and sometimes prepared one a time in three years or five years. Therefore, the secondary data used in this study was solely collected from the general insurance business revenue account, balance sheet and income statement because revenue account and income statement of life assurance business is not available at the end of the year, the researcher starts to collect the data for the sampled insurer.

Furthermore, this study was used only two industry specific related variables as an independent variable namely as industry concentration level and insurers product diversification, whereas there is other industry related variables such as market share, regulation, industry profit rate, branch expansion, geographical diversification, insurance sector development like insurance penetration rate and density rate. Despite, this study used

only two macroeconomic variables GDP growth rate and inflation rate whereas there are other macroeconomic related variables like exchange rate volatility, money supply, interest rate and others.

1.7 Significance of the Study

The finding of this study has a great importance for the management of the insurers through identifying significant factors determine profitability and was try to pinpoint some possible solutions that may be applicable to achieve superior profitability and help to tackle, the ambiguities that hindering the financial performance of the general insurance business operating in Ethiopia. Despite to that, this study enriches the knowledge of the reader to understand the profitability determinants; particularly for the insurance companies.

Thus, the research has an effort to provide an empirical evaluation on the determinants of profitability of non-life insurance business, and contributing some issues to the literature which are essential for improving financial performance by providing evidence on firm specific, Industry specific and macroeconomic factors. Despite, the finding of this research used as a bench mark for the future studies and also highlights areas where gap in literature exist which stimulate further research investigation of the issue at hand.

1.8 Structure of the Study

The overall final paper is organized into five chapters. The first chapter presents introduction of the study. The reviews of related literature part of the study are presented in the second chapter. The reviews of the related literature include the theoretical review in its first section which is followed by the review of the previous studies related to the area and conclusion and knowledge gap and conceptual fame work finally. The third Chapter presents the research design and methodology. This is followed by an analysis of the results and discussion part of the paper in the fourth chapter. And finally, the fifth chapter presents the conclusions and recommendations of the study.

CHAPTER TWO: REVIEW OF RELATED LITERATURES

2.1 Introduction

The first chapter introduced the problem that expected to be investigated in this research along with purpose and research hypothesis. In this chapter, the possible relationship between general insurance company profitability and the determinants influencing is reviewed in order to put the study within the context of the existing literature, the subsequent sections of this chapter present the theoretical review, factor affecting profitability, empirical review, conclusion and knowledge part from literature, and conceptual frame work used in order to conduct the study.

2.2 Theoretical Review

It is obvious that, the theoretical review aims at giving the meaning of a basic terminologies, theories and creating a comprehensive theoretical framework for the study. The following sub-sections will present definition of insurance, role of insurance in economic growth and development, profitability definition and related profitability theories those used in order to achieve the end result of the study.

2.2.1 Insurance Definitions and its Role in Economic Growth

Insurance is a way of plummeting uncertainty of occurrence of an event and is deriving a plans to counteract the financial consequences of unfavorable events. It is basically a co-operative endeavor of a social device for eradicating the cost to society under the occurrence of certain types of risks (Sushma, 2012). An insurance is a contract under which one party accepts significant insurance risk from another party by agreeing to compensate the policyholder if a specified uncertain future event (the insured event) adversely affects the policyholder [IFRS, 4). Insurance can be defined as a service provided as a financial benefit in favor of an individual, association or business in exchange for collected premiums that provides a benefit in case a risk occurs. It is an economic sector that includes the conception, production and marketing of this type of service (Berteji and Hammami, 2016). The insurance firms reinforce monetary and investment activities by providing long-term funds for physical and social infrastructure while simultaneously boosting risk-taking abilities (Cudiamat and Siy, 2017).

According to the Stability of Financial Forum (2000), there are three major categories of insurance which include Life insurance, Non-life insurance and Re-insurance. The life

insurance market is give different products, with different protection and investment elements which consist of pension, saving, permanent health and term insurance. It is similar to the contractual saving and deposit in addition to their risk transfer mechanism. Despite to that, the non-life insurance is called property and casualty insurance or property and liability insurance (General insurance). The non-life insurance industry is providing specific insurable event in consequence of industry injury. The policies are short-term indemnity contracts and normally there is no investment elements as an expectation of financial return. In addition to this, the non-life insurance provide policies related with personal and commercial lines which consist of fire insurance policies, motor insurance policies, product liability insurance policies, automobile insurance and others.

According to Davies *et.al.,* (2003), the unique attributes of insurance is worth focusing on those services that are not provided by other financial services providers and they spreading the financial losses. For instance, the contractual savings features of whole or universal life products, the indemnification and risk pooling properties of insurance facilitate commercial transactions and the provision of credit by mitigating losses as well as the measurement and management of non-diversifiable risk.

The insurance contracts involve small periodic payments in return for protection against uncertain, but potentially severe losses. This income smoothing effects from contracts help an organization to avoid excessive and costly bankruptcies and facilitates lending to businesses. Most fundamentally, the availability of insurance enables risk averse individuals and entrepreneurs to undertake higher risk, higher return activities than they would do in the absence of insurance, ensure efficient capital allocation, promoting higher productivity and growth (Brainard, 2008)

In general, during recent decades, there have been faster development rates in the insurance market activity in both developing and transition economies. The growth of insurance penetration such as life and non-life is used as a proxy for insurance sector growth (Brainard, 2008). They have several effects to promote financial stability, facilitate trade and commerce, enable risk to be managed more efficiently, encourage loss mitigation, foster efficient capital allocation and also can be a substitute for and complement government security programs (Skipper, 2001). They provide both economic and social

benefits to the society through reduction of anxiousness, fear and increasing employment (Ahmed et.al., 2011). Therefore, a resilient and well-regulated insurance industry can highly contribute to economic growth and efficient resource allocation through transfer of risk and mobilization of savings, enhance financial system efficiency by reducing transaction costs, creating liquidity and facilitating economies of scale in investment. **(**Davies et.al., 2003).

2.2.2 Profitability of Insurance Companies

In the current complex world, the measuring business performance is ambiguous concept in terms of its definition and evaluation. It is measured through profitability which is attached with an overall firm business performance (Borlea and Achim, 2010). Profitability is one of the largest goal of financial management in maximizing the owner's wealth of the shareholders. It is an essential determinant of firm's financial performance (Malik, 2011). Profitability is defined as proxy of financial performance which are one of the main objectives of insurance company's management (Burca and Batrinca, 2014). It also measured by return on assets (ROA) which are a major indicator of how profitable a company is relative to its total assets (Malik, 2011).

In this context, assessing the financial performance of the financial industry has been attracting an interest of many researchers. Particularly, the profitability of insurance companies has been the focus of several studies in emerging as well as developed economies with proxies of Return on Assets (ROA) which is one the most commonly used measure for profitability and performance of a company.

2.2.3 Profitability Related Theories

Different researchers have been come up with different conclusions regarding the determinants of profitability. But, there is no single theory which gives a correct and comprehensive explanation on the nature and determinants of profit. It is familiar that without profitability, the business will not survive in the long-run since the profitability is the measure the goal of all business ventures and success of the business economic unit. Therefore, to achieve better profitability, the insurance firm should consider the theories which discussed in different finance literatures and they must relate those theories with their operational activities.

2.2.3.1 Market Structure Theories (MST)

Traditionally, the Market Structure Theory (MST) of the firm was assumed that a firm's objective is simply to maximize a profits. In the societies of modern industries, this theory is not applicable in practice, because most of the modern industries are involved in providing a variety of products/services, and they faced with much more complex decisions to be taken in a dynamic and uncertain business environment (Rasiah, 2010). The overall assumption of the market structure theory is focus on the consideration of industry structure (measured by market concentration level in term of market share ratio) which has an impact on profitability of insurance companies.

There are two theories that are proposed in MST. The first theory is structure-conduct-performance hypothesis (SCP) (also referred to as the Relative-market-power hypothesis (RMP)) states that a more concentrated sector favors high profitability and motivated by benefits of greater market power, which reflects the setting of prices that are less favorable to consumers (high policy holders, higher Gross Written Premium) as a result of competitive imperfections in markets (monopoly profits). Existence of superior management and high market share will lead the company to raise their profit (Berger,1995; Berger and Hannan,1989). Goddard *et.al.,* (2004) noted that, the relationship between market concentration and profitability is based on the SCP hypothesis and they have empirically positive relationship.

The second formulation of theoretical framework of Market Structure Theory is the efficient structure hypothesis (ESH). It states that efficient firms in the market lead to increase in the firms' size and market share due to the aggressive behavior. This will help the large firms to maintain high profits through low cost as a consequence of concentrated market structures and collusion occur among firms. The ESH theory also states a positive relationship between firm concentration and profitability as an indirect consequence of efficiency. Generally, Berger and Hannan (1989) states that ESH and SPC stand on similar observation on the relationship between concentration and performance (profitability). The findings of Lee and Lee (2012), Pervan and Kramaric (2012) and Jovovic et.al., (2014) is also support this finding. However, the difference in two theories consisted mainly in ways of interpretation of the relationship. But, some empirical evidence on the relationship between firm concentration and profitability is not conclusive.

2.2.3.2 Modern Portfolio Theory (MPT)Approach

The Modern portfolio theory approach is the most relevant approach and it plays a vital role in financial institutions; particularly in bank, nonbank financial institutions and insurance (Nzongang and Atemnkeng, 2006). The theory was developed first by Markowitz in 1952. The major ideas of the modern portfolio theory are maximizing the expected portfolio returns for a given amount of minimum portfolio risk in a given level of return by carefully choosing the proportions of various assets. Markowitz explain the Modern portfolio theory as to which the investors should select a portfolio and make the highest possible return from a certain level of risk or get the lowest possible risk for a certain level of return. There is a positive relationship between the risk and the expected return of a financial asset (Sadiye, 2014).

Two types of risks are considered under MPT to determine the rates of return of asset portfolio held by the firms. The first is the unsystematic risks which are effectively minimized and possible by diversifying portfolio risk. It related to the firm specific factors for individual firm. Further side, the systematic risks are affected by the macroeconomic factors and even cannot eliminated through diversification of the portfolios. Erdugan (2012) noted that the risk and return on firms diversified portfolio is depending on domestic and foreign economic and financial variables for financial industry which are based on decisions taken by the financial manager. This are also real for the insurance companies in elsewhere. Since insurance firms are investments by themselves its standard practice for them to invest in a diversified portfolio to minimize risk and increase the returns through various investment options on offer. Thus, when choosing a portfolio, an insurance firms should maximize the discounted (or capitalized) value of future earnings (Suheyli, 2015). Further, the ability to obtain maximum profits depends on the feasible set of assets and liabilities determined by the management of the organizations and the unit costs incurred by the firm for producing each component of assets (Nzongang and Atemnkeng, 2006). Therefore, this theory is also important for the insurance companies operating in elsewhere and all over the world.

2.2.3.3 Arbitrage Pricing Theory (APT)

The Arbitrage Pricing Theory (APT) was introduced by Ross in 1976. The theory assumes a positive relationship between risk and expected return of the firm. The APT model is an

expansion of the CAPM and describes returns as a linear function of several rather than of single variable. The APT theory is less restrictive in comparison to Capital Asset Pricing Model(CAPM). As noted by Ouma and Muriu (2014), the APT theories are based on two basic assumptions such as capital markets are perfectly competitive and investors always prefer more wealth to less wealth with certainty respectively. Furthermore, the APT agrees on the existence of many different specific forces those can influence the return obtained any individual firm. As noted by Suyehli (2015), the effect of these specific factors may consider the principle of diversification which has highly influence the activities undertaken on the field of insurance. Despite to that, the APT are also uses multiple variables and is a multi-beta model by its nature. Sadiye (2014) also noted that, the sensitivity of movements in each variable is represented with a beta coefficient to indicates the unique sensitivity of each particular variable.

The Arbitrage Pricing Theories connects several types of risk associated with firm securities such as changes in interest rates, inflation and productivity with the expected return of the same securities used by the entities through combining both systematic and unsystematic risk which attributes the expected return of a capital asset to multiple risk factors. Thus, an insurance company has no way of knowing whether any particular individual will become sick or will be involved risk. This shows that an insurance company is not entirely free of risk since the insurers is insures a large number of individuals (Ouma and Muriu, 2014). With reference to the APT model, insurance firm's profitability is also affected by several macro-economic factors such as inflations, interest rates, money supply and exchange rates like another firms. In context to this, even if there is lack of the capital market in Ethiopia; some of the assumption of APT which discussed above is related to profitability of the insurance industry operating in our countries. Therefore, this study considers some of the factors which affect profitability of the selected firms and relates some assumption of this theory with the issues under investigation.

2.3 Factors Affecting Insurance Companies Profitability

From different theories point of view, the factors that affect the profitability of insurance companies could be divided into two groups, being internal and external factors. Internal factors mean the firm-specific variables, and external factors refer to the sector-specific and macroeconomic variables. The internal factors (firm-specific factors) are always

related to internal efficiencies and managerial decisions of the firm and they are controllable by the manager of the firm. The industry specific variable are variables related to an external activity to some extent whereas the macroeconomic variable is totally related external factors. The managers cannot change the external related variable immediately like that of firm-specific variables which is controllable.

Depending up on the above stated theories, market structure theories and the modern portfolio theory highly insight that, the organizational performance is influenced by those internal and industry related factors those related to internal efficiencies and be controlled by management of the companies. In context to this, internal and industry related determinants used in this study include underwriting risk, reinsurance dependence, financial leverage, liquidity, diversification, industry concentration ratio and others among huge variables used in this studies. The modern portfolio theory also considers both firm specific and macro-economic related variables. On the other hand, the Arbitrage Pricing Theory consider the external factors affecting profit ability of an organizations other than the internal factors. Thus, the macroeconomic factors that can affect organizational profitability include Growth Domestic Product and inflation rate among others a lot of variables discussed in the review of literature parts. Furthermore, considering the degree to which those variables influence the insurance company's profitability and identifying the relationship among those variables was clearly discussed in this research, particularly in Ethiopian general insurance business context.

2.4 Empirical Reviews.

Mazviona *et.al.,* (2017) undertake the study on factors affecting the performance of insurance companies in Zimbabwe. The study used secondary data from twenty short-term insurance companies which was collected through panel data from the period of 2010 to 2014 for years. The study used nine key variables such as expense ratio, claims ratio, the size, liquidity, leverage, growth rate, inflation, retention rate and equity capital. In order to see the impact of those variables, the study used factor analysis and multiple linear regression models for the panel data.

Based on the data analyzed the result of the of the multiple regression demonstrates that expense ratio, claims ratio and the size of a company significantly and negatively affect

insurance companies' performance whereas leverage and liquidity affect performance of the insurance companies positively. Based on the result, the study recommend that insurance companies should introduce mechanisms that reduces operational costs such as automated systems to increase the profitability of the sector.

Boyjoo and Ramesh (2017) investigate the factors influencing the performance of general insurance companies operated in Mauritius for a five consecutive years from 2011-2015. The study used 11 explanatory variables which influence the financial performance of the insurers such as company size, underwriting risk, leverage, liquidity, investment performance, re-insurance dependency, sale profitability, net operating expense, industry concentration ratio, growth rate and company age. In the study, performance of general insurers was determined by using Return on Assets (ROA) as dependent variable. The panel data of ordinary least square(OLS) multiple regression is used to analyze the secondary data collected for the study purpose.

The finding of the study reveals that size of the company, underwriting risk, Leverage, liquidity, concentration ratio and investment performance has positive and significant impact on the profitability of the firm measured by return on asset (ROA). Whereas reinsurance dependency and growth rate is negative and insignificantly related with the ROA. However, sales profitability ratio, net operating expense, company age and premium growth are positively and insignificantly related with financial performance of general insurance companies operated in Mauritius. Based on the finding, the study recommends that many factors influencing the performance of Mauritius general insurers has identified and investigated in respective of their correlation and predictive capacity to develop a model that could be used to monitor their performance to achieve growth and success.

Krivopavic *et.al.,* (2017) undertake the study on topic entitled the effects of corporate diversification on firm performance among Serbian insurance industry from 2004-2014 for eleven consecutive years through panel data. Particularly, the paper focus on the relation between line-of-business diversification and performance of insurance companies those operated for 11 years. The return on asset and the return on equity is used as a dependent variable, while the independent variable is entropy (product diversity), company size, capitalization, share of life premiums, specific line market concentration, and three dummy

variables which consist group, public, and foreign. The study analyzes the effect by using multiple regression statistical model.

The finding of the study indicates that the relation between risk-adjusted returns measured by return on assets and return on equity and line-of-business diversification and performance measured by entropy is significant and positive. This implies that diversified insurers outperform undiversified insurers. The finding of Krivopavic *et.al., (*2017) is also consistent with the finding of Zhang (2015) which indicates that specialized insurance companies which is composite will be more profitable (outperform) than insurance companies operated by one line alone in moderate competitive environment. Whereas Zhang (2015) found negative and highly significant relationship between diversification and ROA which indicates that diversified insurers are underperform single-line insurers companies for those operated in highly competitive business environment. Based on the finding, the study recommends that, the management should formulate business strategies and diversification plans in the hope of better positioning themselves in the marketplace from their line of insurance companies.

Daare (2016) undertake the study to identify factors that determining non-life insurance companies` profitability in India on eight general insurance companies (2 publics and 6 private companies) from the year of 2006 to 2016 through the panel data. The secondary data which collected from annual audited financial statement is used in the study. To see the impact, the author tested eight major combinations of both internal and external variables such as size, capital adequacy, liquidity, loss ratio, premium growth, age, GDP and inflation. The return on asset is used as a proxy to measure profitability of the companies which is dependent variable. The multiple linear regression OLS model is used to analyzing the data on the study.

The finding demonstrates that company size, liquidity and inflation found statistically significant factors that determine insurance companies` profitability in India. From those variables, the size, loss ratio, liquidity, age and GDP are positively correlated with ROA while capital adequacy, premium growth and inflation are negatively correlated with ROA. The author concluded that, insurance companies' specific factors such as age of the firm and liquidity of the firm are the most significant determinants of the profitability of

insurance companies and inflation is statistically significant variable among macroeconomic variables in Indian non-life insurance.

Based on the finding, study recommended that insurance mangers may put significant attention on managing current assets and current liability to maintain optimal liquidity position while inflation also important from external variables.

Datu (2016) investigate the relationship between insurer specific and macroeconomic indicator on profitability of Philippine Non-Life Insurance market by using the panel data over the period of 2008 to 2012 for five consecutive years. The Return on assets (ROA) and operating ratio were used as a proxy for measuring profitability. Seven key firm specific and macro-economic variables are used in the study which include diversification, market share, growth domestic product, inflation, reinsurance dependence, underwriting risk, input cost and leverage. The ordinary least square multiple regression is used in analyzing data of the study.

The study empirical finding underpinning that firm size, financial leverage, underwriting risk, reinsurance utilization and input cost have significant control on profitability in both operating ratio and ROA models, however macroeconomics variables have no significant effect on both models. In addition to that the finding states that underwriting risk, GDP and market share has negative significant impact on profitability of insurers whereas leverage, reinsurance dependency and inflation has positive significant link with the profitability. But diversification is positive and insignificant with the profitability measured by the ROA.

Therefore, based on finding of the study the author recommends that low underwriting risk, low reinsurance utilization, low input cost and smaller firm size fabricates positive effect on the profitability. The financial leverage firm could have negative consequence on the profitability since it lowers the market value of the firm. Despite to that, the study recommends a non-life insurer should conduct careful estimation and take into deliberation insurer specific indicators and macroeconomics factors have influence the profitability of the firm before implementing policies seeking for profit and competitiveness.

Jibran *et.al.,* (2016) empirically investigate the determinant that affect the profitability of non-life insurance companies in Pakistan. Only 20 companies were studied over the period

of 9 consecutive years from 2005 to 2013. In order to analyze data and reach at a final conclusion, the secondary balanced panel data was collected from the financial statement of the non-life insurance companies with a total number of observations of 180. The study used two dependent variables such as ROA and ROE and five major independent variables namely firm size, liquidity, premium growth, inflation and economic growth were used in their studies. The OLS multiple regression model of the study was generated by running balanced panel data through Eviews 6 to reach at the final conclusion.

The results of panel data that was run by Eveiws 6 software statistical package concluded that the determinants of both ROA and ROE are not same across the study. Current assets were proved significant in case of ROA, but it proved insignificant in case of ROE. The control variables also play their part in determining the profitability of firms. Current ratio has positive relationships with the ROA which shows that the higher current ratio will bring higher profits for firms. The size of the firm also proved to be vital in determining the profitability of the firms. It affects positively both the ROA and ROE of the firms as with the case of premium growth. The latter term also proves significant for both the measures.

Based on the finding, the study recommends that, the management of firm may use the finding to increase their profitability. Furthermore, the non-life insurers operated in Pakistan should increase their firm size and growth of their premiums in order achieve higher profits in their operation.

Nyamu (2015) undertake the study on the effect of macroeconomic factors on financial performance of insurance companies operated in Kenya which covered a period of 10 years from 2006 to 2015. In the study, the effect of the six major independent variable was analyzed which consist of interest rate, Exchange rate, Lending rate, Money supply, GDP and inflation. Despite to that, the financial performance the companies are used as dependent variables. In order to reach at the final conclusion, the study employed a descriptive research design. The multiple linear regression and correlation was used to analyze data for the study by using the SPSS

The finding which obtained by using the SPSS indicates that, an insignificant positive relationship between financial performance of insurance firms and GDP growth rate and inflation and an insignificant negative relationship between financial performance of

insurance firms and lending rates, exchange rates and money supply. From this finding the study concluded that there is direct relationship between economic growth, inflation and an inverse relationship between lending rates, exchange rates and money supply and financial performance of insurance firms operated in Kenya.

Based on the findings, the study recommended that the government and ministries of finance and planning should undertake measures to ensure good performance of the economy. Despite to that, the government should undertake an effective mechanism to maintain that inflations rate, lending rates, exchange rates and money supply those do not have adverse effects on financial performance of firms.

Hussain (2015) investigates the relationship between macro economy and profitability of 39 insurance companies in post crisis scenario operated in Pakistan by using firm level and macroeconomic data from the period of 2006-2011 through panel data. The study consists of some firm specific factors such as firm size, financial leverage, growth opportunity, diversifications, underwriting risk, working capital management, equity market and macroeconomic variables like inflations. Whereas return on asset (ROA) is used as the proxy of measuring profitability. In order to analysis the data, the popular statistical model of panel data analysis that combines cross section and time series data and estimates panel least squares regression of a standard model is used by the researchers.

The result of the studies shows that, macroeconomic environment, equity market conditions and inflation have a positive and significant impact on profitability of both life and non-life insurance companies in Pakistan whereas diversification is positively and significantly affect the profitability of the insurance companies.

Based on the finding, the study recommends that, the management of non-life insurance companies should also keep in view the macroeconomic environment, equity market conditions, inflation in addition to firm specific characteristics including financial leverage, relative firm size, financial soundness, growth opportunities, underwriting risk and diversification in particular to manage profitability. Despite to that, the Takaful business managers should especially focus on underwriting risk, diversification and working capital management to manage their return on assets.

Kazeem (2015) investigates the impact of firm specific characteristics on the financial performance of listed insurance firms in Nigeria from twelve (12) listed insurance firms for eight years from 2006-2013 through the panel data. In the study, the financial performance which measured by ROA is the dependent variable while age of insurance company, firm size, premium growth, loss ratio, liquidity and leverage are used as an independent variable. To reach at the final destination, the study employed multiple regressions as tool for analysis. The secondary data was obtained from the audited financial statements of the companies were analyzed by the multiple regression statistical tool. Despite to that, the panel data techniques (fixed and random effects model) were utilized to investigate the impact of firm specific characteristics on financial performance and finally, the Hausman specification confirmed that, the random effect model is more appropriate to reach at clear conclusion in the study.

The result of multiple regression shows that firm size, liquidity, loss ratio and leverage are most important and significant determinants of financial performance in Nigerian insurance industry. Hence, firm size, loss ratio and leverage are negatively related. In contrast, liquidity ratio is positively and significantly related with financial performance. Lastly, age of insurance company and premium growth is not significantly related with financial performance of listed insurance firms in Nigeria.

Based on the finding, the study recommends that an insurance companies operated in Nigeria should conduct careful evaluation and take into consideration on the firm specific characteristics (firm size, loss ratio, liquidity and leverage) that influence the financial performance of the company before making major business decision as this will go a long way in improving their financial performance and achieve a greater profit and help the insurers competitiveness in the market.

Mwangi and Murigu (2015) conduct the study on the topic entitled the determinants of financial performance in general insurance companies in Kenya for the period 2009-10 to 2012-13 for four consecutive years through panel data. Their study employing multiple linear regression analysis, with return on assets as the dependent variable. The study used leverage, retention ratio, underwriting risk, liquidity, size, management competence index, ownership, equity capital and age as an independent variable.

The OLS multiple regression model indicates that profitability was positively related to leverage, equity capital, management competence index and negatively related to size and ownership structure. The study did not find a relationship between performance and retention ratio, liquidity, underwriting risk and age. Based on the finding, the study recommends that the general insurers in Kenya to perform better if they should increase leverage, equity capital and quality of staff.

Saeed and Khurram (2015) conducted the study on determining factor of the financial performance among Pakistani non-life insurance companies for nine (9) consecutive years. The data used in the study is based on balanced panel of 24 non-life insurance entities operated in Pakistan from the period of 2005-2013. The financial performance is measured by the proxy of Return on Asset which is dependent variable. The study uses six major firm specific independent variables such as size of firm, loss ratio, expense ratio, debt ratio, growth of premium and age of firm on performance deputations by return on assets a measure of the profitability. In order to extract the impact of selected factors, the Hausman test is employed to decide whether fixed or random effect model is appropriate for reaching at visible conclusion. The outcome of the study which analyzed by the fixed effect model put forward that age and loss ratio proves significant and negative impact on in determining performance of non-life insurance companies operated in Pakistan.

Based on the finding, the study recommends that management should make payments of only spot on claims and try to avoid fraudulent claims in order to increase their proceeds. The imminent studies must explore some peripheral factors coupled with inner ones to see the sights of the financial performance of insurance sector operated in Pakistan.

Moro and Anderloni (2014) conduct the study on the determinants of economic performances in the non-life insurance firms operating in the main European markets spanning from 2004 to 2012 by using the panel data for nine years. In order to end the study, the authors test the impact of several firm characteristics, such as dimension, capital structure and investment policies on economic performance. There are several independent variables used in the study including both firm specific and country specific such as leverage, size of the asset, size of the firm, reserve dimension, combination ratio, Financial contribution, 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 the firm status. The Return on asset and Return on equity is used as the measure of profitability which are dependent variable. Multiple regression is used to analyze the data through OLS.

The study finding demonstrates that ROA is differently affected both by firm specific variables and macroeconomic variables for insurance company like negatively impact by asset-size, by underwriting activity; whereas the strategic choices such as internationalization and diversification while it is positively affected by investment activity, by reserves' dimension and by asset turnover. Surprisingly, it is not statistically affected, by reinsurance activity. For macroeconomic variables, the relevance of financial markets has a positive effect on profitability while variables linked to the country insurance market seem to have no impact on profitability. The cited firm-specific variables have the same impact on ROE, while the 2007 financial crisis and the subsequent economic crisis have a detrimental effect on shareholders' profitability. It is worth mentioning the positive relation with financial markets' dimension and the inverse relation with the rate of insurance market growth, which may result from the increase in competition in the non-life insurance industry.

Lee (2014) undertake the study on the relationship between firm specific factors and macroeconomics on profitability in Taiwanese property-liability insurance industry using the panel data over the1999 through 2009 for ten consecutive periods. Two dependent variable such as operating ratio and return on assets for the two kinds of profitability indicators used to measure insurers' profitability and the impact of twelve independent variables which including underwriting, financial leverage, firm size, underwriting risk, firm growth, reinsurance, return on investment, market share, diversification, input cost, economic growth rate, inflation rates and financial holding. The multiple regression OLS model were used in the analyzing data and Random effect model were selected.

The finding of show that underwriting risk, financial leverage, reinsurance dependence, financial holding and input cost has significantly and negatively related with the ROA whereas return on investment is positively and significantly related with ROA. This finding implies that high underwriting risk, subsidiaries of financial holding group compared with

other insurance companies leads the Property and Causality insurance to lower profitability measured by ROA. In addition, economic growth rate has significant influence on profitability in operating ratio model but insignificant influence on profitability in ROA model.

Jovovic *et.al., (*2014) investigate the assessment of performance of companies engaged in non-life insurance business in Serbia. Their studies are conducted basis of financial statements of non-life and composite insurers during the period of 2006-2013 by using CARMEL indicators on the panel data. In order to reach at the final result, the multiple regression analysis was used. In the study, the Returns on Assets, as a summary measure of insurer`s profitability is used in the function of dependent variable. The independent variables that used in their study consist of age of the company, combined ratio, Hiershiman-Herfindahl index (HHI), investment ratio, leverage, liquidity, reinsurance dependency and size of the firm. The data was analyzed quantitatively through multiple regression.

Based on the finding of the estimated model with individual fixed effects, the panel data demonstrates a significant and negative influence of the combined ratio, financial leverage and retention rate on the profitability(ROA) of non-life insurers, while the influence of the growth written premium rate, return on investment and company size is significant and positive in profitability of non-life insurers in Serbia.

From the study finding perspectives, their study recommends that the insurance companies operated in Serbia should undertake relevant regulatory restrictions which leads the management of the non-life insurers to consider the compliance of the maturity structure between assets and liabilities to safeguard the liquidity of insurers and continuously sustain the profitability of their companies through investment activities.

Burca and Batrinca (2014) investigated the factors that affect the financial performance of 21 insurance companies operating in the Romanian insurance market during the period 2008 -2012 for five consecutive years. For this purpose, the explanatory variables used were financial leverage in insurance, company size, number of years of operating in the Romanian market, growth of gross written premiums, equity, total market share, diversification, underwriting risk, investment ratio, reinsurance dependence, retained risk

ratio, solvency margin, and growth of GDP per capita. ROA was utilized as an indicator of company performance. By applying panel data techniques, the authors showed that the major determinants of financial performance in the Romanian insurance market are financial leverage in insurance, company size, growth of gross written premiums, underwriting risk, risk retention ratio, and solvency margin.

The finding that obtained by applying the panel data technique into the model indicates that market share and reinsurance dependency have positive significant relationship with the profitability measured by ROA whereas the GDP and underwriting risk has negative significant relationship with ROA. Despite to that the finding of the study implicates that diversification has positive impact on profitability but statistically insignificant with ROA.

Based on this finding, the study considering the fact that the insurance companies from Romania are facing the combined effects of deteriorating market conditions and financial crisis impact and the effects of the financial crisis are still present and that the Romanian insurance market is below its potential, the insurance industry has interesting perspectives of evolution as whole.

Sumaira and Amjad (2013) conducted a study on profitability by focusing on the firm specific factor as a determinant of Pakistan insurance sectors from 2006-2011 for six consecutive years. Their studies are based on panel data of 31 insurance firms six (6) consecutive years. The study used leverage, growth opportunities, size, liquidity, age and earnings volatility as a key independent variable whereas the profitability is measured by Return on Asset (ROA). The ordinary least square multiple regression is used in order to analyze the secondary data and reach at the final conclusion.

The finding of their study reveals a significant negative relationship between profitability measured by ROA and independent variables such as leverage, earnings volatility and age of the firm whereas size have significant positive relationship with profitability of insurance sector in Pakistan. In addition to that, the study also found insignificant relationship between growth opportunities and profitability as well as between liquidity and profitability.

Doumpos *et.al.,* (2012) undertake the study is to estimate and explain the performance of non-life (property and casualty) insurers by using a sample of over 2000 non-life insurance firms operating in 91 countries between 2005 and 2009 for five continuous years. The secondary data that used in the study were analyzed through two stage analysis. The first stage proposes the use of a multi-criteria method to assess the condition of insurers while considering simultaneously a set of conflicting financial criteria. Then, the second stage used the regression analysis to examine the influence of firm-specific and country-specific attributes on the overall measure of performance obtained during the first stage.

Based on their model, the regression result that demonstrates that macroeconomic indicators such as real GDP growth, inflation, and income inequality influence the overall performance of firm's non-life insurance industry operated in those selected countries. Macroeconomic conditions such as gross domestic product (GDP) growth, inflation, and income inequality are the most robust predictors of performance. However, other country-specific characteristics that relate to the institutional environment and financial or economic freedom do not appear to matter. Inflation and Loss ratio is negatively and significantly related to the profitability of non-life insurance companies in this studies. In addition to that, the result of the study dictates stock market development also has a positive effect on performance whereas inflation has negative and significant impact. In contrast, other indicators of the banking and capital market development such as the insurance premium to GDP, bank credit to GDP, and insurance and financial services as percentage of import services are not significant. Similarly, the institutional development and the overall freedom in the financial services industry do not exercise a statistically significant effect on overall performance.

Pervan and Kramaric (2012) investigate the influence of market share and diversification on non-life insurance performance for eleven (11) consecutive years from the period of 1999-2009. For the purpose of conducting their study internal variables like firms' profitability from previous years, market share, diversification. control variables like ownership, industrial concentration, GDP per capita and inflation are used whereas ROA is used as a measure of the dependent variable. According to their studies the underlying relationships have been investigated in different industries and different disciplines states

that still there is no consistency exists either in the magnitude or statistical significance of the relationship between market share (and diversification as well) on one side and companies' performance on the other side. Therefore, the direction of the relationship is also somewhat questionable. While some authors find this relationship to be positive, the others reveal its negative association.

The impact of six independent variables such as firms' profitability from previous years, market share, diversification and control variables (i.e. ownership, industrial concentration, GDP per capita, inflation) on non-life insurance is companies' performance is tested on the empirical model by employing two-step generalized method of moments (GMM) estimator in the study. Based on the result from the model, there is evidence of a negative and statistically significant influence of diversification and inflation on insurers profitability whereas market share, GDP and past profitability is positive and statistically significant impact on profitability.

Lee and Lee (2012) investigates the relationship between reinsurance and firm performance using panel data from the period of 1999 to 2009 on Taiwan property-liability insurance industry for eleven consecutive years. In the study, two dependent variables (Return on Asset and Return on Investment) and ten (10) firm specific profitability determinants of property-casualty insurance such as firm size, insurance leverage, financial leverage, underwriting risk, line-of-business concentration, liquidity ratio, reinsurance price, growth of premium, return on investment and financial holding was used. In order to analyze the secondary data collected from the companies, the ordinary least square multiple regression model is used.

The study finding shows that insurers with higher return on assets (ROA) tend to purchase less reinsurance and insurers with higher reinsurance dependence tend to have a lower level of firm performance, return on investment (ROI) and financial holding dummy have a significant correlation with reinsurance. The firm size, financial leverage, reinsurance, underwriting risks, liquidity ratio and ROI have a significant influence on firm performance. Other empirical results show that underwriting risks, liquidity ratio, reinsurance dependency and market has significant negative impact on profitability of non-life insurers whereas industry line concentration has negative and significant impact on

profitability non-life insurers. The finding of Iqbal et.al., (2013) on the relationship between ROA and Re-insurance dependence is also consistent with the Lee (2012).

Based on the finding, the study recommends that, managers have to strike a balance between decreasing insolvency risk and reducing potential profitability which have practical implications for the property-liability insurance industry and competent authorities in Taiwan.

Kozak (2011) analyzed the determinants of profitability among 25 general insurance companies in Poland from 2002 to 2009 for nine consecutive years. By applying a regression model, the author identified the factors which create reduction of motor insurance, increase other classes of insurance, growth of gross written premiums, operating costs reduction, gross domestic product (GDP) growth, and growth of the market share of the companies with foreign ownership, as having a positive impact on insurance companies' performance.

The study finding based on panel data regression model and random effect model is reveals that the profitability is positively related with reinsurance utilization. This implies that the increased dependence on reinsurer decreases the profitability and hence may increase risk of insolvency. The leverage levels have a significant negative impact on the profitability. The overall above finding indicates that majority of the insurance companies in Poland depend on reinsurance and leverage order to increase their underwriting capacity and to stabilize their earnings. Despite to that, the provision of wide range of insurance classes affects profitability negatively. Therefore, based on this finding, the study recommends that, the general insurance companies whether financially stable or unstable should try to reduce their dependence and exposure of reinsurance to improve their profitability.

2.5 Studies in Ethiopian

This section reviews only studies conducted in Ethiopia in order to reach at the knowledge gap in this study. When we coming back to the context of Ethiopia, there appears to be very scanty work on the assessment of determinants of profitability in insurance companies in Ethiopia as the researcher's best knowledge. For instance, Teklit and Jasmindeep (2017) conduct the study on topic entitled internal and external determinant of insurance companies of profitability in Ethiopia for the 2006-2015 through panel data consecutive

years. In the study, eight dependent variables were used such as size of insurance companies, capital adequacy, leverage ratio, liquidity ratio, and loss ratio and market share, growth rate of GDP and inflation rate. In order to achieve this objective, the fixed effect model was used instead of random effect model following the result of Hausman test. Panel data covering 10 years' period from 2005-06 to 2014-15 were analyzed for seventeen (17) insurance companies.

The results of the regression analysis revealed that size of insurance, capital adequacy, liquidity ratio and growth rate of GDP were the major factors that significantly affect the profitability of insurance companies. On the other hand, leverage ratio, loss ratio, market share and inflation rate were found to have insignificant effect on insurance companies' profitability. the liquidity, loss ratio, Growth rate of GDP and inflation rate is negatively related with the profitability measured by the ROA. Based on the finding, the study suggested that managers of insurance companies as well as the policy makers in the country should take crucial measures by framing policies and strategies that aimed in improving the overall profitability of insurance companies.

Demis (2016) conducted the study on macroeconomic and firm specific determinants of profitability of insurance industry in Ethiopia. The study considers the firm specific factors which consist of age of company, size of company, leverage ratio, liquidity ratio, premium growth, technical provision, underwriting risk, solvency, re-insurance dependency and tangibility of assets and macroeconomic factors; GDP and Inflation on profitability of Ethiopian insurance industry.

The study identifies that underwriting risk, technical provision, leverage and inflation have negative and significant effect whereas premium growth, age of the company, solvency ratio and GDP have statically positive and significant effect on the profitability of Ethiopian insurance industry. However, the study found that liquidity, re-insurance dependency, tangibility of assets and company size have no significant effect on the profitability of insurance industry in Ethiopia. Based on the finding, the study suggests that, insurance companies should critically consider underwriting risk and should minimize the accumulation used for technical provision and the level of leverage.

Simon (2016) investigate the internal factors affecting financial performance of insurance companies in Ethiopia by using the panel data over the period of 2005 to 2012. The Return on Asset was used as a proxy for measuring profitability which is dependent variable. The independent variable was identified from the annual audited financial statements such as balance sheet and the income statements. The data that collected from the financial statements of insurance companies is analyzed with the multiple regression analysis by using the STATA version 11.0. The finding of the study demonstrates that leverage ratio, liquidity ratio, company size, Management competence index and company growth rate are influential factors of financial performance. But, age of company and loss ratio has no effect on the financial performance of Insurance Companies in Ethiopia.

Base on the finding of the study, the author recommends that high consideration of increasing the company assets, using internal sources of financing and having highly qualified employees in the top managerial staff is advisable for insurance companies currently operating in Ethiopia to enhance their performance.

Asrat and Tesfahun (2016) investigate the determinant of profitability, particularly in eight Ethiopian private insurance companies from the period of 2005- 2015 through panel data. The data were analyzed by using multiple linear regression analysis. The firm specific factors used in this study include underwriting risk, reinsurance dependence, solvency ratio, premium growth, company size and three macro factor was used such as GDP, Inflations and interest rate.

The regression result shows that profitability is 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. Whereas GDP has significant impact on profitability; whereas inflation and interest rate is considered as insignificant variable in the study.

Based on the above finding, the study recommended that private insurance companies should reduce the impact of underwriting risk by improving their underwriting performance through techniques like risk and product selections with geographical and different pricing strategy. In addition to that private insurance company should improve

their underwriting in favor of economic growth of the country via identifying the potential and priority direction of the overall economic activity and growth of the country.

Mistire (2015) have studied the determinant of profitability on insurance sector in Ethiopia. The study investigates both of the firm specific variables and macro-economic variables by using sample of nine companies over period duration of 2003 to 2014 by collecting through panel data and primary data. The firm specific variables used in this study include age of companies, size of companies, leverage, tangibility of assets, liquidity, premium growth, loss ratio, reinsurance dependence, solvency margin and the macroeconomic variable used in the is only GDP growth rate. The finding of the study states that loss ratio and leverage ratio is significant and negative impact on profitability of insurance companies, whereas all other variables have positive and significant impact on profitability. Based on the finding the study recommends that the management of the companies should pay great attention on ways to increasing the company assets, ways to control the companies leverage and finally the companies must employee highly qualified stuffs at top management position to get from the customer acceptance in Ethiopian general insurers.

Hanna (2015) conducted the determinant of profitability in Ethiopian insurance companies by considering both external and internal factors. The internal independent variables used in the study is company size, leverage, liquidity, firm growth, age, volume of capital and tangibility are used. Moreover, as external explanatory variables, inflation and GDP are used. The return on assert were used as the proxy of measuring profitability. In the study, a panel data covering the period of 2005 to 2014 are analyzed for a sample of nine insurance companies to reach on the final conclusions.

The finding of the study shows that internal factors leverage, firm growth and tangibility of assets are the most significant determinants of profitability of insurance companies in Ethiopia, of which, firm growth has positive impact, on the other hand leverage and tangibility of assets have negative impact on profitability of insurers. From macroeconomic factors, inflation has a negative and significant impact on insurers' profitability as well as company size, company age and GDP growth shows positive but insignificant relationship with insurers' profitability. And liquidity has negative and insignificant relationship with insurers' profitability.

Based on the finding the authors recommend that an insurance company's management and investors should focus on how they promote the growth which significantly affects the profitability since the sector is still at the early stage of development.

Hadush (2015) investigates the determinants of profitability by considering both exogenous and endogenous variables such as liquidity, tangibility, volume of capital, premium growth, claim ratio, real GDP and inflation on general insurance companies operating in Ethiopia proxied by ROA to measure profitability. The econometric analyses have performed on a panel data for a sample of nine Ethiopian general insurance companies for the study period of 2005-2014.

Based on the above data the finding of the study reveals that tangibility, volume of capital, premium growth, claim ratio, and real GDP are the most important determinants of profitability hence tangibility, volume of capital, premium growth is significant and positively related. In contrast, claim ratio and real GDP are negatively but significantly related with profitability. However, liquidity and inflation are not significantly related with profitability.

Based on the finding, the study recommends that the general insurance companies operated in Ethiopia should pay due attention in the way they reducing incurred claims by identifying the risk areas and managing it by implementing good management guidelines and risk management techniques to minimize their risk exposure at the time of underwriting. In addition to that the management of the companies must pay attention on all significant factor affecting the profitability of the company's in order to increase the profitability of general insurers operated in Ethiopia as a whole.

Suyehli (2015) also examine the determinants of the of insurance companies' profitability in Ethiopia. The mixed research approach was used in the study which consist of depth interview with manager and annual report of the firm. Panel data covering eleven-year period from 2004 – 2014 are analyzed for a sample of nine insurance companies in Ethiopia. The find from the study demonstrate that underwriting risk, technical provision and solvency ratio have statistically significant and negative relationship with insurers' profitability. However, reinsurance dependence has negative but insignificant relationship with profitability. On the other hand, variables like liquidity, company size and premium

growth have a positive and statistically significant relationship with insurers' profitability. In addition, economic growth rate has significant influence on profitability whereas inflation has insignificant influence on insurers' profitability. The study provides evidence that underwriting risk, technical provision and liquidity are the most important factors that affect profitability of insurance companies in Ethiopia. And finally, the study recommends that, the insurance companies' managers as they give high attention to underwriting risk, technical provision and liquidity which increases profitability of the sector significantly.

Meaza (2014) conducted a study on the effects of firm specific factors (size of company, leverage ratio, liquidity ratio, loss ratio/ risk, tangibility of assets, growth and managerial efficiency) and macroeconomic factors (economic growth and inflation) on profitability proxied by ROA (dependent variables). In the study, the data is collected from a sample of ten insurers by using panel data with the time duration of 2008-2013 for six consecutive years.

The result of the study demonstrates that size, leverage, tangibility of asset, loss ratio, firm growth and managerial efficiency have significant impact on profitability(ROA). Whereas firm size, tangibility of asset, firm growth and, managerial efficiency is positively related. In contrast, leverage and loss ratio are negatively and significantly related with profitability. Liquidity, inflation, and economic growth are not significant determinants of profitability**.**

Based on the finding the study recommended that, the insurance managers and policy makers should give more attentions to firm-specific determinants of profitability than macroeconomic variables; since investigating the effects of macroeconomic variables on profitability of companies more use longer period observations.

Mehari and Aemiro (2013) conduct their study on factors determining insurance companies' performance in Ethiopia by considering the variables (size, leverage, tangibility, Loss ratio (risk), growth in writing premium, liquidity and age) on performance of insurance companies in Ethiopia which measured by (ROA). In order to conduct the study, the sample of nine insurance companies was selected over the period of 2005-2010 through the panel data.

The finding of the study shows that insurers' size, tangibility and leverage are statistically significant and positively related with return on total asset; however, loss ratio is statistically significant and negatively related with ROA. Thus, insurers' size, Loss ratio, tangibility and leverage are important determinants of performance of insurance companies in Ethiopia. But, growth in writing premium, insurers' age and liquidity have statistically insignificant relationship with return on asset.

Based on the data, that analyzed through SPSS, the regression results demonstrate that growth, leverage, volume of capital, size, and liquidity are identified as most important determinant factors of profitability hence data growth, size, and volume of capita are positively related. In contrast, liquidity ratio and leverage ratio are negatively but significantly related with profitability. The age of companies and tangibility of assets are not significantly related with profitability.

Finally, Ayele and Samasivam (2013) undertake the study on firm specific factor influencing financial performance of insurance companies in Ethiopia from the period of 2003 to 2011 by selecting sample of nine insurance companies through panel data. In order to conduct the study, the examine the effects of firm specific factors (age of company, size of company, volume of capital, leverage ratio, liquidity ratio, growth and tangibility of assets) on profitability measured by Return on Assets(ROA) which is dependent variable. The secondary data obtained through panel data from the financial statements (Balance sheet and Profit/Loss account) of insurance companies and financial publications of National Bank of Ethiopia are analyzed by using Ordinary Least Square (OLS) multiple regression methods through SPSS Software.

The finding of the studies indicates that firm growth, leverage, volume of capital, size, and liquidity are identified as most important determinant factors of profitability hence growth, size, and volume of capita are positively related. In contrast, liquidity ratio and leverage ratio are negatively but significantly related with profitability. Lastly, age of company and tangibility of assets are not significantly related with profitability.

Based on the finding the study recommends that, both management and regulatory bodies of the insurers should pay attention external and internal factors affecting profitability of insurance companies in Ethiopia as indicated in the study.

2.6 Conclusion and Gap from Reviews of Related Literature

An investigation of the factors affecting profitability has been more of focus on digging theoretical and empirical studies in finance research. As highlighted from the above empirical reviews, a large number of studies has been investigated on the factors determining profitability in different jurisdictions. But a scanty of study had been conducted in the selected area from developing countries as far as the researcher concerned and they are also insufficient in amount. For instance, in order to conduct this study, some of the literatures were taken from Pakistan, Kenya, India, Taiwan, Nigeria and other Europe countries for an intention of identifying non-life insurance business profitability determinants. Some of the previous researches that conducted on these jurisdictions as well as in Ethiopia have also documented unclear results on relationship between profitability which measured by return on asset and some other variables used to measure it as a proxy. For instance, Mazviona *et.al.,* (2017), Sumaira and Amjad (2013) and Lee and Lee (2012) indicates that, financial leverage of the non-life insurance companies is positively related with profitability. Whereas, Kozak (2011) and Kazeem (2015) found inverse relationship between leverage and profitability of general insurers. Despite to that, Mazviona *et.al.,* (2017), Daare (2016), Kazeem (2015) and Lee and Lee (2012) found positive relationship between ROA and the firm liquidity.

When coming back to context of Ethiopia, some of few researches are conducted in the area of factor determining insurance companies' profitability; particularly in general insurance. Accordingly, those studies clearly failed to identify most of the external related factors affecting profitability of insurance companies significantly in Ethiopia, even if they attempt to identify the firm specific variables and macroeconomic variables. For instance, the industry specific-variables such as industry concentration level and diversification. The industry concentration level is measured by the sum of market share[1] square represents by the Herfindahl-Herschman Index (HHI). Thus, ignoring such important variable from the study leads to failure of filling the knowledge gap that exists in the area of the study undertaken.

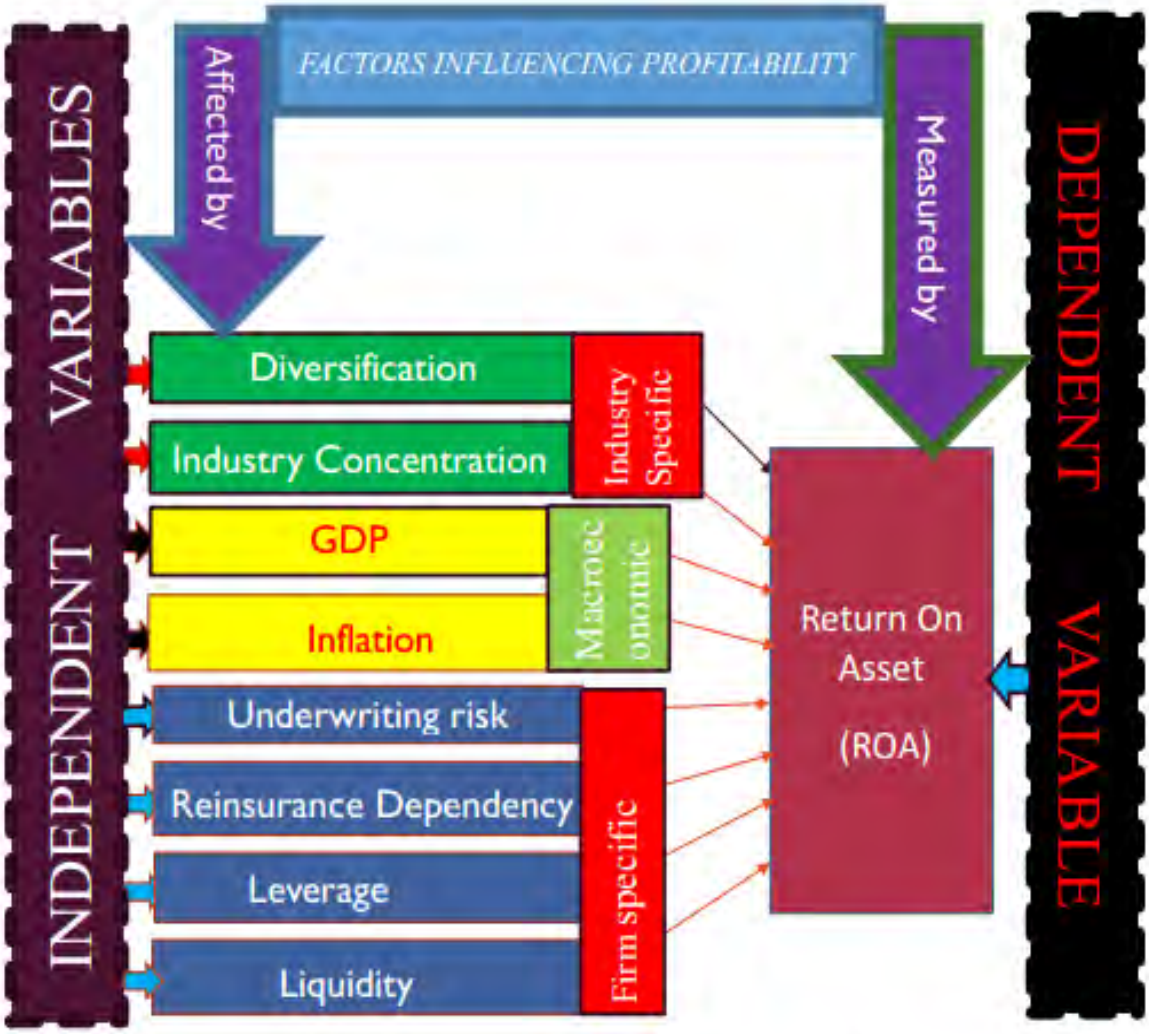
[1] Market share is measured by total gross written premium ratio each firm to total market gross written premium of the industry in each year.

Despite, some of few studies conducted in Ethiopia on profitability determinants of insurance sectors provide inconsistent and controversial result among the variable used in their study and profitability. For instance, Suyehli (2015) found positive and significant relationship between profitability and liquidity whereas Mehari and Aemiro (2013) found positive insignificant relationship between profitability and liquidity. In opposite to that, Ayele and Sambasivam (2013), Meaza (2014), Mistire (2015), Hanna (2015), Hadush (2015), Teklit and Jasmindeep (2017), Suyehli (2015), Demis (2016), Mehari and Aemiro (2013) and Asrat and Tesfahun (2016) states that liquidity have negative impact on profitability of insurance companies in Ethiopia. Despite to this gap, Asrat and Tesfahun (2016) are also failed to include one of the largest government owned Insurance company namely Ethiopian Insurance Corporations during their study.

In general, the lack of sufficient research on the determinants of non-life profitability in context of Ethiopia, the existence of knowledge gap and the problem stated in the statement of the problem part in the area is initiate the researcher to conduct this study. Therefore, the intent of this research is to investigate the profitability determinant factors of insurance sector in Ethiopia with especial reference to general insurance companies and to fill the knowledge gap that exists in the area by providing evidence from Ethiopian insurance sectors.

2.7 Conceptual Framework

This section provides conceptual framework that was guide the study. According to Becker (1998), the conceptual framework grounds the study in the relevant knowledge bases that lay the foundation for the importance of the problem statement and research questions or hypothesis. In addition to that, a conceptual framework is made up of theoretical and empirical work relevant to investigate specific purpose. Therefore, the study conceptual framework consists of eight independent variables namely underwriting risk, Reinsurance dependence, Leverage, Liquidity, Industry concentration level, Diversification, inflation and growth domestic product (GDP). The independent variable influences the profitability of insurance industry in Ethiopia which is the dependent variable. The conceptual framework that designed and paraphrased by the researchers from previous studies will represent in the following diagram.



Source: Compiled by the researcher from Empirical Reviews

Figure 2.1: The Conceptual Framework or Model of the Study

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter specifically gives a brief description of the research method that is employed to capture determinant factors of profitability in Ethiopian non-life insurers. This include a detail description of quantitative research design tools which embrace research approaches and design adopted, sample design of the study, data type, source and the data collection mechanism, variable definition and hypothesis development, empirical model specification, type of data analysis and link between hypothesis and data source are also discussed.

3.2 Research Approaches and Design Adopted

Research approaches is plan and procedure for research that span the steps from broad assumption to detailed method of data collection, analysis and interpretations. It is a plan proposed to conduct the research, involving the intersection of philosophy, research design and specific methods (Creswell, 2014). There are three common research approaches that every researcher use when they conduct study, based on the approaching of the problem. Creswell (2014) noted that, there are three basic approaches of research; quantitative, qualitative and mixed. Quantitative research approach is the process of testing objective theories by examining the relationship among variables and a numbered data can be analyzed by using statistical procedure deductively or inductively. On the other hand, qualitative research approach is a means for exploring and understanding the meaning of individuals or groups to ascribe to a social or human problem with intent of developing a theory or pattern inductively. At the end, mixed methods approach is an approach to inquiry involving collecting both quantitative and qualitative data, integrating the forms of data and using distinct designing that may involve philosophical assumption and theoretical framework. Therefore, the researcher used the quantitative research approach based on the nature of data, the problem taken into account and pre-determined objective in this study.

The research design is type of inquiry with approaches that provide specific direction for procedure (Denzins and Lincoln, 2011). It is based on, the one of the philosophical assumption that researcher brings to the study and procedure of inquiry (Creswell, 2014). In this context, this study was based on positivist research paradigm philosophical assumption. Because, the problems studied by positivists are commonly based on empirical

observation, measurement and its deterministic in which cause determine the effects (Creswell, 2014 and 2009). The positivist paradigmatic are focuses on the deterministic view of cause and effect which derives from the deductive reasoning that research is guided by the theory (Kinsler, 2011). The research design was correlational explanatory research design. The nature of research problem tends to be explanatory which seeks to explain the relationship between profitability and it related determinants in the study (Creswell, 2009). Correlation research design help the researcher to construct correlational statistics and find out the degree of relationship between the variables (Creswell, 2012 and Saunders *et.al.,* 2016). The rationale and dimension for using this design was due to arrangement of secondary data collection via longitudinal time dimension, quantitative approach and deductive method of inquiry. Furthermore, quantitative approach is employed as far as the methodological inquiry allows the numerical data for underpinning inference and hypotheses testing (Creswell, 2012).

3.3 Sample Design of the Study

3.3.1 Target Population, Sampling Mechanism and Sample size

The population refers to the entire group of people, events or things of interest that the researcher interested to investigate (Sekaran, 2003). As per NBE quarterly bulletin of 2017, there were 17 (1 public and 16 private) insurance companies with a total of 482 branches operating throughout the country. In terms of ownership, all insurance companies except the Ethiopian Insurance Corporation (EIC), are privately owned. Private insurance companies accounted for 75 percent of the total capital of insurance companies reached in Birr 3.9 billion, while the remaining share was taken up by the single public owned enterprise, the Ethiopian Insurance Corporation. Of the total insurance branches, 53.9 percent were concentrated in Addis Ababa. Private insurance companies owned 83.6 percent of the total branches.

In context to this, the target population of the current study employed all insurance companies operating in Ethiopia which have a license from NBE to underwrite a non-life or general insurance business as a target population, with audited financial statements from the 2011 to 2016. In order to make conclusion, about the target population a researcher determine the sample size which have paramount importance in the study. Therefore, to be included in the research analysis, the researcher selects twelve (12) non-life insurances

companies currently operating in Ethiopia, out of seventeen (17) insurance companies. The sampled insurance companies are based on the fact in firm specific, industry specific and macro-economic condition of the country they operate is used as sample selection criteria. For example, Ethio-Life and General insurance established in (2008), Lucy insurance companies established in (2012), Buna insurance companies established in (2012), Tsehay insurance companies and Bunna insurance companies established in (2013) are excluded from the sampled insurance companies because of lack of 6 years' data that is required for the analysis purpose in most of the newly established insurers. This leads also reduce the amount of insurance companies selected to thirteen (13) insurance companies. Ethio-Life and General insurance (ELIG) was establish to underwrite non-life insurance business after 2012. Therefore, it excluded from the current study sample, since it has not six year annual financial statements. Based on this exclusion, 12 non-life insurers were selected based on 2 selection criteria's underlined by the researchers to investigate the profitability determinant factors of profitability as follows:

1. Establishment and operational period: Both public and private insurance companies who have at least six (6) years audited Annual financial statements (i.e. Balance sheet and Income statement) and established before 2011.
2. Branch expansion and operating type: An insurance companies who have at least 13 branches all over the country and have license to underwriting general insurance business service for minimum 6 years in comparison to industry as a whole.

Therefore, in this study, all insurers established before 2011 and has a license to underwrite a line of general insurance is included in the study purposively, based on the selection criteria set by the researcher, except Ethio-Life and General insurance (ELIG) which was started to underwrite non-life insurance product after 2012. Furthermore, the insurance companies' who appropriately fulfill the selection criteria's was used by the researcher was included in this study based on non-random purposive sampling techniques (See Appendix, 6).

3.4 Data types and Sources

The study was used the panel data from 2010/2011 to 2015/16 for six consecutive years from twelve insurance companies. Other periods and all companies target populationdon't covered in this study due to data problem for all period. The type of data used for this study

was secondary data. According to Gupta (2012), the secondary data is data that exists somewhere having been collected and used for some other purposes. The secondary data that was used for this study is based on data that filed with publications of the National Bank of Ethiopia (NBE) and firm itself for the firm specific associated variables and Ministry of Finance and Economic development (MoFED) for macroeconomic factors to see the effect of selected variables. In context to that, to examine the link between profitability and macro-economic variables, the macroeconomic data was organized in the same years. To build the literature part, the researcher was collect the secondary data from books, previous journal article, research and from internet to explore and gather this published and archived data on the issues under investigation.

3.5 Variable Definitions and Hypothesis Development

3.5.1 Definition of variables

In any quantitative research, in order to make it is clear to readers what groups are receiving the experimental treatment and what outcomes are being measured, the variables need to be specified (Creswell, 2009). The study was not including all dimensions of the profitability, i.e. external, industry and internal factors but limited to the following variables. Therefore, one important thing here is that, either in the above measurement techniques or in the following definitions, the researcher was not differ rather, it was duplicate and extend the existing common measurement techniques and definitions used by previous researchers on the topic under consideration. It is of no doubt that the use of more than one indicator gives stability to the scores and it also improves their validity.

3.5.2 Dependent Variable

As discussed in literature part, the most commonly used proxy for measuring profitability that was used in this study is ROA, which is used by Kozak (2011), Lee and Lee (2012), Pervan and Kramaric (2012), Burca and Batrinca (2014), Hadush (2014), Lee (2014), Hussain (2015), and Datu (2016), Malik (2011), Mwangi and Murigu (2015) and Mehari and Aemiro (2013). They used multiple regression analysis where the dependent variable was profitability measured by ROA. Return on asset is reflects how well a company's management is using the company real investment resources to generate profits and it is computed as the ratio of net income to total assets. ROA is used as a better measure of profitability than other ratios and it reveals how much profit a company earns for its assets

(Malik, 2011). It is the most important single ratio to compare the efficiency and financial performance of insurance companies as it indicates the returns generated from the assets that insurers own (Mehari and Aemiro, 2013). Lee (2014), Lee (2012) and Mehari and Aemiro (2013) indicates that the return on asset is measured by ratio of pre -tax income (losses) to average total assets which shows an amount of profit earned per dollar of assets and how well insurance management use the insurer's real investments resources to generate profits for their companies. Doumpos *et.al.,* (2012) states that the high ratio of ROA reveals how effectively the firm is converting the money it had to invest into profits.

Therefore, the return on asset used in the current study is measured as ratio of net income before tax to total assets in line with the above authors. It is used as dependent variable in the assessment of economic performance and it used to express the company's ability to generate profit as a consequence of the productive use of resources and of the efficient management.

3.5.3 Independent variables

In this study, four firm specific (internal related) variables, two industries specific (external related) variables and two macroeconomic variables affecting the profitability of Ethiopian general (Non-life) insurance business were used. From the numerous potential determinants of profitability identified in previous similar studies; diversification, liquidity, l0everage, industry concentration ratio, reinsurance dependence, underwriting risk, real growth domestic product and inflation are included in this study. Therefore, in order to achieve the objectives of this study, the variable was defined and the hypotheses were originated from the literature to give a key factors that determine profitability of general insurance companies operating in Ethiopia as follows.

Profitability (ROA) Versus Underwriting risk

Underwriting risk (UR)**: -** The underwriting risk is measured through loss rate and it used to measure the productivity of the underwriting activity. The underwriting risk or loss ratio is computed by the ratio of net losses incurred to net premium earned (Burca and Batrinca, 2014, Lee and Lee, (2012), Lee (2014) and Kazeem, (2015)). Underwriting risk is reflecting adequacy of the insurers' underwriting performance and it measured by ratio of the claim incurred to net premium earned (Mwangi and Murigu, 2015). It emphasized on

efficiency of the insurance companies underwriting activity (Burca and Batrinca, 2014). The lower anticipated underwriting losses may lead the firm to better financial performance. Therefore, knowing major cause of underwriting risk help the insurers to monitoring and claims handling costs are low (Lee and Lee, 2012). According to Teklit and Jasmindep (2017), Daare (2016), Datu (2016), Kazeem (2015), Burca and Batrinca (2014), Lee and Lee (2012), Asrat and and Tesfahun (2016), Suyehli (2015), Hussain (2015), Malik (2011), Mehari and Aemiro (2013), Doumpos *et.al.,* (2012) and Saeed and Khurram (2015) indicated the negative relationship between underwriting risk and insurance companies' profitability which suggesting that higher underwriting risk**,** the lower the profitability measured by Return on Asset (ROA). Therefore, in this study the negative relationship is anticipated by the researcher among the relationship between profitability (ROA) and underwriting risk. As a result, the researcher formulates its hypothesis(H1) as follows:

H_{o1}: Underwriting risk is negatively related to insurance company profitability in Ethiopia

Profitability (ROA) Versus Reinsurance dependence

Reinsurance dependence(RED): - The reinsurance dependency is measured by the ratio of gross written premiums ceded in reinsurance to total assets (Lee and Lee, 2012; Burca and Batrinca, 2014). It is used to reduce the risk of bankruptcy when the insurers are subject to higher losses (Suyehli, 2015). Some of the studies conducted on the impact of reinsurance dependence on profitability of non-life insurance companies indicate different result such as Burca, and Batrinca (2014) and Moro and Anderloni (2014) found positive insignificant relationship between reinsurance and ROA, Datu (2016) found positive significant relationship between profitability and reinsurance dependence, suggesting that the non-life insurance business with higher reinsurance significantly have higher profitability from their firm. However, the studies that conducted by Kozak (2011), Jovovic *et.al.,* (2014), Mistire (2014), Lee and Lee (2012), Demis (2016), Asrat and Tesfahun (2016) and Lee (2014) found negative relationship between reinsurance dependency and profitability, suggesting that the property and causality insurance business who have higher reinsurance dependence report low profit in comparison to premium they received from

the policyholders and asset they own. Therefore, in this study the negative relationship is anticipated for the relationship between profitability (ROA) and reinsurance dependence. Therefore, the researcher formulates its hypothesis as follows:

Ho_2: Reinsurance dependence is negatively related to profitability of insurance company's in Ethiopia.

Profitability (ROA) Versus Liquidity

Liquidity (LIQ): - Liquidity measures the capability of an insurers to fulfill their immediate commitment to policyholders and other creditors without having to increase profits from underwriting activities and investment activities and/or liquidate financial assets or when they due **(**Mwangi and Murungi, 2015). It is measured by ratio of current assets to current liabilities and indicate an organizational ability to meet its current obligations when they fall due (Burca and Batrinca, 2014; Kazeem, 2015). Therefore, it is measured by ratio of current assets to current liabilities (Mehari and Aemiro, 2013; Asrat and Tesfahun, 2016). The studies conducted by the Hussain (2012); and Ayele and Sambasivam (2013) found negative relationship between profitability and liquidity. However, the studies of Teklit and Jasmindeep (2017), Daare (2016) and Kazeem (2015) observe the positive relationship. The influence of liquidity on insurance company's profitability is unclear. There are two possible scenarios. The first scenario indicates insurance company who has high amount of current asset is more profitable, whereas the second scenario indicates the insurance companies who have more current asset is less profitable. This variable widely associated with the accounting result which allows companies to enjoy a higher liquidity when better financial performance is achieved**.** Therefore, the result obtained from of evidence of previous studies are more expresses the positive relationship between liquidity and profitability. In line with the arguments of first scenario, the result that anticipated in this study is positive.

Ho3: Liquidity ratio positively related to profitability of insurance company's in Ethiopia.

Profitability (ROA) Versus Leverage

(LEV): - Leverage is the amount of debt used to finance a company's assets. It was measured by total debt to total equity value (Capital and reserve) of the company (Mehari

and Aemiro,2013; Asrat and Tesfahun, 2016). Insurer generate leverage from unearned premiums, from unexpired policies and any outstanding claim amount (Lee, 2014). A large insurance companies who has high total gross written premium have a higher leverage coefficient (Pervan and Kramaric, 2012). Leverage measures the degree to which a business is utilizing debt fund (Kazeem, 2015)**.** Therefore, the studies conducted by the by Simon (2016), Kazeem (2015), Sumaira and Amjad (2013) and Ayele and Sambasivam (2013) states that bad investments decisions lead to a negative leverage-profitability relationship which suggesting that highly leveraged companies tend to achieve less profitability of the non-life insurance business. However, the studies conducted by Teklit and Jasmindeep (2017), Malik (2011), Sumaira and Amjad (2013), Ayele and Sambasivam (2013), Jovovic *et.al.,* (2014) and Mehari and Aemiro (2013) have found evidence in support of a positive relationship which suggesting that a highly leveraged insurer has better enjoyed financial performance achieved. Therefore, these conflicting results provide genuine incentives for further investigation of this relationship. From the above theoretical explanations, the researchers anticipate that the relationship between the profitability of the general insurance companies and leverage is negative sign.

Ho4: Firm leverage has negatively related to profitability of insurance company's in Ethiopia.

Profitability (ROA) Versus Growth Domestic Product

Real GDP growth rate: - Gross domestic product is defined as the total value of goods and service produced by an economy at national's level in particular country for a given period of time (Ayele and Sambasivam, 2013). It measured based on the annual economic growth changes or rates (Doumpos *et.al.,* 2012). GDP growth is indicative of overall business conditions and hence capacity to insurers (Hussain,2015). The poor economic conditions can reduce the quality of the finance portfolio. Therefore, it reducing profitability of the companies (Teklit and Jasmideep, 2017). If GDP grows, the likelihood of selling insurance policies also grows and insurers are likely to benefit from that in form of higher profits. Economic growth is improving the living standards and the levels of income, increasing the purchasing power of population (Burca and Batrinca, 2015)). There are a lot of empirical evidence conducted regarding effect of GDP growth rate on profitability of insurance companies. For instance, Doumpos *et.al.,* (2012), Pervan and

Kramaric (2012), Daare, (2016), Suyehli (2015), Hanna (2015), Meaza (2014) and Mistire (2015) indicates positive insignificant relationship between GDP growth rate and ROA. Whereas Demis (2016), Asrat and Tesfahun (2016) found positive significant relationship between ROA and GDP. A similar studies conducted by Teklit and Jasmindeep (2017), Jibran *et.al.,* (2016), Hadush (2015) and Datu (2016) indicates negative significant relationship between ROA and GDP growth rate; whereas Lee (2014), Burca and Batrinca (2014) indicates negative insignificant correlations between ROA and profitability. Furthermore, the current study also calculates the change in economic growth rate in line with above pervious empirical evidence. Therefore, in this study the positive relationship is anticipated by the researcher for link between profitability (ROA) and GDP growth rate in line with the research conducted in developing countries by Astrat and Tesfahun (2016), Mehari and Aemiro (2013) and Suyehli (2015). Therefore, the researcher formulates its hypothesis as follows:

Ho5: Gross domestic product is positively related to profitability of insurance company's in Ethiopia.

Profitability (ROA) Versus Inflation

Inflation rate (INF): - Inflation occur when the general price of goods and services increase over time. Inflation is a general increase in the overall price level of the goods and services in the economy (Hadush, 2015). Theoretically, the low level of inflation enhances the financial performance of insurance firms. The inflation is measured based on general annual increase change rates of consumer price Index (Hussain, 2015 and Suyehli, 2015). The relationship between consumer price index and profitability of insurance companies are not the same across the country. For instance, research conducted by Datu (2016) in Mississippi and Hussain (2015) in Pakistan reveals positive links between inflation and profitability which implies that high inflation rate may lead to irrational pricing and consequently high levels of earned premium for insurance which leads to increase in profitability. In opposite to that, the research conducted by Daare (2016) in India, Lee (2014) in Taiwan, Pervan and Kramaric (2015), Suyehli (2015) in Ethiopia, Hana (2015) in Ethiopia, Asrat and Tesfahun (2016) in Ethiopia, Meaza (2015) in Ethiopia, Teklit and Jasmindeep (2017) in Ethiopia and Hadush (2012) in Ethiopia reveals negative insignificant relationship between profitability and inflation whereas Jibran *et.al.,* (2016),

Doumpost *et.al.,* (2012), and Demis (2016) reveals significant relationship between profitability and inflation, suggesting that higher inflationary periods reduce the profitability of firm by leads the insurance company to higher amount of indemnity for the risk occur in the firm. Therefore, the current study anticipated negative relationship between inflation rate and profitability of the firms measured by ROA and the researcher formulates the following null hypothesis as follows:

Ho6: Inflation is negatively related to profitability of insurance company's in Ethiopia.

Profitability (ROA) Versus Industry Concentration ratio

Industry concentration Ratio (HHI): **-** The industry concentration ratios is commonly pinpoints the market structure measures in which few dominant firms within an industry account for greater portions of market share of economic activities within the market. The industry concentration variable is computed by the Herfindahl-Hirschman Index (HHI) (Lee and Lee, 2012 and Jovovic et.al., 2014). It is calculated by the sum of the square of the ratio of individual premiums written to gross premiums written by the industries (Lee and lee, 2012 and Mayers and Smith,1988). Whereas the market share is measured by ratio of gross written premium of individual firm to total gross written premium of the industries (Berger, 1995; Choi and Weiss, 2005). A highly concentrated property and causality insurance industry has enjoyed with more professional and they are easily predicting an accurate occurrence of potential losses. Despite to that, a high concentration of business means that potentially high risks may impact their performance (Mayers and Smith, 1988). This helps the insurers to create profitability forecasts. Despite to that, a lot of studies conducted by different authors for relationship between industry concentration ratio and profitability indicates different result. For instance, Jovovic et.al., (2016) found negative significant relationship between ROA and HHI; whereas Pavic and Pervan (2010) and Lee and Lee (2012) indicate positive significant relationship Herfindah-Hiershman index and ROA. According to the SCP hypothesis paradigm theory an insurer that operating in more concentrated industry are likely to benefit from collusion, higher prices and therefore get more profits. Based on this assumption, the current study anticipated positive sign between profitability and Industry concentration level (HHI) for a non-life insurance industry operating in Ethiopia.

Ho7: Industry concentration level positively related to profitability of insurance company's in Ethiopia.

Profitability (ROA) Versus Diversification

Diversification (DIV): - The proxy for measuring insurers diversification[2] applied in this study is the type of insurance that, the insurance companies operating in Ethiopia is used to run their business which is non-life versus composite (Life and non-life) insurance. The type of insurance they engaged is considered as dummy variable, 1 if active in the non-life insurance business or 0 if composite insurers or other types of insurance for this study purpose.

The effect of diversification on performance is not homogeneous across product lines of the insurance companies. But, the diversified insurers perform better in product lines in comparison to specialized insurers (Hussain, 2015, and Zhang, 2015). In contrary, the finding of Pavic and Pervan (2010) indicates that undiversified insurers outperform diversified insurers. Furthermore, a lot of scholars are conducting the study on the relationship between profitability and diversification of the insurance companies. For instance, the studies conducted by Pervan and Kramaric (2012), Krivopavic, (2017), Moro and Anderloni (2014) and Hussain (2015) in Pakistan found positive and significant relationship between profitability and diversification, suggesting that diversified insurers with different line better perform undiversified insures. However, the studies conducted by Zhang (2015), Pavic and Pervan (2010) in Croatia and Lee (2014) found negative and significant relationship between diversification and ROA. Despite to that, the research conducted by Burca and Batrinca (2014) in Romania and Datu (2016) in India found positive and negative insignificant correlation between ROA and diversification respectively, suggesting that diversification is not key determinant of profitability in India and Romania during their studies. Therefore, the empirical evidence emerging from various studies about the effect of diversification on general insurance profitability have so far yield mixed result that are inconclusive and contradictory**.** As a result, the anticipated sign is negative which is subject to empirical examination.

[2] The variable that used as diversification in this study is consider the type of insurance businesses. It doesn't consider each product line underwritten by property and Causality insurance and Life insurance businesses. It measures as one for the pure nonlife insurers, and zero for composite insurers.

Ho8: Diversification has negatively and significantly related to profitability of insurance companies in Ethiopia.

Therefore, this paper was employee a secondary annual panel data on the dependent variable called profitability which were measured by return on asset. The description of the variables and their expected result or signs for the variables in the model presented as follows: -

Table 3.1:Operational definition, measurement and the expected sign of variables

Classification	Variables Name	Measurable	Source	Notation	Signs
Dependent variables	Profitability	Net Income before taxes /Total asset	(Lee, 2014)	ROA	
Independent variables					
Internal Factors	Underwriting risk	Annual net claims incurred / Net earned premiums	(Burca and Batrinca, 2014)	UR	-
	Re-insurance dependence	Premium ceded/Total asset	(Suyehli, 2015)	RED	-
	Leverage	Total debt/ Total Capital and reserve	(Asrat and Tilahun, 2016)	LEV	-
	Liquidity	Total current Assets / Total current Liabilities	(Mwangi and Murungi,2015)	LIQ	-
Industry specific variables	Diversification	Dummy variable: 1 if non-life line and 0 otherwise .	(Moro and Anderloni, 2014 and Zhang, 2015)	DIV	-
	Industry concentration Level	Herfindahl-Hiershman Index (Sum of market share square)	(Jovovic *et.al.,*2014 and Lee and Lee, 2012)	HHI	+/-

Macroeconomic variables	Gross Domestic Product	$(GDPt - GDPt_{-1})/GDPt_{-1}$.	(Nyamu , 2015)	GDP	+
	Inflation	$I = (Inft - Inft_{-1})/Inft_{-1}$.	(Hussain,2015and Nyamu, 2015)	INF	-

3.6 Empirical Model Specification

In this research paper, the data from Ethiopian General insurance companies that include audited financial statement from 2011 to 2016 was used for analysis. The nature of data that was deployed in this study enabled the researcher to use econometric panel data model, which cover cross sectional and time series data methodology. To reach at the final point, the study tested the two most powerful panel data techniques such as Random Effects Model (REM) and Fixed Effect Model (FEM).

Based on the theoretical setups and empirical evidences in previous researches, this study deemed some of the key variables under consideration those used by different researchers at different times. In highlight to this, the model consists of dependent and independent variables. Different researcher employed major dependent variable of profitability that measured by Return on Asset which used by Kozak (2011), Lee and Lee (2012), Mehari and Aemiro (2013), Pervan and Kramaric (2012), Burca and Batrinca (2014), Lee (2014), Hussain (2015), Demis (2016) and Datu (2016). The independent variables used are level of diversification, liquidity, leverage, industry concentration ratio, reinsurance dependence, underwriting risk, growth domestic product and inflation rate.

To investigate the exogenous and endogenous profitability determinants of insurance companies operating in Ethiopia; particularly in non-life (General) insurance business, the following baseline regression model was specified with some modification depending on empirical studies in aforementioned source which include (Mazviona *et.al.,* 2017; Demis, 2016; Asrat and Tesfahun, 2016; Daare, 2016; Datu, 2016; Hussain, 2015; Moro and Anderloni, 2014; Lee, 2014; Burca and Batrinca, 2014; Mehari and Aemiro, 2013; Lee and Lee, 2012; Pervan and Kramaric, 2012 and Kozak, 2011). The linear model which developed by the researcher is based on the empirical reviews in the study as denoted as follows:

$$ROAit = \alpha + \beta 1\ (DIVit) + \beta 2(GDPit) + \beta 3(HHIit) + \beta 4(INFit) + \beta 5(LEVit) + \beta 6\ (LIQit) + \beta 7(REDit) + \beta 8(URit) + Є\ it$$

Table 3.2: Model Specification and Definition of Variable

Variable used in the Analysis	Their definition
ROA it	Return On Asset used as a barometer of profitability of company i at time t.
DIV it	Diversification of company i at time t; 1 if non-life insurance business line; 0 otherwise.
GDP it	Real Growth Domestic Product (Economic growth rate) country i at time t;
HHI it	Industry concentration ratio (Herfindahl-Hirschman Index) i at time t;
INF it	Average Inflation anticipated change in each period in the country i at time t;
LIQ it	Liquidity of a company i at time t;
LEV it	Leverage of a company i at time t;
RED it	Reinsurance dependence of a company i at time t;
UR it	Underwriting risk of a company i at time t;
$Є_{it}$	The stochastic variables (error term) for a company i at time t whereas is i cross sectional and t is time identifier assumed to have mean zero E [Є it] = 0;
β_1- $\beta_{8'}$	1, 2, 3…8 are parameters to be estimate or Coefficients parameters;
I	Insurance company and i = 1, 2, 3…..... 12;
T	The index of time periods and t = 1, 2, 3. . .. 6.

3.7 Data Analysis

In order to achieve the objective of the study, the researcher analyzed the raw data collected from the insurance companies particularly from non-life insurers. As indicated above, the financial statements of sampled general insurance business for the period of 2011- 2016

were analyzed through panel data model by applying the Eviews 9 statistical software package for the multiple regression used in the study. According to Brooks (2008), the panel data consists both time series and cross-sectional member in each data set. Prominently, a panel keeps the same individuals or objects and measures some quantity about them over time. In short, panel modelling helps to identity a common group of characteristics while, at the same time, taking in to account the heterogeneity that present among individual units. In addition to that, the technique allows for the study of the impact of industry specific and macroeconomic developments on profitability after controlling for firm-specific characteristics, with less collinearity among variables, more degrees of freedom and greater efficiency.

The consensus from the previous literatures on firm's profitability is that, the appropriate functional form of analysis is the linear one. To this extent, Bourke (1989) considered several functional forms and concluded that linear model produces results at least as good as any other functional forms. Therefore, in this study, a panel linear model was used to analyses the cross-sectional and time series data, to isolate important profitability determinants (factors) among non-life insurers for the issues under consideration. In order to reach on the final result, the overall quantitative data analysis was done by using Eveiws 9 software statistical package. The finding also consisted the descriptive statistics, the Correlation matrix analysis and panel the data regression of the study.

In this study, the descriptive statistics is used to show the basic features of the data and it provide a simple summary about the sample and the measures which indicate the variable used in the study, in terms of average and variation among the cross section and time series. The descriptive statistics also consisting mean, maximum, minimum and standard deviation for all study variables.

Despite to that, the correlation matrix analysis is undertaken to determine the relationship among the dependent and its explanatory variables. This would help the researcher to insight the nature of the relationship among the independent variables as well as dependent and independent variables before proceeding to regression analysis for the current study.

Lastly, panel least square regression analysis is used to determine the significant relationships between general insurance business profitability and the selected firm

specific, industry specific and macroeconomic variables. The Hausman test is used to determine and check the appropriateness and fitness of the model, after the panel data regression was undertaken by using the random effect Model (REM). As a precondition, the diagnoses test of Classical Linear Assumption Model (CLRM) such as heteroscedastic, autocorrelation, normality, and multi-collinearity are made to check the validity of the model. Therefore, all the above was done for the objective to make a prediction about the dependent variable based on its relationship with all the independent variables under consideration in the study.

3.8 Nexus between Hypothesis and Data sources

In this chapter, a detail description of the research methodology that adopted in the research to address the rsaerch problem is presented. In connection to this, the research hyphothesis which was developed in order to undetake the study with its data source are represented in the following table.

Table 3.2 Nexus between hypotheses, independent variables and data source.

Research Hypotheses	Nature of data	Source of data
HP1: Profitability is negatively related to Diversifications.	Dummy Variable	Balance sheet held by NBE, and the selected Insurance companies. The data related to macroeconomic data also obtained from the records held by NBE and MOFED.
HP 2: Profitability is positively related to real GDP growth rate.	Change in growth rate in each year	
HP 3: Profitability is positively related to firm concentration level.	Sum of Market share square (HHI)	
HP 4: Profitability is negatively related to Inflation.	Consumer price index	
HP 5: Profitability is negatively related to financial Leverage.	Total debt vs Total capital and reserve	
HP 6: Profitability is positively related to Liquidity.	Current asset vs current liabilities	
HP 7: Profitability is negatively related to Reinsurance dependency.	Premium ceded vs total asset	
HP 8: Profitability is negatively related to Underwriting risk.	Net claim incurred vs Net premium earned	

CHAPTER FOUR: RESULTS AND DISCUSSIONS

4.1 Introduction

In the previous chapters, the relevant literature was reviewed in order to help this study to understand the problem and build a fitting research approach to deal with. The preceding chapter also conferred the key research design used to achieve the objectives of the study and to test the research hypotheses developed under there. In the current chapter, the study analyses the collected data by using various statistical methods and offering the results and discussion accordingly. This chapter is organized in sub sections in order to provide the result which consist of descriptive statistics, Classical Linear Regression Model (CLRM) Assumptions versus Diagnostic tests, correlation analysis and the regression results.

4.2 Results

In order to achieve the objective of the study, the researcher employed a tremendous statistical tool which help to analyze the data collected from the sampled population. The result of the study is articulated with different sections. Section is 4.2.1 presents the descriptive statistics which focuses on the distribution of the data, mean, maximum and standard deviation. Section 4.2.2 is presents tests for the classical linear regression model assumptions followed by the correlation analysis among the dependent and independent variables in section 4.2.3. The model specification, the test of selected model and the outcome of the regression result with discussion are provided in section 4.3 and 4.4 respectively.

4.2.1 Descriptive Statistics

In this section, the researcher presents the descriptive statistics of dependent and independent variables which used in this study. The dependent variable used in this study is profitability which measured by return on asset (i.e. determined by the ratio of earning before tax and interest to total asset) and explanatory variable are underwriting risk, reinsurance dependency, liquidity ratio, leverage, insurance industry concentration, diversification, growth domestic product and Inflation. The total observation for dependent and independent variable was 72 (i.e. from the data of 12 General (Non-life) insurance companies for the period of 2011 to 2016). The overall descriptive statistics that computed in the study is include mean, median, maximum, minimum and standard deviation of all

study variable. Each result of the descriptive statistics was summarized and represented in the following tables 4.1.

Table 4.1: Summary of descriptive statistics

	ROA	DIV	GDP	HHI	INF	LEV	LIQ	RED	UR
Mean	0.10	0.40	0.10	0.02	0.15	2.64	1.39	0.68	0.72
Median	0.11	0.00	0.10	0.00	0.12	2.19	1.10	0.41	0.64
Maximum	0.22	1.00	0.11	0.22	0.34	14.18	17.14	3.88	4.76
Minimum	-0.06	0.00	0.08	0.00	0.08	0.71	0.36	0.01	0.07
Std. Dev.	0.05	0.49	0.01	0.05	0.09	1.79	1.93	0.69	0.54
Observations	72	72	72	72	72	72	72	72	72

Source: Output of Eviews 9

As indicated table 4.1 above, all variables comprised 72 observations and the profitability measure used in this study namely; ROA indicates that the Ethiopian General insurance companies attained, on average, a positive before tax profit over the last six years. For the total sample, the mean of ROA was 10% with a minimum of -6% and a maximum of 22%. This indicates that the most profitable non-life insurers among the sampled insurers earned 22 cents of profit before tax for a single birr invested in the assets /premium written of the firm. On the other hand, the least profitable insurers of the sampled general insurers earned -0.06 of profit before tax for each birr invested in the assets/premium written of the firm. In addition to that, the standard deviation which analyzed through Eviews 9 software for ROA was 5% which indicates that the profitability variation between the selected insurers was very small except one of the largest government owned insurance companies which is Ethiopian insurance corporation. In context to this, Brooks, (2008) indicates that a low standard deviation shows data are very close to the mean, whereas high standard deviation shows data are spread out over a large range of values. Therefore, this result indicates that as the insurers need to optimize the premium written to increase the return on their assets.

As presented in the table 4.1, the mean values of all the variables are ranged from the minimum of 0.02 for the insurance companies' concentration ratio which measured by the

Hirschman Herfindahal Index (HHI) to a maximum of 2.64. Despite to that, the mean value for profitability (ROA) is 0.10 which indicating that, the Ethiopian non-life insurance companies are averagely observing the income before tax of 10%. The value of the standard deviation is -0.05. This indicates that the profitability of the general insurer operating in Ethiopia is varies from the mean by -5 during the selected period.

As presented in table 4.1, the first explanatory variable of the study, diversification has a minimum value and maximum value of 0.00 and 1.00 respectively. These imply that there is an insurance companies who underwrite both life and non-life insurers business line with maximum value of 1.00 and a non-life insurer with a minimum value of 0.00 during the selected period. Yet, the ratio of undiversified insurers during the selected period is 0.05 standard deviation from its mean value with 0.40. This implies that on average ratio of undiversified insurers is reported to be 40% during the review period. Therefore, we can conclude that few of the insurers operating in Ethiopia are more diversified in both life and non-life insurance business whereas ratio of undiversified insurers is 40% which shows that more diversified firms are more profitable in comparison to non-diversified firms during the selected period.

The macroeconomic variable used in this study is growth domestic product (GDP) which are also another variable of the study, as presented on the table 4.1 has an average mean value of 10% which clearly displays the average real GDP growth rate of the country's economy over the past 6 years. The maximum and minimum growth of the economy was recorded and reported during the year of 2011 (i.e. 11.2%) and 2016 (i.e.8.3%) which is 1% and 11% respectively. The table 4.1 also presents small percentage of the standard deviation which is 5% for GDP. The value of GDP across sample of selected insurance companies is the same and there is no deviation in value of GDP across the companies. However, this shows that economic growth in Ethiopia during the period of 2011 to 2016 remains reasonable stable and the result was more or less in agreement with the report that provided by the government regarding to the economic growth.

The other macro-economic variable used in the study is general inflation rate. The general inflation rate is measured by the percentage change in consumer price index in each year. As presented table 4.1 inflation rate had high standard deviation of 9% as compared to the

GDP; this implies that inflation rate in Ethiopia during the study period remains somewhat unstable. This indicates the deviation in price of the goods and service from the average mean value during the study period for six consecutive years. The mean value of the general inflation rate of the country during the past six years was 15%, which was more than that of the average real GDP growth i.e. 10%.

As per data of Minister of Finance and Economic Development (MoFed), the maximum inflation was recorded in the year of 2011 (i.e. 34.1%) and the minimum was in the year of 2015 (i.e.7.7%) which have minimum and maximum value of 8% and 34% respectively.

The other explanatory variable of the study, leverage, as demonstrated in table 4.1 has a minimum value and maximum value of 0.17 and 14.18 respectively. These indicates that there is a non-life insurer out of the selected non-life (general) insurance companies with the maximum leverage or the ratio of total liabilities to total owners' equity is 14.18 and a non-life insurer with as minimum as 0.17 ratio of total liabilities to total capital and reserve during the review period. Yet, the ratio of total liabilities to total capital and reserve has 1.79 standard deviation from its mean value with 2.64. This also indicates that general insurers are uses debt than equity for their financing purpose and also there are great differences among leveraged status that measured by debt to equity/capital ratio vis-à-vis the selected insurance companies beneath to the study under consideration.

The liquidity ratio is used as another indicator of profitability determinants of general insurance companies in this study. It is computed by dividing total current assets and total current liabilities. As presented in table 4.1 above its mean value and standard deviation is 1.39 and 1.93 respectively. This implies that deviation in liquidity ratio across the selected non-life insurance companies of Ethiopia by 1.39 from the average mean value. The overall maximum and minimum value for liquidity ratio is 17.14 and 0.36 respectively. This implies that the Ethiopian general insurance companies those have more liquid asset is more profitable than those insurance companies own less liquid asset. It also indicates the existence of large variation among the liquidity ratio for non-life insurance companies operating in Ethiopia for the study under consideration.

As shown in table 4.1 above, the independent variable, reinsurance dependency (RED) have a mean value of 0.68 and standard deviation of 0.69. The reinsurance dependence

computed by dividing the premium ceded to total asset of the companies. This implies that on average 68% percent of the gross premium collected from the customers as percentage of total asset was ceded for the reinsurance purpose. On the other hand, the minimum and maximum value of 1 percent and 3.88 percent which indicate that, the minimum ratio of premium ceded shows lower risk of dependency on reinsurance whereas the higher premium ceded shows the higher risk of dependency on reinsurance sides.

Ethiopian general insurance companies have on average 72 percent of underwriting risk measured by net claim incurred divided by annual premium earned in this study. This indicates that around 72 percent of net earned premium on average, paid for loss incurred per year by Ethiopian general insurance companies. The highest ratio of losses incurred to earned premium value was 4.76 and the minimum value for a company in a particular year was 0.07 percent. This indicates that at least seven non-life insurance business out of 12 sampled insurers is pay for claim incurred from the premium they earned in average. The standard deviation in underwriting risk for the selected samples of non-life insurance companies is 0.54. This indicates that deviation in their value of underwriting risk among the sampled non-life companies in Ethiopia from their mean value

As exhibited in the table above, the overall industry concentration ratio which measured by the sum of squared market shares of companies denoted by the HHI has an average mean value of 0.02 and standard deviation of 0.05. This implies that more concentrated insurers are more profitable than less concentrated insurance companies. On average, the non-life insurance business operating in Ethiopia's are less concentrated and they have low market share and there is low degree of competition. Despite, a more and less concentrated insurers have maximum of 0.22 and minimum of 0.00 respectively which means that a more concentrated insurance company has a profit per cents of 0.22 than less concentrated insurers.

4.2.2 Classical Linear Regression Model (CLRM) Assumptions and Diagnostic tests

Brook (2008) noted that the data validity of the regressed result of the research is maintained through the classical linear regression model CLRM assumptions in order to pinpointing the model misspecification and correcting them so as to augment the research quality. The diagnostic test is made in order to make sure that the classical linear regression

model assumption is violated or not. Therefore, in this study, an attempt is made to CLRM Assumption such as test of Heteroscedasticity, Autocorrelation, Normality and Multicollinearity in which their result is presented and discussed on the following section.

4.2.2.1 Heteroscedasticity

It is a test that made in order to check whether error terms variance is constant (homoscedasticity) or not (heteroscedasticity). Theoretically, the variance of the errors term is constant, which is known as the assumption of homoscedasticity. If the errors (disturbance) term do not have a constant variance, they are said to be heteroskedastic (Gujarati, 2004). In order to achieve this, the White test is used as most popular test of homoscedasticity (Brooks, 2008). Therefore, this study is used the white test to test the assumption of the homoscedasticity as represented in the following table 4.2. In this case, the result is presented in table 4.2 which indicates, both the F-statistic and Chi-Square versions of the test statistic gave the same conclusion that there is no evidence for the presence of heteroscedasticity in this particular study, since the p-values are considerably in excess of 0.05. Therefore, the null hypothesis that the variance of the errors is constant (homoscedasticity) should not be rejected (failed to reject). There is no problem of heteroscedasticity.

Table 4.2:Heteroscedasticity test: White test

Heteroskedasticity Test: White

F-statistic	1.112748	Prob. F(8,63)	0.3670
Obs*R-squared	8.914120	Prob. Chi-Square(8)	0.3496
Scaled explained SS	6.192554	Prob. Chi-Square(8)	0.6257

Source: Eviews Output 9

4.2.2.2 Autocorrelation: (cov(ui , uj) = 0 for i _= j)

The other basic diagnostic test assumption is the assumption of classical linear regression model is Autocorrelation. The diagnostic test for CLRM assumption of no autocorrelation was tested by this study. The assumption of no autocorrelation between the disturbances assumes that given any two X values, Xi and Xj (i≠ j), the correlation between any two ui and uj(i≠j), is zero (Gujarati, 20 04). According to Brooks (2008) it is assumed that the errors are uncorrelated with one another. Thus, if the errors are not uncorrelated with one

another, it can be concluded that, they are serially correlated (Autocorrelated). This assumption was tested by Durbin Watson (DW) test of autocorrelation. Durbin--Watson (DW) is a test for first order autocorrelation and it tests for a relationship between an error and its immediate previous value. One way to motivate the test and interpret the test statistic would be in the context of a regression of the time *t* error on its previous value.

$$ut = \rho ut\text{-}1 + vt$$

According to Brook (2008), Whereas $vt \sim N(0, \sigma^2 v)$ and ρ is the coefficient of autocorrelation. The DW test statistic has its null and alternative hypotheses. Under the null hypothesis, the errors at time *t -1* and *t* are independent of one another (the errors at time *t -1* and *t* are uncorrelated), and the alternative hypothesis says the errors at time *t -1* and *t* are independent (the errors at time *t -1* and *t* are serially correlated). Therefore:

H0: $\rho = 0$: There is no autocorrelation

H1: $\rho \neq 0$: There is autocorrelation

The DW has 2 critical values which consist of an upper critical value (dU) and a lower critical value (dL), and there is also an intermediate region where the null hypothesis of no autocorrelation can neither be rejected nor not rejected. The rejection, non-rejection, and inconclusive regions are shown on the number line in figure 4.1 below.

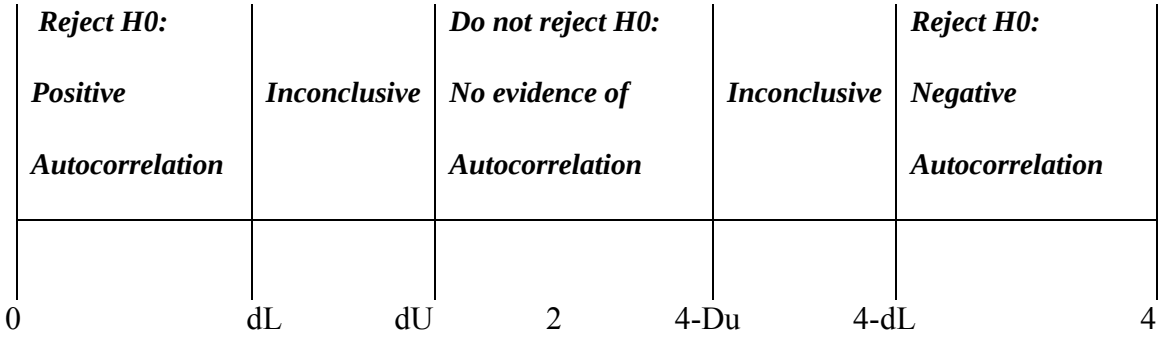


Figure 4.1: Rejection, non-rejection, and inconclusive regions for DW test

According to Brooks (2008) the following is the decision rule that undertake to reject and not to reject the null hypothesis (H_0).

- The null hypothesis is rejected and the existence of positive autocorrelation presumed if DW is less than the lower critical value dL; the null hypothesis is also

rejected and the existence of negative autocorrelation presumed if DW is greater than 4 minus the lower critical value dL;

- The null hypothesis is not rejected and no significant residual autocorrelation is presumed if DW is between the upper critical value dU and 4 minus the upper critical value dU. The null hypothesis is neither rejected or fails to be rejected if DW is between lower critical value dL and the upper critical value dU or if DW is in between 4 minus the upper critical value dU and 4 minus the lower critical value DL. The DW test table value of dL, dU, 4-dU and 4-dL at N of 72, and K of 8 for this study is presented figure 4.2 below.

Figure 4.2: Durban-Watson (DW) test result

Table 4.3: DW test result test of autocorrelation

Test	DW test statistics
DW result	1.79

Source: Output of Eviews 9

Therefore, the DW test statistic value for models used in the study was 1.79 for a total observation of 72 (6*12) for eight (8) explanatory variables. The values for the autocorrelation test are dL= 1.408, du = 1.926, 4-dU = 2.074 and 4-dL = 2.952. The DW test statistics for the model is 1.79 lies between DL which is 1.408 and DU which is 1.926 critical values on areas the null hypothesis is neither rejected nor fails to be rejected (Inconclusive region). Therefore, this indicates that there is no significance evidence for the existence of autocorrelation in the study since null hypothesis of no autocorrelation is in inconclusive region.

4.2.2.3 Normality Assumption

In order to say, the model is good the residual should be normally distributed to satisfy the classical assumptions regression model. The classical linear regression model (CLRM)

assumes that each *ui* is distributed normally with mean and standard deviation (Gujarati, 2004). In order to test the normality assumption for this study, the researcher uses Jarque-Bera (JB) test statistics.

According to Brooks (2008), Jarque-Bera (JB) uses the typical feature of a normally distributed random variable in which the entire distribution is characterized by the first two moments such as the mean and the variance. The third and fourth standardized of a distribution are known as skewness and kurtosis which are close to zero and three respectively. Whereas Skewness measures the extent to which a distribution is not symmetric about its mean value and Kurtosis measures how fat the tails of the distributed. If the residuals are normally distributed, the histogram should be bell shaped and the Jarque-Bera statistic would not be significant. This means that the p-value given at the bottom of the normality test screen should be bigger than 0.05. Therefore, the null hypothesis normality is not rejected at the 5% significance level.

As clearly exhibited in figure 4.1, the normality test for this study shows a p-value of Jarque-Bera is 0.56 which is greater than 0.05 and the histogram is also bell-shaped indicates that; the residuals of the study undertaken is normally distributed. In order to test normality assumption, the researcher also uses the hypothesis testing. The hypothesis of normality test is presented as follows:

H0: The residuals are normally distributed.

H1: The residuals are not normally disturbance

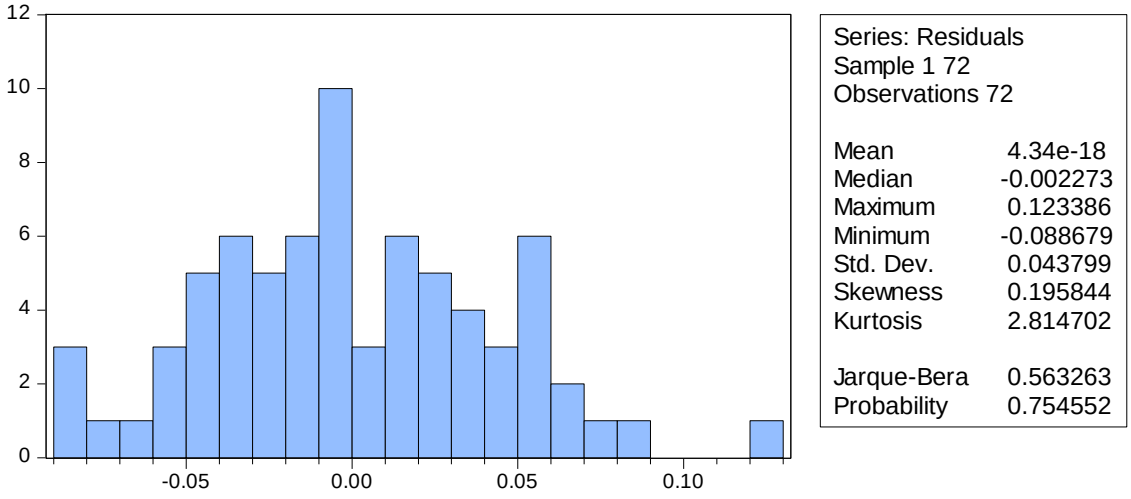


Figure 4.3: Normality Test: Residual

Source: Output of Eviews 9

4.2.2.4 Multicollinearity

According to Guajarati (2004), multicollinearity is other very important assumption of the classical linear regression model that test existence of multicollinearity among the explanatory variables which denoted by X's. Multicollinearity is occurring in a situation either an exact or approximately exact linear relationship among the explanatory variable is exist. According to Kennedy (2008), the multicollinearity problem exists when the correlation coefficient among the variables are greater than 0.70. As exhibited in table 4.4, almost in all there is no multicollinearity problem among the explanatory variables except RED and LEV which is 0.69 with the lowest correlation coefficient. This implicates the existence of the little or weak evidence of multicollinearity, but their relationship is less than 0.7. Therefore, the researcher concludes that there is no evidence for presence of multicollinearity problem in this study model.

As exhibited in the following table, almost all correlations that have occurred among explanatory variables are surprisingly weak correlations that ranged from 0.00 to 0.69. This indicates that there is no the existence of multicollinearity problem on the study. The rationale behind is that, the correlations among variables were less than 7indicating the 70% absence of multicollinearity problem (Guajarati, 2004).

Table 4.4 :Correlation Matrix for independent variables

	DIV	*GDP*	*HHI*	*INF*	*LEV*	*LIQ*	*RED*	*UR*
DIV	*1*							
GDP	*-0.04*	*1*						
HHI	*-0.27*	*0.02*	*1*					
INF	*-0.01*	*-0.22*	*0.00*	*1*				
LEV	*0.12*	*-0.07*	*0.28*	*0.13*	*1*			
LIQ	*-0.06*	*-0.19*	*-0.03*	*-0.11*	*0.00*	*1*		

RED	*0.01*	*0.14*	*0.42*	*0.24*	*0.69*	*-0.06*	*1*	
UR	*-0.13*	*0.16*	*-0.08*	*0.07*	*0.09*	*-0.03*	*-0.01*	*1*

Table 4.4: Source Eviews 9

4.2.3 Correlation Analysis

The major purpose of the correlation matrix in this particular study was in order to indicates the linear association between the dependent and independent variables. According to Brooks (2008), the correlation between two variables measures the degree of linear association between them. The values of the correlation coefficient are always lies between positive one and negative one. When correlation coefficient is positive one, it means that there is a perfect positive relationship between the two selected variables; while a correlation coefficient of negative one indicates a perfect negative association between the two variables. On the other hand, a correlation coefficient of zero indicates that there is no linear relationship between the two variables. In highlight to this, the following table 4.5 presents the correlation analysis which consist of the correlation coefficients for the variables used in the determinant of non-life insurance profitability model designed.

As presented in table 4.5, almost all the variables are correlated with profitability which is measured by ROA except underwriting risk, GDP and reinsurance dependency which have lowest correlation coefficient in comparison with other variables used in the study. Therefore, this relationship suggests first table in comparison to the nature of the relationship between independent variables and profitability (ROA).

As the correlation matrix indicates, surprisingly, diversification and industrial concentration (HHI) is the most dominant and important determinants of profitability, which is reflected in the table, with little negative and positive correlation between the two independent variables and the dependent variable (ROA). Therefore, this correlation clearly indicates that, as the company underwrite their life and non-life insurance type service based on focused strategies and less concentrated vis-à-vis to their competitor, their profitability will move to the opposite directions. In addition to that, the variables, INF and HHI indicates weak correlation with ROA of the general insurers. Table 4.5 also indicates that GDP and UR have very highly weak correlation with dependent variables.

Table 4.5: Correlation matrix of dependent and independent variables

	ROA	*DIV*	*GDP*	*HHI*	*INF*	*LEV*	*LIQ*	*RED*	*UR*
ROA	*1*								
DIV	*-0.36*	*1*							
GDP	*-0.02*	*-0.04*	*1*						
HHI	*0.30*	*-0.27*	*0.02*	*1*					
INF	*-0.19*	*-0.01*	*-0.22*	*0.00*	*1*				
LEV	*0.13*	*0.12*	*-0.07*	*0.28*	*0.13*	*1*			
LIQ	*0.13*	*-0.06*	*-0.19*	*-0.03*	*-0.11*	*0.00*	*1*		
RED	*-0.09*	*0.01*	*0.14*	*0.42*	*0.24*	***0.69***	*-0.06*	*1*	
UR	*-0.05*	*-0.13*	*0.16*	*-0.08*	*0.07*	*0.09*	*-0.03*	*-0.00*	*1*

Source: Eviews 9

4.3 Model specification and Selection: Random Versus Fixed Effect Model

All the results show that CLRM assumptions are not violated. Therefore, the ordinary least Square (OLS) regression can be properly applied in this study. To achieve an overall objective of the study, the researcher employed panel data model techniques. In highlight to the data concerned, employing both cross sectional and time series elements panel model is more suitable for this study. Thus, the selection of this methods is comparing time series and cross-sectional units of the panel data by using Hausman specification test.

As noted by Brooks (2008), there are two broad classes of panel estimator approaches that can be applied in finance and finance related researches such as fixed effects models (FEM) and random effects models (REM). The random effect model is always allowing the heterogeneity or individuality among the selected companies by allowing to have its own intercept value. It is time invariant in nature but show different value from one company to another; whereas the fixed effect model has common mean value for the intercept which is time variant. The Hausman test is conducted when the number of cross section should be greater than the number of coefficients to be estimated. Gujarati (2004) noted that if the

number of time series data (T) is large and the number of cross-sectional units (N) is small, there is a likely to be little difference in the values of the parameters which estimated by fixed effect model and random effect model. Therefore, the model choice used here is based on computational convenience by the Eviews 9 Software packages.

Therefore, in this study the Hausman specification tests is used in order to determine which model is more appropriate to fit the sample data. According to Hausman (1978), the researcher can choose between fixed effects and random effects models by running the Hausman specification test at five percent significance levels.

Therefore, the hypothesis employed for Hausman specification test is:

- Null hypothesis ($H_{0)}$): Random- effect model is appropriate
- Alternative hypothesis (H_1): Fixed-effect model is appropriate

In order to make choice among random and fixed effect model, the researcher make the decision value which provided as "if statistically significant P-value from the Hausman test is more significant only at 5% significance level, the fixed effect model is preferred instead of random effect, otherwise the random effect model is preferable." The finding from Hausman test specification indicated in the following table allow as to reject the null hypothesis that random effect model is more appropriate in the regression analysis of this study. The rationale behind is that, the p-value for Hausman test is greater than 5%, indicating that the random effects model is appropriate and that the fixed effects specification is not preferred in this particular study.

Table 4.6: Correlated Random Effect-Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	5.4067456	8	0.46221

Source: Output of Eviews 9

4.3.1 Random-Effect Regression result

Under this section, the Eviews output presents a Random-effect model (REM) regression result in order to assess the effect of explanatory variables (DIV, GDP, HHI, INF, LEV, LIQ, UR and RED) on the profitability measure by ROA of non-life insurers in Ethiopia. The table 4.7 displays random effect model regression estimation result.

Table 4.7: Profitability Model of Random Effect regression result.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.069547	0.059294	-1.172910	0.2452
DIV	-0.037963	0.011640	-3.261343	0.0018***
GDP	0.455904	0.555720	0.820384	0.4151
HHI	0.333711	0.131913	2.529779	0.0139***
INF	-0.049869	0.062065	-0.803500	0.4247
LEV	0.015348	0.004313	3.558208	0.0007***
LIQ	0.002331	0.012246	0.839719	0.4042
RED	-0.042903	0.010227	-3.03405	0.0009***
UR	-0.012392	0.011474	-1.211725	0.0039***

R-squared	0.783156
Adjusted R-squared	0.739237
Prob. (F-statistic)	0.000383
Durbin Watson stat	1.798208

****, **, and * denote significance at 1%, 5%, and 10% levels, respectively*

Source: Financial statement of sampled non-life insurers and own computation through output of E-views 9.

The linear function for the study regression equation is denoted as below:

ROA= 0.069- 0.037DIV + 0.455GDP+ 0.333HHI- 0.049INF+ 0.015LEV+ 0.0021LIQ- 0.042RED – 0.012UR

(0.0592) (0.0116) (0.5557) (0.1319) (0.0620) (0.0043) (0.0122) (0.0102) (0.0114)

R2 = 0.783 Adjusted R2 = 0.739 Prob (F-statistic) = 0.000383 DW = 1.789208

Note: The value in the parentheses are represent standard error.

As indicated in the above table, the values of the R2 and adjusted R2 is 0.783 and 0.739 respectively. This indicates that on the average, about 78.3% per cent of variations in profitability of non-life insurers in our country are explained by explanatory variables used in the model above while 21.7% of the variation in profitability is explained by other variables not included in the model. This indicates that the model is properly fit and the explanatory variables are properly selected, combined and used in the study. The null hypothesis of F-statistic (an overall test of significance) that equal to zero R2 is rejected at 1% since the p-value is low. The F-statistic is significant at 1% significance level (0.000383) which implies that indicates that profitability and its related factors selected in the study is adequately fit the model and explanatory variables are jointly significant. All the explanatory variables have jointly statistically significant impact on the profitability of general insurance business in Ethiopia. This means that there is 99.9% probability that the relationship among the variables is not due to mere chance.

As exhibited in the table 4.7, the liquidity, inflation and GDP have no statistical significance impact on profitability measured by ROA even at 0.1 significance level. The expected sign for industry concentration is consistent and leverage is contrary to the expectation of the researcher. Whereas all the other variables with exception of the researcher.

4.4 Econometric regression results and Discussion

In this section of the study, specifically the researcher analysis, discusses and interprets in detail an overall regression result of random effect model and the relationship between explanatory variables and profitability of non-life insurance. The current study shows that

all explanatory variables in the model except the growth domestic product (GDP), inflation and liquidity affects the profitability of non-life or general insurance companies operated in Ethiopia.

More specifically, the Random effects model regression result indicates that diversification (DIV), Insurance companies' concentration (HHI), Leverage (LEV), Reinsurance Dependence (RED) and Underwriting risk (UR) have statistically significant impact on profitability of the non-life insurance companies. Therefore, the current study, analyzes the statistical findings of the study in comparison to the earlier empirical evidences and study conducted on the areas. However, there are some findings that are in contrary to the expectations of the researcher. Those findings that are consistent with the result of the current study is existing in the literature and findings that are inconsistent with the existing result of the study is also presented in the literature part of this study. The discussed results are presented one by one as follows:

Diversification versus profitability of Non-life insurance companies

Diversification: A dummy variable that has a value of zero if the firm is composite which underwrite both of life and non-life insurance business, one otherwise (for companies underwrite in non-life business alone). The first independent (explanatory) variable used in this study is diversification which expected to have significant effect and it is measured by dummy. Diversification was considered to be one of the major factor that can affect the profitability of non-life business in Ethiopia. Particularly, this study found a negative impact of firm diversification on the profitability of general insurance companies. The results of the regression analysis shown in table 4.7 implies that there was a strong negative significant relationship between insurers diversifications and profitability measured by the ROA, with a regression coefficient of -0.037963, t-statistic of -3.261343 and P-value of 0.0018. This implies that diversification of insurers either as life or non-life is considered as a proper explanatory variable of profitability that measured by ROA in Ethiopian non-life insurance companies. Thus, the working hypothesis of the research which indicates, profitability measured by ROA is negatively related to diversification and it is rejected.

As indicated in literature part of this study, the findings of different studies related to impact of diversification on profitability do not show a consistent pattern in their results across the

studies in different industries and in different jurisdictions. In context to this, the negative regression result in this study was inconsistent with the findings of some previous researches such as Zhang (2015), Krivopavic *et.al., (*2017), Hussain (2012), Burca and Batrinca (2014), Pervan and Kramaric (2012); but consistent with Moro and Anderloni (2014) and Lee (2014) who found negative and significant and Datu (2016) who found negative relationship between profitability and diversification. This implies that the financial impact of diversification on firm profitability is differ from sector to sector as well as countries to countries, even from one studies to other studies. In that context, the finding of this study, the undiversified insurers underperform than diversified insurers those have underwritten both life and non-life insurance business simultaneously. Therefore, the researcher can conclude that diversification is one of the major determinant affecting the profitability of non-life insurance companies in Ethiopia.

Industry concentration ratio Versus Profitability of Non-life insurance companies

***Industry concentration ratio (HHI*)**: An industry market concentration has plays a major role in increasing the profitability of overall organization. Industry concentration is measured as the sum of squared market shares of the firms in the industry. Therefore, the industry concentration ratio in this study is measured by Herfindhal-Hirchaman Index (HHI) which is calculated as the sum of squared market share of general insurance companies in Ethiopia. This variable was statistically significant both at 1% and 5% significance level (p-value = 0.0139) in explaining the variability in profitability of non-life insurance companies in Ethiopia. The coefficient on industry concentration denoted by HHI is 0.333711 which was positive and significant in all models suggesting that more concentrated non-life insurers are able to charge higher prices, earn higher profits and they are more competent in the market than less concentrated insurers. Despite to that, the finding of the current studies implies, when a company are more concentrated by increasing their market share and competition level, the profitability measured by Return on Asset will increase by 0.0090 which showing that, a more concentrated insurer will highly profitable than less concentrated insurers.

This significant regression result was consistent with the findings of Goddard *et.al.,* (2004); Berger (1995); Berger and Hannan (1989), which suggested that industry concentration is

one of the prime determinant in order to earn or raise high profits by increasing the companies market shares. A more concentrated firm maintain superior management and increased market share to raise their profits. Despite to that, Lee and Lee (2012) and Pavic and Pervan (2010) indicates positive significant relationship between profitability and Industry concentration level (HHI) which is consistent with finding of the current study. Insurance companies in more concentrated business lines are able to charge high price and earn higher profits than companies in less concentrated lines (Pavic and Pervan, 2010). In addition to that, the finding of the current study supports MST theories. Inversely, the result of the current study is inconsistent with finding of Jovovic *et.al.,* (2016) who indicates significant relationship between profitability and industry concentration level (HHI).

The finding of this study is in agreement with a prior expectation of the Market Structure Theories that support an assumption of the Structural Conduct Performance (SCP) hypothesis which states that more concentrated sector favors high profitability and motivated by the benefits of greater market power, which reflects the setting of prices that are less favorable to consumers (high policy holders, higher Gross Written Premium) as a result of competitive imperfections in these markets (monopoly profits). That means, when the companies are more concentrated they are more profitable. Accordingly, the findings of the regression result demonstrate industry concentration ratio as a vital driver of profitability determinants among the Ethiopian general insurance companies'.

Real GDP growth rate versus profitability of non-life insurance companies

Real Growth Domestic Product (GDP): Gross domestic product is defined as the total value of goods and service produced by an economy at national's level in particular country for a given period of time (Ayele and Sambasivam, 2013). GDP is measured based on annual economic growth changes or rates (Doumpos et.al., 2012). Therefore, the above exhibited table 4.7 show the positive coefficient (0.455904) of growth domestic product (GDP). But it is statistically insignificant determinants with the profitability for non-life insurance companies operating in Ethiopia with the probability value of (0.4151). As indicated in the literature reviews part of this study, GDP is expected to have a positive effect on the insurance companies' profitability. Because, the overall economic development of a country is always used to improve the nation living standards by

increasing their levels of income and purchasing power. The result of regression output in this study is consistent with some of the previous studies. For instance, Pervan and Kramaric (2012), Daare (2016), Suyehli (2015), Doumpas *et.al.,* (2012), Mistire (2015), Meaza (2014) and Hana (2015) states that GDP has positive coefficient and statistically insignificant with the profitability which measured by ROA. Whereas Kozak (2011), Daare (2016), Mistire (2014), Demis (2016) and Asrat and Tesfahun (2016) states that there is positive and significant relationship between GDP and profitability of the insurance companies. Therefore, the finding of the current study is in line with that of previous studies in which coefficient is positive and the probability value is insignificant that implies GDP is not a prime determinant of profitability among Ethiopian General insurance companies.

Inflation versus Profitability of Non-life insurance companies

Inflation: Inflation refers to changes in the overall level of prices within economy which consequently leads to the erosion of the domestic currency**.** The inflation is commonly measured by calculating the percentage change in the overall level of prices over a period as measured by price index such as Consumer Price Index (CPI). In highlight to this, the existence of high or low inflation have its own impact on insurers financial performance. While high inflation by itself may increase claims of the insurers and the low inflation may decrease an amount of claim the insurers pays for the insured. But, the impacts of inflation are not the same across the developing and developed countries. As indicated in the regression output of the study in table 4.7 above, the coefficient of Inflation rate (INF) measured by change in annual inflation is -0.049869 and its probability value (P-Value) is 0.4247. This may be interpreted as holding other factor (variables) constant at their average value, when inflation (INF) decreased by one percent, the profitability which measured by ROA of sampled Ethiopian non-life insurance companies would be decreased by -0.049869 percent but it is statistically insignificant. The result of the current study is in line with the finding of the previous studies conducted in developing countries such as Lee (2014), Asrat and Tesfahun (2016), Meaza (2015), Hadush (2012) Suyehli (2015), Pervan and Kramaric (2012) and Teklit and Jasmindep (2017), and developed countries such as Lee (2014) and Daare (2016) those states that, inflation is negatively related to the profitability of insurance companies but it is statistically insignificant. This implies that inflation is insignificant and

it is not a prime determinant of profitability among the non-life insurance companies in Ethiopia.

Liquidity versus profitability of Non-life insurance companies

Liquidity: It is a measure of the capability of an insurer to fulfil their immediate commitment or pay their liabilities to policyholders and other creditors without having to increase profits from the underwriting activities and investment activities and/or liquidate financial assets when they due. In comparison to other financial institutions, an insurance companies are fail into some unexpected events which have adverse effect on their profitability due to lack of excess cash or illiquidity.

As indicated in the table 4.7 above, the regression result of random effect model of this study, the liquidity ratio of Non-life insurance business in Ethiopia has positive and statistically insignificant impact on profitability measured by the Return on Asset (ROA) with the p-value of 0.4042 and coefficient of 0.002331. However, this is consistent with the expectation of the researcher and it pinpoints the same conclusion with some of the previous studies finding such as Daare (2016); Mwangi and Murigu (2015) and Kazeem (2015). In contrary, some of the previous study conducted by Teklit and Jasmindep (2017), Mehari and Aemiro (2013), Malik (2011) and Burca and Batrinca (2014) also found negative and insignificant relationship between profitability and liquidity. Furthermore, the result of the current study is consistent with the argument of the above different studies. But the result of the regression observed in this study indicate that liquidity is not key determinant of non-life insurance companies' profitability in Ethiopia. Therefore, the positive sign implies that the insurers who has higher current ratio will bring higher profits for their firms and increase insurance companies' ability to pay claims incurred to policy holder and creditors by increasing their profitability.

Reinsurance Dependence Versus profitability of Non-life insurance companies

Reinsurance Dependence: Reinsurance is a way in which an insurer can recover a part of the claims they pay out, from the reinsurer in order to reduces the risk of the failure occurs from the large events. It is a measure of the companies' ability to bear risks. Insurance

companies underwrite the risk of other companies but to mitigate their own risk, these insurance companies use reinsurance.

As exhibited in table 4.7 the beta value (coefficient) of reinsurance dependence which measured by the ratio of premiums ceded in reinsurance to total asset was statistically significant and has negative impact on profitability which measured by ROA at 1% significance level (p-value = 0.0009) which implies that increase reinsurance dependence on the non-life reinsurers will leads to decline profitability negatively. This implies that increment of the reinsurance dependency is highly influence the profitability of Ethiopian General insurance companies. Therefore, the result of the current study is also created controversy with that of the previous studies conducted in Ethiopia and other jurisdictions. For instance, Boyjoo and Ramesh (2017) in Mauritius, Mistire (2015), Suyehli (2015), Asrat and Tesfahun (2016) and Demis (2016) in Ethiopian, found negative and insignificant relationship between profitability and reinsurance dependence among general insurance companies which implies that reinsurance dependence is not prime determinant of profitability in Mauritius and in Ethiopia during they conduct their studies. In contrary to that, Lee (2014) and Iqbal *et al.,* (2013) found a significant and negative relationship between reinsurance dependence and insurance profits. Furthermore, Iqbal *et.al.,* (2013) states that reinsurance utilization improves the performance of the firm while the reinsurance dependence and exposure of reinsurance reduce its performance which measured ROA. Therefore, the result that obtained in the current study is consistent with the result of Iqbal *et.al.,* (2013) and Lee (2014) which is statistically significant and negatively related to the profitability. Despite, the result obtained in the current study implicates that, when the companies reducing the amount of premium ceded it will help the insurers to increase their profitability and vice-versa.

Leverage Versus Profitability of Non-life insurance companies

Leverage: The financial leverage is a measure of companies' long term financing and it is calculated as the percentage of total debt to total equity value (Capital and reserve) of the company. The regression output of the random effect model exhibited in table 4.7 above indicates that financial leverage as measured by ratio of total debt to total capital and

reserve have statistically significant positive impact on profitability of non-life insurance companies operating in Ethiopia with the p-value of 0.0007 and coefficient of 0.015348.

Therefore, this result implicates that the null hypothesis of the study is rejected, since the t-statistic value is less than 0.05. Thus, the profitability of Ethiopian general insurance companies will be influenced by the companies an overall financing decision which leads us to reject the working hypothesis of this study for profitability that measured by the ROA which are positively related to firm financial leverage.

The regression finding of the current study is consistent with some existing findings in the previous literature such as Malik (2011), Sumaira and Amjad (2013), Ayele and Sambasivam (2013), Jovovic *et.al.,* (2014) and Mehari and Aemiro (2013) have revealed that financial leverage as represented by the ratio of total debt to total equity finance statistically significant impact on general insurers operating in Ethiopia. In this context, there are also some findings in the literature which are inconsistent with the finding of the current study. For instance, Teklit and Jasmindeep (2017) and Kazeem (2015) indicates that profitability measured by ROA is positively influenced by firm's financial leverage decision. According to Pervan and Kramaric (2012) a large insurance companies who has high total gross written premium have a higher leverage ratio. Despite of contradicting findings, the result of this study clearly implies that insurance companies with high leverage ratio have higher return on assets than with that of low leveraged non-life insurance companies in Ethiopian context.

Underwriting risk Versus Profitability of Non-life insurance companies

Underwriting risk: Underwriting risk is the risk of loss and adverse changes in the value of insurance liabilities which occur due to inadequate pricing, inadequate amount of premium written by the companies and lack clear determination in their provisioning. It is measured through loss rate which measure the productivity of the underwriting activity undertaken in the insurance business. The regression result above also shows that underwriting risk which measured by net claim incurred to earned premiums was statistically significant and has negative impact on profitability of general insurance companies in Ethiopia. This result is in accordance with the result expected by the researcher and consistent with many results in the literature. For instance, Asrat and

Tesfahun (2016), Mistire (2015), Meaza (2014), Demis (2016), Mehari and Aemiro (2013), Suyehli (2015), Saeed and Khurram (2015), Datu (2016), Lee (2014), Burca and Batrinca (2014), Malik (2011) and Kazeem (2015) who found negative and significant relationship between profitability and underwriting risk. Therefore, this argument is proved that underwriting risk or loss ratio has inversely affect the profitability of general insurance companies operating in Ethiopia.

The finding of the current study indicates that understanding root cause of underwriting risk will help general insurance operating in Ethiopia to accurately estimate the future claims or losses and expenses and thereby correctly price the insurance contracts provided by their companies. In addition to that, high claims ratio or underwriting risk indicates that, the premium rates are too low for the level of risk or that the claims experience has deteriorated and the company profitability will be endangered. Generally, the reduction of the underwriting risk will definitely help the insurers to sustainably increase the profitability, as result of its negative relationship with return on asset (ROA). The rationale behind is that, high underwriting risk has negatively influence insurers company's profitability and financial stability by leading the insurers to higher unexpected payments or expenses. Therefore, the researcher concluded that high claim ratios indicates premium rate are too low, for a given level of risk and companies' profitability will be endangered, whereas the low claim ratio indicates an insurers are underwriting profitable business.

Table 4.8: Summary and comparison of hypothesized test and actual impact

Independent variables	Measurement	Hypothesized	Actual impact	Hypothesis Status
Diversification	1 if non-life insurance or 0 if it is composite insurers.	Negative and significant	Negative and significant	Rejected
GDP	Growth rate in each year	Positive and significant	Positive and insignificant	Failed to reject
Industry concentration (HHI)	Sum of Market share Square	Positive and significant	Positive and significant	Rejected

Inflation	Consumer price index	Negative and significant	Negative and insignificant	Failed to reject
Leverage	Total debt vs Total capital and reserve	Negative and significant	Positive and significant	Rejected
Liquidity	Current asset vs current liabilities	Positive and significant	Positive and insignificant	Failed to reject
Reinsurance Dependency	Premium ceded vs total asset	Negative and significant	Negative and significant	Rejected
Underwriting risk	Net claim incurred vs Net premium earned	Negative and significant	Negative and significant	Rejected

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The previous chapter presented the results and discussion, while the current chapter deals with the conclusions and recommendations based on the findings of the study. Accordingly, this chapter is organized into two sub-sections. The first section presents the conclusions and the second presents the recommendations.

5.2 Conclusions

Profitability is the central issues to the company's overall operational activities. Improving the company's financial performance is highly contributing to the development of the country economy. Recently there is highly an increasing interest in research on profitability of the companies. Nevertheless, major determinants of profitability in the insurance companies are not well understood in the current different finance literatures in both developed and less developed countries because profitability determinants are not the same from one country to another country; even from one sector to another sectors. In some countries, the firm-specific factor are highly affects profitability of the organizations whereas industry-specific and macroeconomic factor are most powerful determinants of profitability in some or other countries. Besides, different firm-specific operational environments, overall industry condition and macro-economic environment are one of the main causes and consequences of the profitability variation and determination among the non-life insurance companies. The basic question is what is the perceived determinants of profitability and how can we identifying and measure these perceived profitability determinants for general insurance business? To answer this, a large body of research has attempted to identify these factors; however, the findings of prior empirical studies have provided varying evidence related to the impact of those factors on insurance companies' profitability measured by Return on Asset (ROA). Besides, the majority of these studies have been conducted in developed countries that have many institutional similarities and developed regulatory framework, but few studies are conducted in developing countries like Ethiopia.

In light of the above, the major purpose of this study was to investigate the relationship between profitability and firm specific (firm financial leverage, reinsurance dependency, firm liquidity, and underwriting risk), industry-specific (diversification and insurance

industry concentration level) and macro-economic (real GDP growth rate and consumer price index or inflation) determinants of profitability of non-life insurance business operating in Ethiopia. In order to achieve the meant objective, the study used only quantitative research approach and correlational explanatory research design which based on philosophical assumption of positivist research paradigm. The non-probabilistic purposive sampling technique were used to select the insurers based selection criteria designed by the researcher. The secondary data used in the study were collected through survey of document reviews from a sample of twelve insurance companies over the time period from 2011 to 2016 for six consecutive years. The collected data were analyzed by employing multiple regression OLS model through statistical package of EVIEWS 9 software.

In order to conduct the empirical analysis, only one dependent variable, profitability(ROA), and eight independent variables were selected from prominent previous research works on profitability determinants of non-life insurance; namely underwriting risk, reinsurance dependency, firm financial leverage, liquidity of firm, Insurance industry concentration ratio (Herfindahl-Hirschman Index) (HHI)), Firm diversification, real GDP growth rate and inflation. In context to this, the results of the random effect estimation model showed the existence of the following relationship between profitability and the selected independent variables.

The diversification had statistically significant negative relationship with the profitability, which was in line with prior expectation of the working hypothesis. The leverage had a positive and statistically significant relationship with ROA, which was inconsistent with the working hypothesis or expected sign. The result suggests that liquidity of the company's will not influence the profitability of non-life insurance companies in Ethiopia during the selected period.

Concerning to the effect of industry concentration ratio (Herfindahl-Hirschman Index) on profitability of non-life insurance companies in this study, the result shows that there was positive and statistically significant relationship with profitability which is in line with the Structural Conduct Performance (SCP) theory and the working hypothesis.

Furthermore, the results of study indicated that industry concentration level had statistically positive significant relationship with profitability which was in line with expected sign.

As exhibited in the regression result, reinsurance dependency found to have significant and negative relationship with the profitability of Ethiopian non-life insurers. Besides, the result of this study indicated that underwriting risk had statistically significant and negatively related with profitability.

The influence of macroeconomic variable such as real GDP growth rate is positive and statistically insignificant. The nexus between real GDP growth rate and profitability in non-life insurance companies in Ethiopia are insignificant. Furthermore, the results of study indicated that inflation (Consumer Price Index) had statistically insignificant and negatively related with profitability. This result was also consistent with issues indicated in literature part and other empirical studies which reveals insignificant impact.

In conclusion, the major finding of the study indicates that firm financial leverage, diversification, industry concentration ratio, reinsurance dependency and underwriting risk are the most determinant influence non-life insurance companies' profitability in Ethiopia. However, there were no support of firm liquidity, real GDP growth rate and Inflation impact on profitability of non-life insurance companies in Ethiopia. In some extent, the results of the current study confirm that Market structure theory particularly Structural Conduct Performance and the Modern Portfolio theory are relevant theory in Ethiopian general insurance companies.

5.3 Recommendations

5.3.1 General Recommendation

The analyses and discussion indicated that, the variables of firm financial leverage, reinsurance dependency, underwriting risk, diversification and industry concentration ratio were significantly related to the profitability of the non-life insurance business in Ethiopia.

Based on the result, it is noted that undiversified insurers who underwrite general insurance business alone is less profitable than diversified insurers those underwrite both life and general insurance business. Therefore, it is recommended that, the Ethiopian insurance companies should expand their operation with different line to achieve superior profitability, since the profitability of undiversified insurers are negatively affected in

Ethiopian context. Despite, the study strongly recommends the management of insurance companies to design strategies that help the companies to diversify their line in both life and non-life insurance business instead of underwriting with one line in order to improve the overall profitability. For instance, establishing the strategies that maintain and consider the overall companies' operation and comparing with the companies operated in different lines. The management should consider as diversifying their firms are to focus on more line of business.

The study found that, a more concentrated non-life insurer will highly profitable than less concentrated non-life insurers. Therefore, the researcher recommends non-life insurance companies operating in Ethiopia as they should more concentrated in order to have largest market share and earn superior profitability. Furthermore, this study found that Ethiopian non-life insurers are more focus on external financing than the internal financing.

This study also found that high claims ratio indicates that, the premium rates are too low for a given level of risk and the company profitability will be endangered. Therefore, the researcher recommends the non-life insurers should try to minimize the influence of underwriting risk by adopt a risk management strategy that looks at the link between all aspects of the company's business line, better actuarial and risk analysis, better risk differentiation strategy, better pricing, and better retention to achieve superior profitability by increasing the insurers premium rates. Furthermore, when the amount of premium ceded is reduced it will help the insurers to increase the profitability. In context to this, the study recommends that the management none-life insurance business should give high attention on the reinsurance dependency since it is negatively affect the profitability of non-life insurance business operating in Ethiopia.

Generally, the current study concluded that the firm and industry specific factors are mostly determine the profitability of non-life insurance companies in Ethiopia. In addition to that undiversified insurer underperform than diversified insurers, so it is recommended that the board and management of non-life insurance company should give high attention on both firm and industry specific related factors by considering the way they underwrite both life and non-life insurance product instead of focusing on one product alone. Despite to that, the management of the companies should give attention on firm specific factors affecting

profitability such as underwriting risk, reinsurance dependency and the firm financial leverage.

Finally, this study particularly examined some firm specific, industry specific and macro-economic profitability determinants of non-life insurance companies in Ethiopia because short time frame which leads this study to small sample size and resource limitation. Thus, future research may be conducting more researches on the areas particularly by considering some variable such as branch expansion, regulation, and ownership to identify which variables are the powerful determinants of profitability. Despite, the further research should investigate the profitability determinants of life insurance business by using the same variable used in the current study. Therefore, this study explained only 78.3% of variation in profitability, other researchers shall identify and clarify the path for including other variables.

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Appendix

Appendix 1: Regression output from Eviews

Dependent Variable: ROA
Method: Panel EGLS (Cross-section random effects)
Date: 08/31/17 Time: 22:55
Sample: 2011 2016
Periods included: 6
Cross-sections included: 12
Total panel (balanced) observations: 72
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.069547	0.059294	1.172910	0.2452
DIV	-0.037963	0.011640	-3.261343	0.0018
GDP	0.455904	0.555720	0.820384	0.4151
HHI	0.333711	0.131913	2.529779	0.0139
INF	-0.049869	0.062065	-0.803500	0.4247
LEV	0.015348	0.004313	3.558208	0.0007
LIQ	0.002331	0.032776	0.839719	0.4042
RED	-0.042903	0.012246	-3.503405	0.0009
UR	-0.012392	0.210227	-2.211725	0.0039

Effects Specification	S.D.	Rho
Cross-section random	0.004555	0.0109
Idiosyncratic random	0.043381	0.9891

Weighted Statistics			
R-squared	0.783156	Mean dependent var	0.099730
Adjusted R-squared	0.739237	S.D. dependent var	0.054020
S.E. of regression	0.046179	Sum squared resid	0.134348
F-statistic	4.269841	Durbin-Watson stat	1.798207
Prob(F-statistic)	0.000383		

Unweighted Statistics			
R-squared	0.724906	Mean dependent var	0.102976
Sum squared resid	0.173621	Durbin-Watson stat	1.363505

Appendix:2 Heteroskedasticity Test: White

F-statistic	1.112748	Prob. F(8,63)	0.3670
Obs*R-squared	8.914120	Prob. Chi-Square(8)	0.3496
Scaled explained SS	6.192554	Prob. Chi-Square(8)	0.6257

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares

Date: 09/01/17 Time: 01:39
Sample: 1 72
Included observations: 72

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000532	0.001804	0.295090	0.7689
DIV^2	5.07E-05	0.000118	0.427836	0.6702
GDP^2	-7.46E-05	0.000181	-0.411882	0.6818
INF^2	-2.47E-06	1.52E-05	-0.162444	0.8715
HHI^2	-3.34E-06	9.05E-06	-0.368964	0.7134
LEV^2	-0.007326	0.039359	-0.186121	0.8529
LIQ^2	0.067332	0.168169	0.400381	0.6902
RED^2	0.003218	0.008403	0.382988	0.7030
UR^2	0.001730	0.065554	2.639558	0.1045

R-squared	0.528078	Mean dependent var	0.001892
Adjusted R-squared	0.125444	S.D. dependent var	0.002566
S.E. of regression	0.002550	Akaike info criterion	-8.988912
Sum squared resid	0.000410	Schwarz criterion	-8.704328
Log likelihood	132.6008	Hannan-Quinn criter.	-8.875618
F-statistic	1.112748	Durbin-Watson stat	2.069515
Prob(F-statistic)	0.367013		

Appendix 3: Correlated Random Effects - Hausman Test

Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	5.4067456	8	0.46221

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
DIV	0.012931	-0.037963	0.002304	0.2890
GDP	0.726798	0.455904	0.029478	0.1146
HHI	1.633862	0.333711	0.903427	0.1714
INF	-0.016187	-0.049869	0.000541	0.1476
LEV	0.020618	0.015348	0.003234	0.0030
LIQ	0.001640	0.002331	0.770846	0.6036
RED	-0.064464	-0.042903	0.000145	0.0736
UR	-0.009860	-0.012392	0.000027	0.6264

Cross-section random effects test equation:
Dependent Variable: ROA
Method: Panel Least Squares
Date: 08/31/17 Time: 23:50
Sample: 2011 2016
Periods included: 6
Cross-sections included: 12
Total panel (balanced) observations: 72

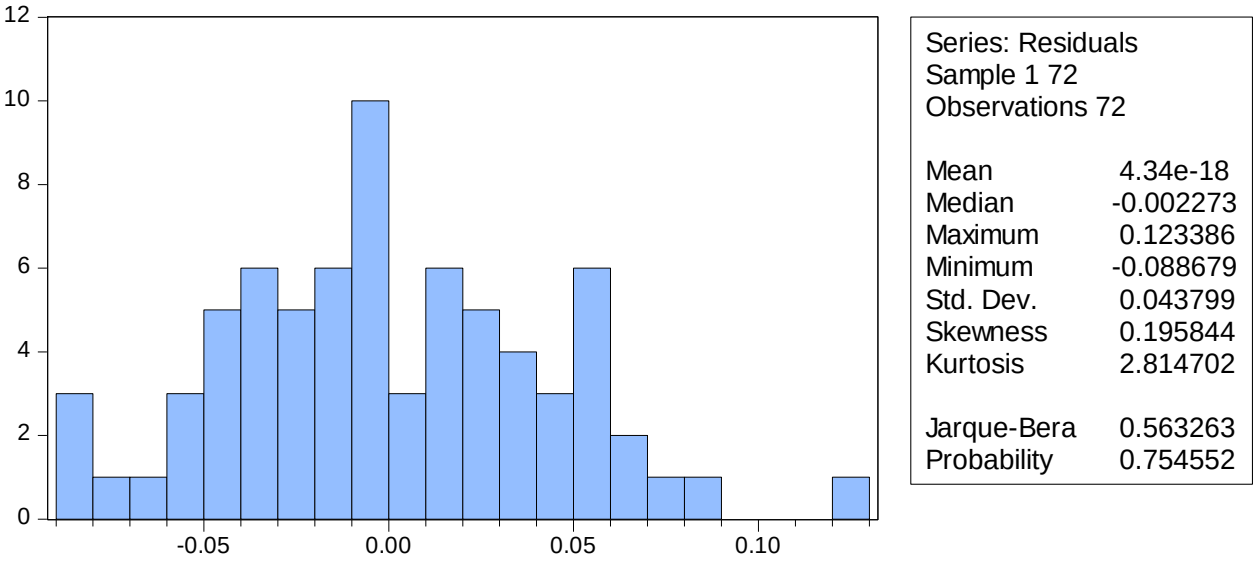
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.005461	0.069758	-0.078283	0.9379
DIV	0.012931	0.049393	2.261803	0.0279
GDP	0.726798	0.581638	1.249571	0.2171
HHI	1.633862	0.059597	2.702653	0.0094
INF	-0.016187	0.066279	-0.244224	0.8080
LEV	0.020618	0.004665	4.419690	0.0001
LIQ	0.001640	0.003078	0.532734	0.5965
RED	-0.064464	0.017182	-3.751745	0.0004
UR	-0.009860	0.011474	-2.859316	0.0134

Effects Specification

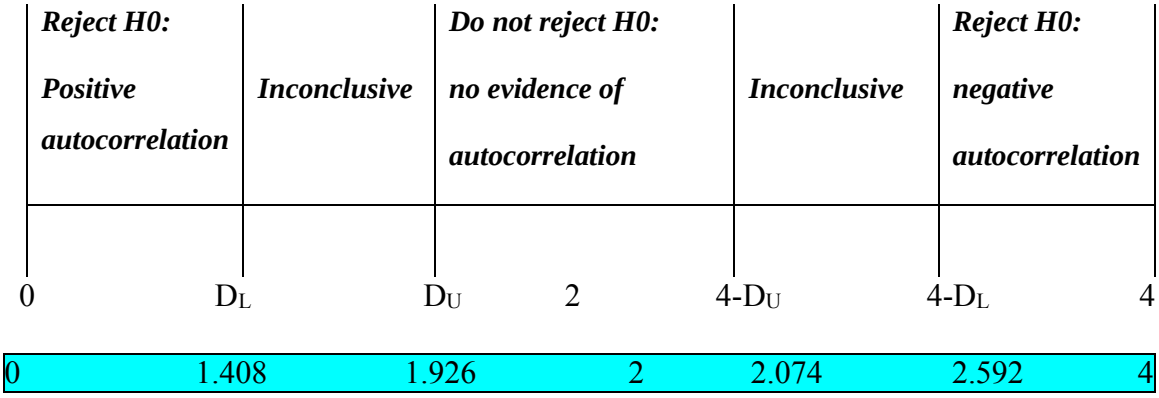
Cross-section fixed (dummy variables)

R-squared	0.803654	Mean dependent var	0.102976
Adjusted R-squared	0.746721	S.D. dependent var	0.054534
S.E. of regression	0.043381	Akaike info criterion	-3.207467
Sum squared resid	0.097858	Schwarz criterion	-2.575060
Log likelihood	135.4688	Hannan-Quinn criter.	-2.955704
F-statistic	3.168508	Durbin-Watson stat	2.068330
Prob(F-statistic)	0.000508		

Appendix 4: Normality test



Appendix: 5 Durban Watson test



Appendix 6: List of companies in Ethiopia

S/N	Name	Established Date	Type	Ownership
1	Ethiopian Insurance Corporation	1975	General	Governmental
2	Africa Insurance company S.C	1/12/1994	General	Private
3	Awash insurance company S.C	1/10/1994	General	Private
4	National Insurance co. of Ethiopia S.C	23/09/1994	General	Private
5	Nyala Insurance company S.C	6/1/1995	General	Private
6	Nile Insurance company S.C	11/4/1995	General	Private
7	The United Insurance S.C	1/4/1997	General	Private
8	Global Insurance Company S.C	11/1/1997	General	Private
9	Nib Insurance Company S.C	1/5/2002	General	Private
10	Lion Insurance Company S.C	1/7/2007	General	Private
11	Oromia Insurance Company S.C	26/01/2009	General	Private
12	Abay Insurance Company S.C	6/7/2010	General	Private
13	Berhan Insurance Company S.C	24/05/2011	General	Private
14	Tsehay Insurance Company S.C	8/3/2012	General	Private
15	Ethio life and General Insurance Co. S.C	23/10/2008	life and General	Private
16	Lucy Insurance Company S.C	1/10/2012	General	Private
17	Bunna Insurance Company S.C	21/05/2013	General	Private