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FACTORS AFFECTING PROFITABILITY OF INSURANCE COMPANIES IN ETHIOPIA

By

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A THESIS SUBMITTED TO ST. MARY'S UNIVERSITY SCHOOL OF GRADUATE STUDENTS TO THE DEPARTMENT OF ACCOUNTING AND FINANCE IN PARTIAL FULFILLMENT FOR THE REQUIREMENTS OF THE DEGREE OF MASTER OF SCIENCE IN ACCOUNTING AND FINANCE

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Declaration Statement

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

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Accounting and Finance

This is to certify that the thesis entitled, Factors affecting the profitability of insurance companies in Ethiopia: A case prepared by Tadelech Lashetew. The thesis is submitted in partial fulfillment of the requirements for the degree of Master of Accounting and finance, complies with the regulations of the university, and meets the accepted standards concerning originality and quality.

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List of Acronyms

AGE- Age of companies

APT- Arbitrage Pricing Theory

BLUE-Best Linear Unbiased Estimators

CLRM- Classical Linear Regression Model

DW-Durbin–Watson

ELIG-Ethio life and general insurance

GDP- Gross Domestic product

JB- JarqueBera

I- Inflation

LIQ- Liquidity

MKS- Market share

MPT- Modern Portfolio Theory

NBE- National Bank of Ethiopia

OLS- Ordinary Least Square

RED- Reinsurance dependence

RESET-Regression Equation Specification Error Test

ROA- Return on assets

ROE- Return on equity

ROI- Return on investment

ROIC- Return on invested capital

SIZE- Size of companies

VOC- Volume of Capital

URR- Underwriting risk

WLS Weight least square

ABSTRACT

Insurance is one of the major risks of justifying mechanisms in the modern economy. The existence and survival of financially strong insurance companies are therefore predictable. For insurers to be reliable and financially sound, their profitability and most importantly knowing what factors make them profitable is a very vital objective. To achieve this objective, this study used a quantitative research approach using Panel data covering five years period from 2014–2018 for seventeen insurance companies. The study used a linear regression model to see the effect of independent variables, which were the factors under study, on dependent variable profitability peroxide by ROI. Data were analyzed with software Eviws8. The findings of the study showed that reinsurance dependency, Market share, gross domestic product, and inflation is positively and significantly affect profitability and volume of the capital is negatively and significantly affect the profitability of insurance companies in Ethiopia, while the size of the company, age of the company, liquidity and underwriting risk is positively and insignificantly affect the profitability of insurance companies in Ethiopia. The study provides evidence that the company volume of capital, market share, reinsurance dependency, and inflation and GDP are important factors affecting the profitability of insurance companies in Ethiopia. Therefore, the study recommends that Ethiopian insurance companies should give due consideration to these factors to address profitability issues.

Keywords: Factors of profitability, firm-Specific/micro factors and macro Factors, and linear regression model.

CHAPTER ONE

1. INTRODUCTION

1.1 Background of the study

Insurance is a contract, represented by a policy, in which an individual or entity receives financial protection or compensation against losses from an insurance company. The company pools clients' risks to make payments more affordable for the insured.

People seek security; a sense of security may be the next basic goal after food, clothing, and shelter. An individual with economic security is fairly certain that he can satisfy his/her needs (food, shelter, medical care, and so on) in the present and the future. Economic risk (which we will refer to simply as risk) is the possibility of losing economic security. Most economic risk derives from variation from the expected outcome (Collier, 2009).

Insurance company business that provides coverage, in the form of compensation resulting from loss, damages, injury, treatment, or hardship in exchange for premium payments. The company calculates the risk of occurrence then determines the cost to replace (pay for) the loss to determine the premium amount.

Insurance companies fall into two categories: Life Insurance which includes life savings, accident indemnity, hospitalization Insurance, and many others and also Non-Life Insurance/General Insurance includes fire, property, theft, public liability, engineering, and many other.

The importance of insurance in modern economies is unquestioned and has been recognized for centuries. Insurance is practically a necessity for business activity and enterprise. But insurance also serves a broad public interest far beyond its role in business affairs and its protection of a large part of the country’s wealth. It is the essential means by which the disaster to an individual is shared by many, the disaster to a community shared by other communities; great catastrophes are thereby lessened, and, it may be, repaired(Sisay, 2015).

In developed economies, the insurance business is seen as the backbone of any country’s risk management system, since it ensures financial security, serves as an important component in

financial intermediation. Because of their role as intermediaries the determinants of performance of insurance companies are considered important(Hindeya Zekarias, 2017).

The best performance of any industry in general and any firm, in particular, plays the role of increasing the market value of that specific firm coupled with the role of leading towards the growth of the whole industry which ultimately leads to the overall success of the economy. Measuring the performance of financial institutions has gained the relevance in the corporate finance literature because as intermediaries, these companies in the sector are not only providing the mechanism of saving money and transferring risk but also helps to channel funds appropriately from surplus economic units to deficit economic units to support the investment activities in the economy (Birhan, 2017).

Having the above, Insurance companies are the ones that play a significant role in the service-based economy and its services are now being integrated into the wider financial industry. Insurance companies (both private and public) consisting the organizations which provide life, fire, accident, causality, and many other forms of insurance. The main objective of all insurance companies in maximizing their profit because one goal of financial management is to maximize the owner`s wealth and profitability is very important determinants of performance(Birhan, 2017).

The history of insurance service in Ethiopia was as far back as the modern form of banking service, which was introduced in 1905. At the time, an agreement was reached between Emperor Menelik II and a representative of the British owned National Bank of Egypt to open a new bank in Ethiopia. Similarly, modern insurance service, which was introduced in Ethiopia by foreigners, mark out their origin as far back as 1905 when the bank of Abyssinia began to transact fire and marine insurance as an agent of a foreign insurance company(Gashaw, 2012).

The Ethiopian insurance industry does not have a long history of development despite the country’s long history of civilization. Although people have been using 'Edir' and 'Ekub' for ages in Ethiopia, insurance in its modern form can hardly be traced beyond the 1920s. Historically the first insurance business was transacted in Ethiopia by the Bank of Abyssinia which began operation in 1905 during the reign of Minilik II that served as an agent to a foreign company(Sharew & Fentie, 2018).

The role of insurance as a financial intermediary is particularly important in countries like Ethiopia with low levels of financial penetration. Insurance companies play a large role in the service-based economy. The financial guarantee services that insurance companies are now being integrated into the wider financial industry. Insurance companies (both private and public) provide fire, marine, accident, causality, and many other forms of insurance. As of January 2020, there are 17 public and private-owned insurance companies with their branches increased to 532 operate in Ethiopian (National Bank of Ethiopia, 2018).

Profitability is one of the most important strategic objectives of financial institutions because the healthiest financial industry is reflected by the maximization of owners' wealth and profitability(G/Michael, 2018).

Profitability is a very important measure of performance. A business that is not profitable cannot survive. Conversely, a highly profitable business can reward its owners with a large return on their investment(Horsa, 2019). Hence, the ultimate goal of a business entity is to earn profit to make sure the sustainability of the business in prevailing market conditions. Although there are numerous approaches, generally, insurers' profitability is estimated through the examination of premium and investment income and of the underwriting results or the overall operating performance. In general, the important role that insurance companies play in an economy entails their financial strength and survival.

Specifically, this paper aims to study the impact of the company's size, age of the company, liquidity, the volume of capital, underwrite risk, reinsurance dependency, market share, the growth rate of GDP, and inflation rate on the profitability of insurance companies.

1.2 Statement of the Problem

Making a profit is an essential prerequisite for the increasing competitiveness of a company. Besides, profit attracts investors and improves the level of solvency, and thus, strengthens consumers' confidence. The financial analysis of insurance companies serves as an important tool used by actuaries in the process of Decision-making on underwriting and investment activities undertaken by them. Their financial performance is also relevant within the macro factor context since the insurance industry is one of the financial system components fostering economic growth and stability. Therefore, the factors affecting an insurance company's

profitability have attracted the interest of academicians, practitioners, managers, regulatory bodies, and policymakers (Kebede, 2016).

There are many factors affecting insurance companies' profitability in Ethiopia like internal such as the size of the company, age of the company, liquidity, Volume of Capital, underwriting risk, reinsurance dependency, market share, and external factors like the macro factor Growth rate of GDP and inflation rate. The absence of empirical studies in the profitability of insurance companies concerning the profitability and then what motivates the research to put my contribution to the other was studied.

Hence, these are important issues to be investigated for the insurance managers, professionals, regulators, and policymakers to support the sector in achieving the profitability of insurance companies. While taking into consideration the absence of empirical inquiry into factors that affect the profitability of insurance companies in Ethiopia, this will attempt to work on such unseen and untouched empirical evidence of the insurance company. The study's main objective was to identify and to what are factors affecting the profitability of insurance companies in Ethiopia.

Therefore factors affecting the profitability of insurance companies have been adequately investigated in this paper believes that to extended prior research and contributes to the literature on the factors affecting the profitability of insurance companies in different approach i.e. by adding important variables to both company micro factors and macro factors in previous studies and understanding the key factors and its magnitude affecting profitability assists managers in developing an effective profitability strategy for their company.

Finally, the above issues motivated the research to put some sort of contribution to what factors are affecting profitability insurance companies in Ethiopia. While taking the importance of the issue of factors affecting the profitability of the insurance industry, this paper was trying to examine macro factors and firm/micro factors that influence profitability in Ethiopian insurance companies.

1.3. Objectives of the study

1.3.1. General objective

The general objective of the study is to examine factors affecting the profitability of insurance companies in Ethiopia.

1.3.2. Specific Objectives

- To identify the main factors affecting the insurance company's profitability.
- To analyze which factors exercise impact and their degree of influence on insurance company's profitability.
- To determine the relationship between these factors and profitability in insurance companies.

1.4 The significance of the study

The findings of the study also benefit insurance companies, regulatory authorities, managers, and others interested in the area the opportunity to gain deep knowledge about the relationship between macro and micro factors and profitability. And also this study may help decision-makers to avoid poor performance and provide them with recommendations to achieve higher rates of profits and hence, improve financial and administrative performance determining the factors that affect the profitability of the insurance company. This, in turn, helps them knowing factors affecting profitability and in that way takes appropriate actions to increase the profitability of insurance companies.

1.5 Scope of the Study

The study mainly focused on identifying the main factors affecting insurance companies' profitability in Ethiopia. The study was conducted based on secondary data that was collected from the audited financial statements of those general insurance companies in Ethiopia specifically from the balance sheet, revenue account, an income statement for the period. Profitability is influenced by variables such as industry dynamics and competitive market position, the perspective of the study encompasses company-specific/micro factors such as company size, company age, liquidity, the volume of capital, underwriting risk, reinsurance

dependence, market share and macro factor variables such as gross domestic product and inflation, which are potentially liable for being determinants of insurers' profitability.

1.6 Limitations of the study

The research focused on the factors mentioned before but other variables have been used in kinds of literature as factors affecting insurance profitability. Some variable was considered included in the study, but due to time and accessibility of the required financial information, the researcher was obliged not to include the factor as a study variable. The financial report of the insurance company was not available on their website/pages, so, cannot easily collect data. Some company managers appoint a long time to submit their data.

1.7. Organization of the study

The study was organized into five chapters. Chapter one is an introduction, where the background of the study, statement of the problem, objectives of the study, significance of the study, the scope of the study, limitations of the study, and finally how the study was organized. Chapter two was a review of literature in which theories, empirical evidence, and conceptual framework were framed out. Chapter three was the statement of the research methodology in use in the study. Chapter four was findings and discussions in which the results of the finding were interpreted. Finally, Chapter five dealt with the conclusion and possible recommendations upon the outcome of the study.

CHAPTER TWO

2. LITERATURE REVIEW

This chapter, section one deals with theoretical literature reviews, section two empirical literature reviews, definition and concepts, its role in the economy, historical high lights of insurance and the concept of profitability, Section three determinants selection, section four conclusion, and knowledge Gap, and section five conceptual Framework.

2.1 Theoretical Literature Review

2.1.1 Insurance

There is no single definition for insurance. Insurance can be defined from the viewpoint of several disciplines, including law, economy, history, risk theory, and sociology. A working definition of insurance and the one that captures the essential characteristics of a true insurance plan by the Commission on Insurance terminology of the Risk and Insurance. Association is defined as Insurance contracts in which the insured transfer risk to potential loss to the insurer who promise to compensate the former upon suffering the loss. An insurance premium is a monetary consideration paid by the insured for the cover granted by the insurance policy according (Tariku Ashenafe, 2019).

The primary function of insurance is to act as a risk transfer mechanism, that is, to transfer a risk from one the insured to the insurer. Transferring the risk does not in itself prevent losses from occurring, but it provides a form of financial security and peace of mind for the insured. The large unknown financial risk that an individual faces, for example, their home burning down is transferred to the insurer and replaced by the much smaller certain cost of the premium. These contributions, or premiums, must be large enough in total to meet the losses in any pool and provide an element of profit for the insurer. The insurer endeavors to make one-year and, also, must cover the costs of operating the insurance that the premium which each insured pays is proportionate to the risk, which they introduce to the pool according (Horsa, 2019).

2.1.2 The Concept of Insurance Profitability

Profitability consists of two words profit and ability. It is necessary to differentiate between the term Profit and Profitability at this point. The term Profit, from an accounting point of view, is arrived at by deducting from total revenue of an enterprise all amount expended in earning that

income while the term Profitability is defined as the ability of a given investment to earn a return from its use(Suheyli, 2015).

The profitability of insurance companies is one of the most important objectives that it seeks. The achievement of high profits enables the firm to maintain its stability and survival and to increase its ownership rights. According to (Islam Abdeljawad, n.d.), profitability enhances firm's solvency, which increases its ability to meet the risks and obligations it faces that, otherwise, leads to the deterioration of the financial conditions of insurance companies, the erosion of their ownership rights, the exposure to financial difficulties, and may lead to liquidation. The business has outside investors who have put their own money into the company; the primary owner certainly has to show profitability to those equity investors. (Boadi, Antwi, & Lartey, 2006).

Finally, profitability is an important tool for measuring the efficiency of management in exploiting available resources. Profit is a vital precondition increasing the competitiveness of a company that operates in a market(Tesfaye, 2018). The term Profit, from an accounting point of view, a residual left after deducting from total revenue of an enterprise all amount expended in earning hat income. Profitis the surplus remaining after total costs are deducted from total revenue, and the basis on which tax is computed and the dividend are paid. It is the best-known measure of success in an enterprise. Profit is reflected in a reduction in liabilities, an increase in assets, and/or an increase in owners'equity(Kebede, 2016).

Profitability ratios are an indicator of the firm's overall efficiency. It's usually used as a measure for earnings generated by the company during a period based on its level of sales, assets, capital employed, net worth, and earnings per share. Profitability ratios measure the earning capacity of the firm, and it is considered as an indicator of its growth, success, and control. Creditors, for example, are also interested in profitability ratios since they indicate the company's capability to meet interest obligations. Shareholders also are interested in profitability. It will indicate the progress and the rate of return on their investments (Dr. Majed Abdel Majid Kabajeh, 2012).

The ratios of the return on assets (ROA), return on owner's equity (ROE), and return on investment (ROI) are the most used profitability ratios in the analysis.

1- Return on assets (ROA) ratio: Net profit after taxes/Total assets.

This ratio is calculated as net profit after tax divided by the total assets. This ratio measures the operating efficiency for the company based on the firm's generated profits from its total assets.

2- Return on owner's equity (ROE) ratio: Net profit after taxes/Total shareholders equity.

This ratio is calculated as net profit after tax divided by the total shareholder's equity. This ratio measures the shareholder's rate of return on their investment in the company.

Activity ratios are another group of ratios; it's usually used to measure the ability to optimize the use of the available resources. These ratios are other measures of operational efficiency and performance. Among this group of ratios is the turnover to capital employed or return on investment (ROI) ratio.

3- Return on investment (ROI) ratio: Net profit after taxes/Total paid-in capital.

This ratio is calculated as net profit after tax divided by the total paid-in capital. It measures the firm's efficiency in utilizing invested capital. In other words, this ratio expresses the company's ability to generate the required return (expected return) based on using and managing the invested resources by the shareholders.

2.2. Factors affecting insurance profitability: An empirical Review

In this part of the study, the researcher looked at the studies conducted by other researchers regarding the insurer's profitability factors in Ethiopia and outside Ethiopia. Factors affecting insurance profitability have been thoroughly examined for the insurance operating in developed and emerging economies. However, such studies are extremely rare for insurances operating in Ethiopia. Thus, in this section, studies on factors affecting insurance profitability were carried out elsewhere are briefly accounted for. Several factors could affect profitability in insurance companies. These factors, as explained above could be further classified as internal and external factors. It is therefore very important to identify what are these factors as it can help insurance companies to take action on what will increase their profitability and investors to forecast the profitability of insurance companies in Ethiopia. To do so, it is better to see what factors were considered in previous times by different individuals in different countries.

According to (Islam & Akter, 2018) to find out the relationship of firm-specific factors (liquidity, reinsurance dependence, growth of premium, loss ratio, leverage, and expense ratio) with the profitability (Return on Asset) of the non-life insurance companies operating in Bangladesh.

Secondary data has been used which is collected from annual reports of 18 listed non-life insurance companies in Bangladesh covering the period of 2004-2015. The study is quantitative and STATA has been used to get the results. The empirical results show that liquidity and reinsurance dependence are positively associated with profitability while premium growth, leverage, loss ratio, and expense ratio are negatively correlated. Growth of premium and leverage are statistically insignificant.

According to (Olarewaju, Oladejo, Olaoye, & Olarewaju, 2018) the profitability of 8 composite insurance companies in Nigeria from 2009-2015. The results reveal that while a negative linear relationship exists among return on asset, leverage, tangibility, and size, there is a positive linear relation between return on asset, risk, and growth of the composite insurance company. The probability values 0.04, $0.00 < 0.05$ show that leverage and tangibility are statistically significant at 5 and 1 percent levels. The "Hausman" test reveals that the random effect model is better than the fixed-effect model at determining the profitability of the composite insurance company concerning the firm-specific factors under consideration. The study, therefore, concludes that the leverage of a composite insurance company as revealed in this study is high, and as a result, limits the average returns on the asset. This implies that firm-specific factors are relevant in enhancing a composite insurance company's profitability and sustainability in Nigeria.

(Birhan, 2017) state that a descriptive study conducted to assess the factors that affect the profitability of Nile Insurance in Dire Dawa branch among 319 active customers and the manager showed that the size, leverage, tangibility of asset, loss ratio/ risk, firm growth and managerial efficiency are significantly associated with the company's profitability. Moreover, liquidity and age of the company are the medium significant factors in addition to the brand preference and perceived quality by the customers.

(Datu, 2015) state that examined the association between Insurer-specific indicators and macro factors on profitability in the Philippine non-life insurance market utilizing the panel data from 2008 through 2012. Return on assets (ROA) and operating ratios was used for profitability. The empirical underpinning revealed that underwriting risk, reinsurance utilization, firm size, financial leverage, and input cost significantly affect profitability both in ROA and operating ratio. However, there is no evidence found in the Gross Domestic Product (GDP) and the

inflation rate on profitability in both ROA and operating ratio. Implications of the findings to the regulating bodies, shareholders, and management were discussed.

(Guendouz & Ouassaf, 2018) state that the investigation of the main internal factors affecting the profitability of insurance Takaful companies in an Islamic insurance system. The data collected from the quarterly reports of the six largest Saudi Takaful Insurance companies for the period 2010-2016, which represents more than 60% of the total assets of the Insurance market. Panel data techniques, namely, pooled ordinary least squares, fixed effects and random effects, were used to estimate the relationship between return on policyholders as a proxy of insurance company profitability and company-specific variables such as age, size, loss ratio, the rate of retention, risk level, and the written premium growth rate. The regression results indicate that age, size, written premium growth rate, and loss ratio, have significant effects on the profitability of insurance Takaful companies. Mainly conducted to determine variables affecting insurance Takaful companies' profitability, but most of them were concerned with mixed insurance systems, in which conventional and Shariah-compliant companies operate together. A lack of studies dedicated to examining the fully Shariah-compliant system is obvious. Therefore, the study contributes to filling this gap in the literature by exploring the factors affecting the profitability of Takaful insurance companies in a full Shariah-compliant insurance sector.

(Kazimierz Ortyński, 2016) analyze the main factors determining the financial performance of insurers. The paper identifies the determinants of the performance of general insurance companies in Poland using a panel dataset consisting of firm-specific factors and macroeconomic factors over the period 2006-2013. Six financial performance measures are used to capture different aspects of insurance operations. These performance measures are related to nine cited business-specific and macroeconomic variables, chosen based on relevant theory and literature. A weight least square (WLS) method and intergroup method for each of six performance models are used to estimate the parameters of these models. The empirical results prove that there is a statistically significant relationship between the following variables with profitability performance being- negatively affected by underwriting activity (represented the net claims ratio variable) and by the net operating expenses variable. It was also shown that the size of a company has a positive relationship with its profitability. The study also confirmed a statistically significant and positive relationship between the profitability ratio of technical activity and the

macroeconomic variable (rate of GDP) as well as the positive impact of the motor gross written premiums ratio variable on the profitability ratio of technical activity.

(Guruswamy, 2016) state that the main objective of this study was to examine the determinants of the capital structure of selected insurance companies in Ethiopia. Researchers' used only secondary data obtained from the annual financial statement of selected insurance companies, the National Bank of Ethiopia (NBE), and the Ministry of Finance and Economic cooperation (MoFEC). In this study, one dependent variable (leverage) and nine independent variables, i.e. growth opportunities, business risk, size of the firm, the tangibility of assets, liquidity, age, management efficiency, inflation, and GDP were employed. Explanatory research design and purposive sampling methods were employed in this study. The balanced panel data were analyzed by using descriptive, correlation, and multiple regression analysis. From the regression results; age, business risk, firm growth, management efficiency, economic growth rate, and inflation are identified as the most important determinant factors of capital structure. Age, business risk, management efficiency, economic growth rate, and inflation are positively related to capital structure; but, firm growth has a negative relation with capital structure. However, liquidity, size, and tangibility of assets had an insignificant impact on capital structure. Finally, the study recommends that the management of the sample insurance companies shall devote their time and efforts to variables of age, business risk, management efficiency, firm growth, GDP, and inflation to minimize the weighted average cost of capital.

(Hassan, 2011) state that the determinants of capital structure in Nigerian listed insurance firms using data obtained from the annual reports of the sampled firms for the period 2001-2010. We used five explanatory variables to measure their effects on the debt ratio. Multiple regression is employed as a tool of analysis. The result reveals that all the explanatory variables have statistically and significantly influenced the explained variable. The results approve the prediction of pecking order theory in the case of profitability and trade-off theory in case of tangibility variables. The growth variable supports the agency theory hypothesis whereas the size variable confirms the asymmetry of information theory. It is therefore recommended that the management of listed insurance firms in Nigeria should always consider their position using these capital structure determinants as important inputs before embarking on debt financing decisions.

According to (Sharew & Fentie, 2018) competition in the economy can create a positive prospect for the economic growth and development of a country. Competition in the Ethiopian financial sector in general and the insurance industry, in particular, should be strong enough for enhancement of efficiency, provision of better service to customers, greater innovation, and lower prices thus resulting in improvement of consumers' welfare and overall economic growth of the country. This research is developed to conduct a study to empirically assess the efficiency of the insurance companies in the Ethiopian insurance industry. Data Envelopment Analysis (DEA) approaches were used to measure the efficiencies of the insurance companies. The proposed study attempted to address (focus) on what is the efficiency of the insurance companies in Ethiopia? What factors affect their efficiency? In what mechanism the insurance companies in Ethiopia could improve or enhance their efficiency? These and other related issues have not been largely answered and not empirically supported in the Ethiopian context. In general, the study seeks to find the determinants of the insurance companies' 'performance/efficiency'. To achieve this objective, the study used Panel data covering ten years period from 2006–2015. The proposed study attempted to provide its contributions to the literature, policy, managerial and methodological implications. Based on the result Ethiopian insurance corporation and Nyala insurance companies were relatively efficient taking first and second rank respectively. It was found that company size and several branches were significantly affecting the efficiency scores at 95% confidence.

(Mazviona, Dube, & Sakahuhwa, 2017)state that to examine factors affecting the performance of insurance companies in Zimbabwe. The study utilized secondary data from twenty short-term insurance companies. The data was for the period from 2010 to 2014. They used factor analysis and multiple linear regression models to determine the factors affecting performance and identifying their impact. The findings revealed that expense ratio, claims ratio, and the size of a company significantly affect insurance companies' performance negatively. Whilst leverage and liquidity affect performance positively. They recommend that insurance companies should introduce mechanisms that reduce operational costs such as automated systems.

(Prof & Kripa, 2016) stated that to have good performance of a company determines the position of the company in its market and the growth and consolidation of the market, giving as a result the development of the economy as a whole. The importance of the topic further enhanced when

dealing with insurance companies because 1) insurance companies' transfer risk in the economy 2) provides a mechanism to promote savings 3) promote investment activities. The growing importance of insurance companies in Albania and the importance of profitability as one of the key performance metrics of a company are the reasons why they decide to write this paper. The variation of profits between insurance companies over the years, within a country, leads to the belief that internal factors play a major role in determining profitability. They have taken understudy the impact of growth rate, liabilities, liquidity, fixed assets, the volume of capital, and company size on the profitability of insurance companies. The methodology used is based on quantitative methods and the data are provided by reliable sources such as annual reports of insurance companies FSA1 reports, and NRC2. They have taken under study 7 companies, including non-life and life insurance companies, from 2008-2013. The results of the paper show that factors such as growth rate, liabilities, liquidity, and fixed assets are the main factors affecting the profitability of insurers, where the growth rate is positively associated with profitability, while liabilities, liquidity, and fixed assets are negatively correlated. Company size and the volume of capital are positively correlated with the profitability of insurance companies, but their impact is statistically insignificant.

(Hailegebreal, 2016) state that the study was conducted on the determinants of profitability of the Ethiopian insurance industry. The study attempts to examine the firm-specific factors which are the age of the company, size of the 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 the profitability of Ethiopian insurance industry. Nine insurance companies from a total of 17 insurance companies established before 2008 were included in the study. Secondary data that was collected from the financial statements (Balance sheet and income statements) of insurance companies; and the National bank of Ethiopia are the major sources of data for this study. The study found that underwriting risk, technical provision, leverage, and inflation have negative and significant effects whereas premium growth, age of the company, solvency ratio, and GDP have a statistically positive and significant relationship with the profitability of the Ethiopian insurance industry.

2.3. Determinants selection

Based on the previous empirical studies, insurers' profitability is influenced by both internal and external factors. The internal determinants of an insurance company's profitability are those management controllable factors, which account for the inter-firm differences in profitability, given the external environment. Defines internal determinants of profitability as factors that could be influenced by management decisions.

2.3.1 specific/micro and Macro factors of Profitability

2.3.1.1 Firm (company) size and Age of the Company

Firm size is one of the most acknowledged determinants of the economic performance of an insurance company. The underlying relationships between size and financial performance though have different results. Size has been identified as an important determinant of the firm's capital structure. Larger firms tend to be more diversified and hence have lower variances of earnings making them able to tolerate high debt ratio (Tornyeva, 2013)

Most studies conclude that there is a statistically significant positive correlation between the size of the company and its profitability, expressed by ROA (Malik, 2011). However, there are discussions about the optimal size of the company, which positively affects profitability (Prof & Kripa, 2016). Performance is likely to increase in size because larger firms will have better risk diversification, more economic scale advantage, and overall better cost-efficiency. In this study, a total asset is used as a proxy for Company Size.

Regarding firm age, older firms are more experienced, have enjoyed the benefits of learning, are not prone to the liabilities of newness, and enjoy superior performance. (Tesfaye, 2018) Older firms may also benefit from reputation effects, which allow them to earn a higher margin on sales. They might have developed routines, which are out of touch with changes in market conditions, in which case an inverse relationship between age and profitability or growth could be observed (Malik, 2011). Found that both the age and size of the firm had a positive and significant effect for enterprise investment scheme recipients: the highest the level of fixed assets formation, the older and larger the company. Through a dynamic panel model, (Pervan, Pervan, & Ćurak, 2017) investigated that age has significant positive impacts on insurers' financial

performance. Several earlier studies (Almajali & De, 2012) argued that firm age does not influence its performance.

2.3.1.2 Liquidity

Liquidity refers to the degree to which debt obligations coming due in the next twelve months can be paid from cash or assets that will be turned into cash. It reveals the ability to convert an asset to cash quickly and reflects the ability of the firm to manage working capital when kept at normal levels. A standard argument to justify the decision of a firm to maintain excess liquidity in its assets relates to both speculative and precautionary motives in financial economics. A firm can utilize liquid assets to finance its activities and investments when external finance is not available or it is too costly (Tesfaye, 2018). In another way, higher liquidity would allow a firm to deal with unexpected contingencies and to cope with its obligations during periods of low earnings (Skandalis, 2010). Liquidity obviates the need for management to improve annual operational performance. Furthermore, high liquidity could increase agency costs for owners by providing managers with incentives to misuse excess cash flows by investing in projects with negative net present value and engaging on excessive perquisite consumption (e.g., luxurious offices). Liquidity from the perspective of insurance companies is the probability of an insurer to pay liabilities which include operating expenses and payments for losses/benefits under insurance policies when due then shows us that more current assets are held and idle if the ratio becomes more which could be invested in profitable investments (Gashaw, 2012).

Companies with more liquid assets are less likely to fail because they can realize cash even in very difficult situations. Therefore, it is expected that insurance companies with more liquid assets will outperform those with less liquid assets. Empirical evidence about liquidity revealed almost inconsistent results. (Charumathi, 2015) in his study concluded that liquidity positively and significantly influences the profitability of life insurers. The study of (Gashaw, 2012) also shows that liquidity is negatively related. In opposite, (Merin, 2016) in his study of determinants of bank profitability in Ethiopia, liquidity was positively and significantly related to banks' profitability. (Abera, 2012) found that the relationship for liquidity risk and profitability is found to be statistically insignificant.

2.3.1.3 Volume of Capital ` `

In most of the studies concerning insurance companies volume of capital measures as the difference between total assets and total liabilities and in some cases, it is measured by the ratio of equity capital to the total asset. The insurance company's equity capital can be seen in two ways. Narrowly, it can be seen as the amount contributed by the owners of insurance (paid-up share capital) that gives them the right to enjoy all the future earnings (Horsa, 2019).

Comprehensively, it can be seen as the number of owners' funds available to support a business. The definition includes reserves and is also termed as total shareholders' funds. No matter the definition adopted, the volume of capital is widely used as one of the determinants of insurance companies' profitability since it indicates the financial strength of the firm (Gashaw, 2012). Capital adequacy has a positive and significant relationship with the profitability of insurance companies (Berhe, Teklit Atsbeha, 2017). This implies that the Ethiopian insurance companies with an adequate amount of capital can have a great number of investment alternatives and thereby the higher tendency of harvesting profit. However, those insurance companies which are poorly capitalized can have fewer investment opportunities, and therefore, their profitability might be highly influenced.

Found in their separate studies that the volume of capital reveals the significant impact and positive association with profitability. Higher capital levels breed higher profitability levels since by having more capital, a bank can easily stick to regulatory capital standards so that excess capital can be provided as loans. The empirical evidence that there is a positive association between bank profitability and capital. (Charumathi, 2015), found that the logarithm of equity capital has negatively and significantly influenced the profitability of Indian life insurers. However, in opposition to the others' findings, in their investigation concluded that capital adequacy has no relation with profitability (Tesfaye, 2018).

2.3.1.4. Underwriting risk

Underwriting risk is the risk that the premiums collected will not be sufficient to cover the cost of coverage. Insurance prices are established based on estimates of expected claims costs and the costs to issue and administer the policy (Suheyli, 2015). The estimates and assumptions used to develop policy pricing may prove to ultimately be inaccurate. This may be due to poor assumptions, changing legal environments, increased longevity, higher than expected weather

catastrophes (Young, 2010). Huge fluctuations in net premiums written indicate a lack of stability in the underwriting operation of an insurance company. An unusual increase in net premiums written might indicate that the company is engaged in the so-called “cash-flow underwriting” to attempt to survive its financial difficulty. However, this is not necessarily the case. An unusual increase in net premiums written could indicate favorable business expansion if it is accompanied by adequate reserving, profitable operations, and stable products mix.

2.3.1.5 Reinsurance Dependence

The reinsurance dependence is calculated as a ratio of gross written premiums ceded in reinsurance to total assets. Insurance companies reinsure a certain amount of the risk underwritten to reduce bankruptcy risk in the case of high losses. Although reinsurance improves the stability of the insurance company through risk dispersion, the achievement of solvency requirements, risk profile equilibration, and growth of the underwriting capacity, it involves a certain cost(Tesfaye, 2018). General insurers usually take out reinsurance cover to stabilize earnings, increase underwriting capacity, and provide protection against catastrophic losses. The purchase of reinsurance can substitute for capital and allow an insurance firm to hold less capital without increasing its insolvency probability. It is worth mentioning that reinsurance dependencies complicated by insurer type. Since there is also a cost for reinsurance, determining an appropriate retention level is important for general insurers, and they have to try to strike a balance between decreasing insolvency risk and reducing potential profitability. Although it increases operational stability, increasing reinsurance dependence, i.e. lowering the retention level, reduces the potential profitability. To be more specific, in the short term the insurer may gain as the reinsurer covers a poor underwriting year; profitability is reduced wither insurance in the long term; otherwise, there would be no profitable reinsurers.

Insurance companies usually take out reinsurance cover to stabilize earnings, increase underwriting capacity, and provide protection against catastrophic losses. Nevertheless, there is a cost for reinsurance. As a result, determining an appropriate ceding level is important for insurance companies, and they have to try to strike a balance between decreasing insolvency risk and reducing potential profitability. Although it increases operational stability, increasing reinsurance dependence, i.e. lowering the retention level, reduces the potential profitability. Purchasing reinsurance reduces insurers’ insolvency risk by stabilizing loss experience,

increasing capacity, limiting liability on specific risks, and/or protecting against catastrophes. However, transferring risk to reinsurers is expensive. The cost of reinsurance for an insurer can be much larger than the actuarial price of the risk transferred. (Cummins, Dionne, Gagn, & Cahier, 2008) they analyzed empirically the costs and the benefits of reinsurance for a sample of US property-liability insurers. The results show that reinsurance purchase increases significantly the insurer's costs but reduces significantly the volatility of the loss ratio. With purchasing reinsurance, insurers accept to pay higher costs of insurance products to reduce their underwriting risk. Insurers with higher reinsurance dependence tend to have a lower level of firm profitability. (Suheyli, 2015) says that possible that an insurer that cedes more business to the reinsurer and keeps lower retention more or less operates like a reinsurance broker who only transfers risk without underwriting risk and is likely to report less profit for a relatively high percentage of the premium received is ceded to reinsurers (H. Lee & Lee, 2012).

2.3.1.6 Market share

Market share is the percentage share of an industry that has or markets total sales that are earned by a particular company over a specified time. Market share is calculated by taking a company‘s sales over the period and dividing it by the total sales of the industry over the same period. Investors look at market share increase or decrease carefully because they can be a sign the relative competitiveness of the company‘s product or services.

As the total market for a product service grows, a company that maintains its market share is growing revenues at the same rate as that total market. A company that is growing its market share will be growing its revenue faster than its competitors will. Market share increase can allow a company to achieve a greater scale in operations and improve profitability(Horsa, 2019).

Companies are always looking to expand their share of the market, in addition to trying to grow the size of the market by appealing to larger demographics, lowering prices, or through advertising. There are several key advantages to building market share. One advantage is the increased bargaining power.

Top companies with the largest market shares may get special deals on products, as their buying power is likely greater than smaller companies‘. The bigger company sells more products, which

leads to bigger orders from their suppliers, conversely smaller may lose its higher profit margin by increasing market share too drastically.

Companies increase market share through innovation, strengthen the customer relationship, smart hiring practices, and acquiring competitors. High marker share puts companies at a competitive advantage. Companies with better market share often receive a better price from suppliers, as their larger order increase their buying power. Innovation is one method by which a company may increase market share. When a firm brings new technology to a market its competitors have yet to offer, customers become loyal which adds to the company‘s market. Also by strengthening customer relationships by keeping current customers from jumping to other competitors. Companies with the highest market share in their industries almost invariably have the most skilled and dedicated employees. Bringing the best employees on board reduces expense related to turnover and training, and enables companies to devote more resources to focus on their core competencies (Horsa, 2019).

The multivariate analysis, they find evidence that market concentration and insurers‘ underwriting profits are positively related. More specifically, insurers in states with greater market concentration are more profitable than insurers in states with lower levels of market concentration. The positive relation between concentration and profitability may be due to several factors including price collusion, differences in products or efficiency and it is, therefore, not clear if this relation is evidence in support of the efficiency structure hypotheses. As an attempt to provide some additional insight into the potential cause of the variation in profitability across the health insurance markets, they include a control variable for efficiency in the model and find some evidence that efficient operations of firms may explain some portion of the profit concentration relation. However, not all studies have found any evidence that supports market share and profitability are always positively related. As a result, the anticipated sign is subject to empirical examination (Berhe, Teklit Atsbeha, 2017). In this research market share is calculated by dividing each insurance company’s gross premium with the total gross premium of the industry because, market share is best explained by the percentage of sales that is shared by the entity from the industry (Kebede, 2016).

2.3.2. Macro factors variables (External Factor) of Profitability

2.3.2.1 Growth rate of GDP

The economic activities and level of development of a particular country over a specified period, usually a year. It is one of the most primary macro factor indicators which is used to measure the economic health of a country (Berhe, Teklit Atsbeha, 2017). Poor economic conditions can worsen the quality of the finance portfolio, thereby reducing profitability. If the GDP grows, the likelihood of selling insurance policies also grows and insurers are likely to benefit from that in the form of higher profits. (Carbonell & Werner, 2018) also studied that GDP growth positively affects insurers profitability i.e. growth of overall economic activity encourage demand for insurers services and indirectly result in harvesting higher profit. The growth rate of GDP will have a positive impact on insurers' profitability. One's country GDP may grow as such in the level of economic activities this growth of GDP leads the total value of goods and services produced in one year.

Therefore, the growth of GDP measures the economic growth of a particular country. When the GDP affected positively or when economic activities grow, so is the financial sector and as insurance is one of the major financial industries, it is positively affected by the boom of the economy and thereby enhances the profit of insurers (Horsa, 2019).

2.3.2.2 Inflation

Inflation is defined as a sustained increase in the general level of prices for goods and services. It is measured as an annual percentage increase. Inflation certainly plays a role in insurance and harms many aspects of insurance operations, such as claims, expenses, and technical provisions.

According to (Kramaric, Miletic, & Pavic, 2017) the influence of inflation on a company's profitability is unclear. This is high inflation rate may lead to irrational pricing and consequently high levels of earned premium which in turn results in high profit considering others will remain constant. The result indicated that current inflation is positively and significantly affects the profit performance of insurance companies (Tesfaye, 2018). This result is consistent with the finding of (Valentina Flamini, Calvin McDonald, 2009) who investigated in their study that inflation has a positive impact on bank profits, which suggests banks forecast future changes in

inflation correctly and promptly enough to adjust interest rates and margins. From the side of the bank during inflation, the central bank can raise the cost of borrowing and reduce the credit creating capacity of commercial banks. Empirical studies on the association between inflation and bank profitability suggest that if a bank's income increases more rapidly than its costs, inflation is expected to positively affect profitability.

Taking into consideration that inflation affects the assets side of the balance sheet, as the bond markets adjust to the higher level of inflation, interest rates begin to rise. This results in bond prices fall, negatively affecting the value of the investment portfolio. Given the negative relationship between inflation and returns on both fixed-income securities and equities are expected that the relationship between profitability and inflation will be negative(Horsa, 2019).

2.5. Conclusion and Knowledge Gap

As clearly shown above in the Empirical review part measurement of the financial industry's profitability has attracted academic attention in recent studies and there has been a growing number of studies in recent years that test for measures and determinants of insurance companies' profitability. Meaza Melese (2014), Tariku Ashenafie Birru(2019), Sisay Horsa(2019), Behailu Kebede (2016), Gemachis DebalaBiru(2017), Suheyli Reshid(2015) and Hindeya Zekarias(2017) are some of the researchers who conduct a study about the determinants of insurance companies' profitability. Even though, many studies are the results found by the researchers mentioned above in the empirically revealed inconsistencies according to the country and the type of insurance company in which the research is conducted and regarding selected variables.

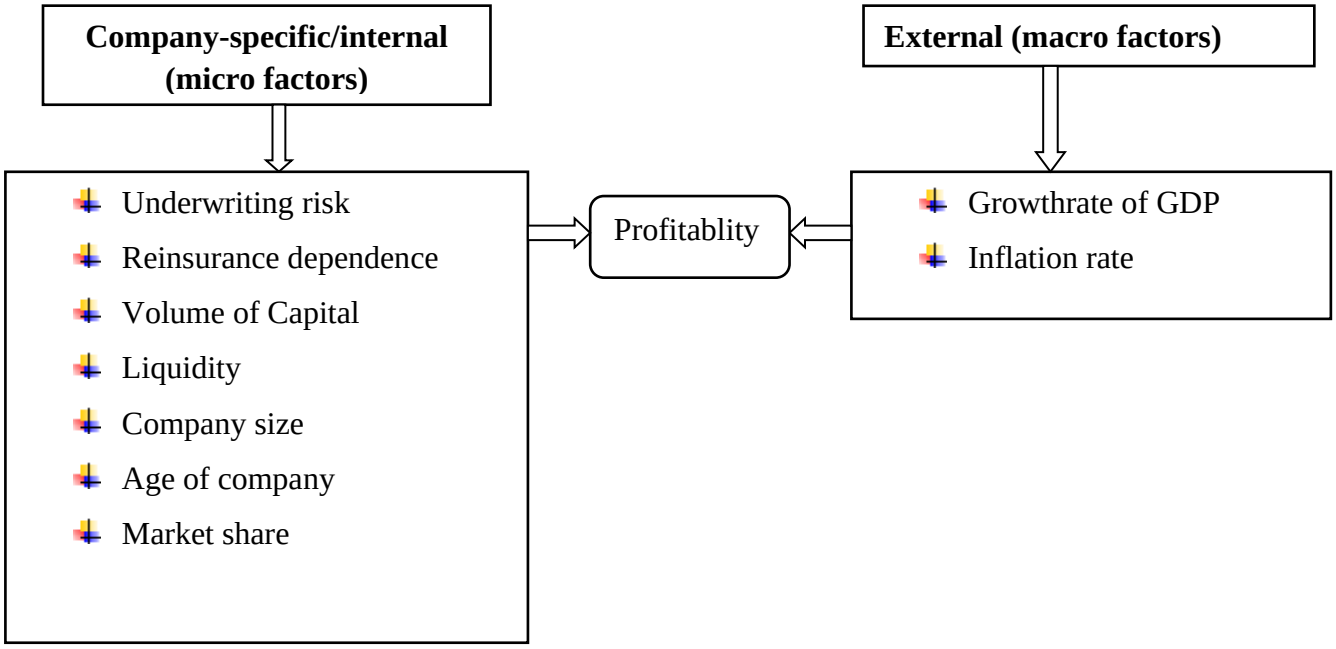
Moreover, as it can see in empirical evidence, most literature is done outside Ethiopia. Even though few studies conducted in this title in the Ethiopian context they concerned with the profitability of banks or financial performance rather than insurance companies. Therefore, there is less literature concerning insurance companies as compared to banks and most of them focus on firm-specific factors. According to the knowledge of the researcher, there are only a few types of research that considered the effects of macro factors on the profitability of insurance companies. Accordingly, this research includes firm-specific(micro factor) and macro factors and

takes recent data from financial statements insurance companies. This study will add literature on the factors affecting of profitability of insurance companies in Ethiopia.

2.6 Conceptual Framework

Different empirical pieces of evidence suggested that the profitability of financial institutions affected by internal and external factors. This study used both internal and external factors affecting insurance's profitability includes size, age of the company, liquidity, the volume of capital, underwrite risk, reinsurance dependency, market share, the growth rate of GDP, and inflation rate. The study was identified how these variables affecting the profitability of an insurance company in Ethiopia.

Figure 1: Conceptual framework



Source: - Self-developed

CHAPTER THREE
3. RESEARCH METHODOLOGY

This chapter discusses the methodology that the researcher used in gathering, processing, and translating the collected data into meaningful information. It provides the steps and procedures of the study that used to find out the factors affecting of profitability of insurance companies in Ethiopia. This chapter explains the research design, data type and source, research approaches, population and sample size, sampling technique, data collection instrument, data analysis techniques, variable definitions which encompasses a choice of the dependent variable and independent variables, and model specification.

3.1 Research Approach

The research approach is a plan and procedure that consists of the steps of broad assumptions to detailed methods of data collection, analysis, and interpretation. This study is used as a quantitative research approach to see the relationship between the profitability of insurance companies and insurance specific/micro factors and macro factors that affects insurance‘s profitability by establishing a causal relationship. This study also adopted an explanatory approach by using a balanced panel research design to meet the research objective. Explanatory research attempts to identify causal factors and outcomes of the target phenomenon (Bhattacherjee, 2012). Explanatory studies go beyond observing and describing the condition and tries to explain the reasons for the phenomenon(Denzin, Norman K, 2018).

(Brooks, 2014) a panel of data has embodied information across both time and space and it measures some quantity about them over time. Hence, the advantage of using the panel data model can acknowledge both time-series and cross-sectional variations, and also it gives more informative data as it consists of both the cross-sectional information, which captures individual variability.

3.2 Research Design

A research design is a master plan that specifies the methods and procedures for collecting analyzing the needed information. The research design constitutes the blueprint for the

collection, measurement, and analysis of data. Method is selecting according to the nature of the research problem and the research perspective, research design and method. For this study, the researcher used a quantitative method (Creswell, 2012). Using explanatory research design Secondary sources are the most reliable ones, as these financial statements are already audited by independent auditors and accepted by the users of the information. Other macro-level data are also obtained from the NBE as reported by them.

Descriptive statistics of the variables (both dependent and independent) were first calculated over the sample period. This is in line with the states that using descriptive statistics methods helps the researcher in picturing the existing situation.

3.2.1 Needs for quantitative research

The quantitative research method is based on numeric figures or numbers. Quantitative research aims to measure the quantity or amount and compares it with records and tries to project for the future period. In social sciences, quantitative research refers to the systematic empirical investigation of quantitative properties and phenomena and their relationships. The objective of quantitative research is to develop and employ mathematical models, theories, or hypotheses about phenomena. The process of measurement is central to quantitative research because it provides a fundamental connection between empirical observation and mathematical expression of quantitative relationships. Statistics is the most widely used branch of mathematics in quantitative research (Dawson, 2009). Statistical methods are used extensively within fields such as economics and commerce. In sum, the research using the normative approach conducts why it may be called quantitative research as the inferences from it are largely based on quantitative data. Moreover, objectivity is the primary guard so that others, if necessary may replicate the research. Quantitative can also be called Analytical Research.

3.2.2 The weakness of quantitative research

The researcher‘s categories that are used might not reflect local constituencies‘ understandings The researcher‘s theories that are used might not reflect local constituencies‘ understandings. The researcher might miss out on phenomena occurring because of the focus on theory or hypothesis testing rather than on theory or hypothesis generation (called the Confirmation bias)

Knowledge produced might be too abstract and general for direct application to specific local situations, contexts, and individuals.

3.3 Population and sampling Technique

There are several available alternative ways to take a sample. The main alternative sampling plans may be grouped into two categories; probability technique and non-probability technique (Neuman, 2014). Probability sampling is a sample procedure, which gives each one in the population a non-zero probability of selection, or it is about giving every element. The non-probability sample involves the selection of a sample based on personal judgment or convenience. when the subjects used in the sample is homogeneous, using purposive sampling technique is appropriate (Tongco, 2007).

According to the National Bank of Ethiopia (NBE), there are eighteen (18) listed insurance companies in Ethiopia. Through purposive Sampling, 17 were selected. Accordingly, seventeen (17) insurance companies were included in this study during the years 2014-2018.

Insurance companies sampled in the study were: Ethiopian insurance corporation, Awash insurance S.C, African insurance S.C, National insurance company of Ethiopia S.C, Nyala insurance S.C, Nile insurance S.C, United insurance S.C, Global insurance S.C, Nib insurance S.C, Lion insurance S.C, Oromia Insurance S.C, Abay insurance S.C, Berhan insurance S.C, Tsehay insurance S.C, Ethio life and general insurance S.C, Lucy insurance S.C and Bunna insurance S.C.

3.4 Data Type and Sources

This study employed Secondary data, consistent and reliable research indicates that research conducted by using appropriate data collection instruments increases the credibility and value of the research findings (C.R. Kothari, 2004). Accordingly, document review was used for this study to collect the required data which was relevant for addressing the objectives of the study from audited financial statements of each insurance company included in the sample size.

The necessary data that were used in this study were obtained from secondary sources. Moreover, to analyze the relationship that exists between profitability and micro factor variables,

macro factor data collected from NBE for the same years. The advantage of using secondary data includes higher quality of data compared with primary data collected by researchers themselves. The feasibility to conduct panel evidence, which is the case in this study and the permanence of data, which means secondary data generally provide a source of data that is both permanent and available in a form that may be checked relatively easily by others, i.e. more open to the public inquiry. Therefore, it enhances the reliability of the data. The principal secondary data sources for this paper were individual insurance company's annual reports that contain detailed consolidated balance sheets, income statements, revenue accounts, and NBE for data.

The annual reports of each listed insurance company and macro-economic data are from the National Bank of Ethiopia during the fiscal year of 2014 to 2018. Thus, the study used Panel data.

3.5 Data Analysis Techniques and Model Specification

Model building involves specifying relationships between two or more variables; perhaps extending to the development of descriptive or predictive equations. To achieve the objectives of this research study, the panel data regression model was used to identify the relationship between the profitability of insurance companies and explanatory variables.

Panel data comprises of both time series and cross-sectional elements, and such a data set would be known as a panel of data or longitudinal data. A panel of data embodies information across both time and space. Importantly, a panel keeps the same individuals or objects and measures some quantity about them over time (Brooks, 2014)

Panel data is favored over pure time-series or cross-sectional data because it can control for individual heterogeneity and there is a less degree of multi-linearity between variables (Brooks, 2014). Thus, the collected panel data were analyzed using descriptive statistics, correlations, multiple linear regression analysis, and inferential statistics.

Mean values and standard deviations were applied to analyze the general trends of the data from 2014 to 2018 based on the sample of seventeen insurance companies and a correlation matrix is used to examine the relationship between the dependent variable and explanatory variables. Besides, ordinary least square (OLS) was conducted using the statistical package “Eviews” to

determine the most significant and influential explanatory variables affecting the profitability of the insurance industry in Ethiopia. Modeling was based on panel data techniques.

In light of the above, to investigate the effect of insurance-specific/micro factors, and macro factors determinants of insurer‘s profitability. When hypotheses involved the distinction between independent and dependent variables, dependence techniques were needed. Predicting the dependent variable profitability based on numerous independent variables was a problem frequently investigated with dependence techniques.

Multiple regression analysis, multiple discriminate analysis, multivariate analysis of variance, and structural equations were all dependent methods. Multiple regression improves the prediction of the dependent variable, as more number of independent variables are expected to explain the dependent variable better than if only one independent variable was used.

3.6 Diagnostic Tests of Ordinary Least Square (OLS)

Diagnostic tests were performed to check for the validity of the parameters. The researcher tested for normality, multicollinearity, heteroscedasticity, and autocorrelation.

3.6.1 Linear regression model

This paper employed the ordinary least square (OLS) regression model to analyze the panel data and examine the effects of firm-specific factors and macro factors on the profitability of insurers. The study determines which of the two models (fixed effect (FE) and random effect (RE)) is best fit by applying the Hausman test for random effects (Schmidheiny, 2019).

Through a literature review, this study constructs an empirical regression model below:

$ROIit=C + \beta(Xit) + Uit$

Where ROI is a return on investment, Xit is dependent variables for insurers “i” at the time “t”, C is constant, β is the coefficient, and U is the error term.

3.6.2 Normality

One assumption of the classical linear regression model (CLRM) is the normal distribution of the residual part of the model. As noted by (Brooks, 2014), OLS estimators are the best linear unbiased estimators (BLUE) regardless of whether the error terms are normally distributed or

not. If the disturbances are independently and identically distributed with zero mean and constant variance and if the explanatory variables are constant in repeated samples, the OLS coefficient estimators are asymptotically normally distributed with means equal to the corresponding. However, as per the central limit theorem, if the disturbances are not normally distributed, the OLS estimators are still normally distributed approximately if there are large-sample data. Thus, since the sample, size for this study is large enough, it is approximately considered as normally distributed. This implies that residuals are asymptotically normal in this study.

3.6.3. Multicollinearity

The term multicollinearity refers to the existence of a perfect or exact, linear relationship among some or all-explanatory variables of a regression model (Brooks, 2014). If it exists the remedy is to drop a variable with a high R-square or do nothing. The correlation matrix was used to detect the presence of severe multicollinearity. A correlation coefficient is high if it is more than 0.8.

3.6.4. Heteroscedasticity

According to (Brooks, 2014) this is a situation whereby the error variances are not constant. This is a violation of one important assumption of the classical linear regression assumptions. To detect heteroscedasticity, the research employed the Whites test for heteroscedasticity. The problem of continuing to use data that suffers heteroscedasticity is that whatever conclusion or inferences, they will be misleading.

3.6.5. Autocorrelation

The violation of the basic assumption that residuals are mutually independent results in serial autocorrelation. In time-series data the successive residuals tend to be highly correlated. Autocorrelation can also be extended to cross-section data where the residuals are correlated with those of the neighboring units. The Durbin-Watson method is used to test for autocorrelation. A Durbin Watson statistic around two is generally accepted though there are zones of indifference and zones of both positive and negative correlation(Brooks, 2014).

It involved the estimation of the effect of individual independent variables on the dependent variable. Unstandardized coefficients were estimated for all independent variables. Multiple regressions also involved constructing an equation to estimate the expected value of the

dependent variable which was predicted by the number of independent variables. Note that multiple regressions mean the multiple numbers of independent variables.

Operational model: the operational panel regression model used to find statistically factors affecting the profitability of insurance in Ethiopian was:

ROI = β o+ β1AGEi,t + β2SIZEi,t + β4URRi,t +β5LIQi,t + β7VOCi,t + β8REDi,t + β12MTSi,t +β10GDPi,t + β11INFi,t +Є it

Where;

- **ROIit = Return on Asset Investement**
- AGE = Age of companies;
- SIZE = Size of companies;
- URR=Underwriting risk;
- LIQ = Liquidity;
- MKS= Market share;
- VOC=Volume of Capital;
- RED = Reinsurance dependence;
- GDP= GDP Growth;
- I=Inflation;
- Є = is the error component for the company I at time t assumed to have mean zero E [Є it] =0
- β o= Constant
- β**1,** 2, 3, …..12 are parameters to be estimated;
- i = Insurance company i = 1, . . . , 17; and t = the index of time periods and t = 1, . . . , 12

The issue that may arise from the use of panel data is whether the individual effect is considered fixed or random. While random effects estimation addresses the endogeneity issue by incrementing potentially endogenous variables, it also assumes that the individual firm effects are uncorrelated with the exogenous variables. On the other hand, the fixed effect estimation deals successfully with the correlated effects problem. Therefore, a fixed cross-sectional effect is specified in the estimation to capture unobserved idiosyncratic effects of different insurance companies.

3.7 Model Validity Assumptions

As mentioned in ((Brooks, 2014) there are basic assumptions required to show that the estimation technique, OLS has several desirable properties, and that hypothesis tests regarding the coefficient estimates could validly be conducted.

If these Classical Linear Regression Model (CLRM) assumptions hold, then the estimators will be determined by OLS will have several desirable properties, and are known as Best Linear Unbiased Estimators(BLUE).

Therefore, for this study, diagnostic tests were performed to ensure whether the assumptions of the CLRM are true or not in the model. Consequently, the basic CLRM assumption tests were applied in terms of heteroscedasticity, autocorrelation, normality, and multi-collinearity. According to (Brooks, 2014) when the assumptions are satisfied, it means that all the information available from the patterns is used. However, if there is an assumption violation in the data it usually means that there is a pattern of data that has not included in the model and suggested finding a model that fits the data better. Relay on (Brooks, 2014)), the first assumption is that the average value of the errors is zero. If a constant term is included in the regression equation, this assumption will never be violated.

The second assumption is homoscedasticity. Homoscedasticity assumes that the variance of the errors is constant or equal. If the variance of the errors were not constant, this would be known as heteroscedasticity (Brooks, 2014). To test homoscedasticity the white test will be used.

The third assumption is the autocorrelation assumption that the covariance between the error terms over time is zero. If the errors were correlated with one another, it would be stated that they are serially correlated. Usually, the Durbin-Watson (DW) value in the main regression table is considered and used to test the presence of autocorrelation. According to (Brooks, 2014) DW has 2 critical values: 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 either be rejected or not rejected.

The fourth assumption is the Normality of the error distribution that assumed the errors of prediction (differences between the obtained and predicted dependent variable scores) are

normally distributed. Violation of this assumption can be detected by constructing a histogram of residuals (Brooks, 2014).

Finally, the fifth assumption is multicollinearity assumption, which refers to the situation in which the independent variables are highly correlated. When independent variables are multicollinearity, there is overlap or sharing of predictive power. This may lead to the inconsistent effect, whereby the regression model fits the data well, but none of the explanatory variables (individually) has a significant impact in predicting the dependent variable (Brooks, 2014). A Pearson correlation used for testing multicollinearity explanatory variables by investigating the relationship of variables.

The specific uses or utilities of such a technique may be such as it provides a measure of errors of estimates made through the regression line. A little scatter of the observed (actual) values around the relevant regression line indicates good estimates of the values of a variable and less degree of errors involved therein. On the other hand, a great deal of scatter of the observed values around the relevant regression line indicates inaccurate estimates of the values of a variable and a high degree of errors involved therein. And also it provides a functional relationship between two or more related variables with the help of which we can easily estimate or predict the unknown values of one variable from the known values of another variable.

In addition to this, it provides a measure of the coefficient of correlation between the two variables which can be calculated by taking the square root of the product of the two regression. Besides that, it provides a measure of the coefficient of the determination, which speaks, of the effect of the independent variable (explanatory, or regressing variable) on the dependent variable (explained or regressed variable) which in turn gives us an idea about the predictive values of the regression analysis. This coefficient of determination is computed by taking the product of the two-regression coefficients. The greater the value of the Coefficient of Determination (R2), the better is the fit, and more useful are the regression equations as the estimating devices. And also it provides a formidable tool of statistical analysis in the field of business and commerce where people are interested in predicting future events as follow: consumption, production, investment, prices, sales, profits, etc. and the success of businessmen depends very much on the degree of accuracy in their various estimates.

Finally, it provides a valuable tool for measuring and estimating the cause and effect relationship among the economic variables that constitute the essence of economic theory and economic life. It is highly used in the estimation of Demand curves, Supply curves, production functions, Cost functions, Consumption functions, etc. Economists have propounded many types of production functions by fitting regression lines to the input and output data and this technique is highly used in our day-to-day life and sociological studies as well to estimate the various factors as follows. birth rate, death rate, tax rate, yield rate, etc.

Last but not the least, the regression analysis technique gives us an idea about the relative variation of a series. Despite the above utilities and usefulness, the technique of regression analysis has the following serious limitations: in the first place, it is assumed that the cause and effect relationship between the variables remains unchanged. This assumption may not always hold good and hence estimation of the values of a variable made based on the regression equation may lead to erroneous and misleading results.

Secondly, the functional relationship that is established between any two or more variables based on some limited data may not hold good if more and more data are taken into consideration. For example, in the case of the Law of Return, the law of diminishing return may come to play, if too much of inputs are used to increase the volume of output. Finally, It involves a very lengthy and complicated procedure of calculations and analysis and it cannot be used in case of a qualitative phenomenon.

3.8. Hypotheses of the Study Variables

According to (Kumar, 2011) a hypothesis is an educated and testable guess about the answer to your research question. The importance of hypotheses lies in their ability to bring direction, specificity, and focus on a research study. It is often described as an attempt by the researcher to explain the phenomenon of interest. The hypothesis can be of null hypotheses or alternative hypotheses.

A null hypothesis predicts that there will be no differences between variables or groups being studied. An alternative variable, on the other hand, predicts that there will be a difference between groups or variables. Therefore, based on the literature reviews in the previous chapter, the researcher put forward the following hypotheses. Based on a review of relevant and related

literature, it is hypothesized that the age of the company, size of the company, the volume of capital, market share, underwriting risk, and GDP are expected to factors affecting firms‘ profitability as measured by Return on Investment (ROI).

Accordingly, the following hypotheses were formulated in this study:

H1. The size of a company has a positive and statistically significant effect on the profitability of insurance companies in Ethiopia.

H2. The age of a company has a positive and statistically significant effect on the profitability of insurance companies in Ethiopia.

H3.The volume of capital has a positive and statistically insignificant effect on the profitability of insurance companies in Ethiopia.

H4. Market Share has a positive and has a positive and statistically insignificant effect on the profitability of insurance companies in Ethiopia.

H5. Liquidity has a positive and statistically significant effect on the profitability of insurance companies in Ethiopia.

H6. Reinsurance dependency has positive and statistically significant effects on the profitability of an insurance company in Ethiopia.

H7. Underwriting risk has positively and statistically significant effects on the profitability of an insurance company in Ethiopia

H8. GDP growth has a positive and statistically significant effect on the profitability of insurance companies in Ethiopia.

H9. Inflation has a positive and statistically significant effect on the profitability of Insurance companies in Ethiopia.

CHAPTER FOUR

4. RESULT AND DISCUSSIONS

4.1 Introduction

This chapter presents the test outcomes of the analysis for seventeen insurance companies in Ethiopia from 2014 to 2018. The chapter is organized into four sections. Section one presents descriptive statistics, model specifications, and tests for the classical linear regression model assumptions. Section two discusses econometrics analysis, Section three presents 'hypotheses of the study and finally, section four is about analysis result and impact.

4.2 Descriptive Statistics

Table 1 presents the mean, maximum, minimum, and standard deviation values. These figures give the overall description of the data used in the regression models. Descriptive statistics summarize the information in a data set by helpful the average indicators of the variables used in the study and present that information in a convenient way each of the variables is examined based on the mean, standard deviation, minimum and maximum values.

4.3 Summary statistics

The summary statistics of the explanatory and dependent variables are presented in Table 1 below.

Table 1: Descriptive Statistics

	ROI	SIZE	AGE	LIQ	VOC	URR	RED	MKS	GDP	I
Mean	0.37	14.71	25.40	8.68	0.06	0.65	0.10	0.06	0.09	0.09
Median	0.29	14.00	23.00	2.03	0.04	0.65	0.09	0.04	0.10	0.08
Maximum	2.47	43.00	85.00	249.76	0.22	0.72	0.51	0.42	0.10	0.13
Minimum	- 0.24	1.00	3.00	- 2.83	0.01	0.54	- 0.06	0.00	0.08	0.07
Std. Dev.	0.38	10.09	15.58	27.65	0.04	0.06	0.09	0.09	0.01	0.02

Source: Results were generated from Eviews

Table 1 shows the descriptive statistics of the study during 2014-2018 and seventeen insurance companies in Ethiopia context which includes the mean, maximum, minimum, and standard deviations. The study has used ten variables for the analysis purpose including nine explanatory variables and one dependent variable.

Those return on investment(ROI) as a dependent variable and size of the company(SIZE), liquidity(LIQ), age of the company(AGE), the volume of capital (VOC), underwriting risk (URR), reinsurance dependency (RED), market share(MKS), gross domestic product (GDP) and inflation(I) as independent variables. The Above Descriptive statistics in Table 1 have the following variables discussion in details:

- **Return on Investement (ROI)**

As presented in Table 1, all variables comprised 85 observations and the profitability measure used in this study namely; ROI indicates that the Ethiopian Insurance companies attained profit from utilizing efficiently using invested capital after paying tax last five years. From the total sample, the average ROI was 0.37 with a minimum of-0.24 and a maximum of 2.47which means, the most profitable insurance among the insurances earned 247% of profit after paying tax for a single birr invested in the capital of the firm. On the other hand, the least profitable of the sampled insurance lose 24%of profit before interest and tax for each birr invested in the firm.

The standard deviation statistics for ROI was 0.38 over the last five years, which indicates that the profitability variation between the insurance was insignificant. The result implies that these insurance companies need to optimize the use of their capital to increase the return on their investment.

- **The Size of the company (SIZE)**

Concerning the total branch (size) as shown in Table 1 above, the average size is 14.71, and there exists significant variation across the insurance companies for the reason that the mean value of size is 14.71 and the value of the standard deviation is 10.09. The maximum and minimum values of size were 43 and 1 respectively. Hence, the varieties of size among insurance companies might have a significant impact on the profitability of insurance companies.

- **The AGE of the company (AGE)**

The average value for age(AGE) has become 25.40 with a standard deviation of 15.58. The maximum value of age was 85.00 and the minimum was 3.00. Therefore, in Table 1 there exists

a very significant variation among the values of age across the sample insurance companies included in this study.

- **Liquidity(LIQ)**

Liquidity has been defined in the model as the ratio of current assets to current liabilities. According to the descriptive statistics Table 1 insurance firm‘s current assets, pay their current liabilities -2.83 times and at most 249.76 times. Similarly, the mean value of liquidity ratio is 8.68 with the value of a standard deviation 27.65, which also shows us the existence of a moderate difference among the values of liquidity ratio for insurance companies under consideration. The maximum and minimum values of liquidity are 249.76 and -2.83 respectively. Therefore, this study conducted to what extent the variations in factors affect the profitability of insurance companies in Ethiopia. Liquidity has been defined in the model as the ratio of current assets to current liabilities.

- **The volume of capital(VOC)**

The average value for the VOC has become 0.06 with a standard deviation of 0.04. The maximum value of the volume of capital was 0.22 and the minimum was 0.01. Therefore, in Table 1 there exists a very significant variation among the values of volume of capital across the sample insurance companies included in this study.

- **Underwriting Risk(URR)**

The average underwriting risk used for the profitability of the insurance industry was 0.65 and the maximum and minimum is 0.72 and 0.54 respectively. Also in Table 1, the standard deviation of the underwriting risk is 0.06. The underwriting of some insurance companies has to employ their risk for the profitability of their company.

- **Reinsurance Dependancy(RED)**

The mean value of reinsurance dependency is 0.10 and the value of standard deviation for the same variable is 0.09 in Table 1, which shows that there were no significant variations among the reinsurance dependency as measured by the change in over the last five years across the sample insurance companies. The maximum and minimum rate is 0.51 and -0.06 rate respectively.

- **Market Share(MKS)**

The average market share rate was 0.06 and; the maximum and minimum rate is 0.42 and 0.00 respectively and Table 1, the standard deviation was 0.09 rate which considers us the market share of the industry is not equally distributed among insurance companies.

- **Gross Domestic Product (GDP)**

The mean value of GDP is 0.09 with the standard deviation value 0.01 which also shows us the existence of a big difference among the values of GDP for insurance companies under consideration. Table 1, the maximum and minimum rate of GDP was 10% and 8% respectively. Therefore, this study is conducted to what extent the variations in factors affecting the profitability of insurance companies in Ethiopia.

- **Inflation(INF)**

Finally, another variable employed in this study was inflation, which had a rate of 9% of the country on average over the past five years. Table 1, the maximum inflation was recorded in the year 13% and the minimum was 7%. The rate of inflation was highly dispersed over the periods under study towards its mean with a standard deviation of 2%. This implies that the inflation rate in Ethiopia during the study period was somewhat unstable.

4.4 Econometrics Analysis

Econometrics analyzes is data using statistical methods to test or develop economic theory. These methods rely on statistical inferences to quantify and analyze economic theories by leveraging tools such as frequency distributions, probability and probability distributions, statistical inference, correlation analysis, simple and multiple regression analysis, simultaneous equation models, and time series methods. This study applied to the common econometrics analysis; Series statistics (i.e. Stationery test), Group statistics (i.e. Correlation among variables), Residual diagnostic (i.e. Normality), and Stability diagnostic (i.e. Model stability test).

4.4.1 Test and Results

4.4.1.1 Unit Root - Stationery Test Result

The unit root test provides the order of integration at which the variables can be stationary. Panel data are rarely stationary means; a type of stochastic process that has received a great deal of attention and study by time series analysts is the so-called stationary stochastic process.

Broadly speaking, a stochastic process is said to be stationary if its mean and variance are constant over time and the value of the covariance between the two time periods depends only on the distance or gap or lag between the two time periods and not the actual time at which the covariance is computed. Regression involving non-stationary variables that have no clear tendency to return to a constant value or linear trend time series often leads to the problem of spurious regression is a regression result of unrelated variables but strongly related as per the result.

This study tests on panel data of insurance companies for the last five years by using the size of the company, age of the company, liquidity, underwriting risk, volume of capital, reinsurance dependency, market share, GDP, and inflation for the Augmented Dickey-Fuller and Phillips-Peron tests.

The results of the Augmented Dickey-Fuller (ADF) test and Phillips-Peron (PP) tests were applied to the variables mentioned in the model of this study ADF test is the first level at a different level. H0 accepts or not reject the H0 and PP tests are first level H0 accept or not reject the H0. So based on this, both test first guideline of the unit root test method, in this study all the variables are stationary at the first level by this implication all critical value at 1%, 5%, and 10% are proved that the critical value and the second guideline of the unit root test the total absolute value t-test value greater than each critical absolute value and final the third guild line of the unit root test all variables p-value less than 5% and significant at all level.

4.4.1.2 Augmented Dickey-Fuller (ADF) Test Result

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

Variables	**ROI**	**SIZE**	**AGE**	**LIQ**	**VOC**	**URR**	**RED**	**MKS**	**GDP**	**I**
t-Statistic Prob	-3.99	-2.80	-3.50	-4.60	-3.94	-11.03	-3.80	-5.76	-7.89	-8.56
Prob.	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1% level	-3.51	-3.51	-3.51	-3.51	-3.51	-3.51	-3.51	-3.51	-3.51	-3.51
5% level	-2.90	-2.90	-2.90	-2.90	-2.90	-2.90	-2.90	-2.90	-2.90	-2.90
10% level	-2.59	-2.59	-2.59	-2.59	-2.59	-2.59	-2.59	-2.59	-2.59	-2.59

Significance level at 1%, 5% & 10%.

Source: Own the study from Eviews

ADF Test Analysis: 1St Level with Intercept

The analysis of the ADF output presented in Table 2 looks at the first level form with intercept the dependent variable ROI is the absolute t-statics value (-3.99) is greater than the critical value 1%(-3.51),5%(-2.90) and 10%(-2.59) and also the dependent variable the p-values 0.000 which is less than 5% so those variables significant at all level.

The next nine independent variables are the absolute t-statistics value, SIZE(-2.80) is greater than the critical value1% (-3.51), 5% (-2.90) and 10% (-2.59), AGE (-3.50) is greater than than the critical value 1% (-3.51),5% (-2.90) and 10% (-2.59), LIQ (-4.06) is greater than the critical value 1% (-3.51), 5% (-2.90) and 10% (-2.59),VOC (-3.94) is greater than the critical value 1% (-3.51), 5% (-2.90) and 10% (-2.59), URR (-11.03) is greater than the critical value 1% (-3.51), 5% (-2.90) and 10% (-2.59), RED (-3.80) is greater than the critical value 1% (-(-3.51), 5% (-2.90) and 10% (-2.59), MKS (-5.76) is greater than the critical value 1% (-3.51), 5% (-2.90) and 10% (-2.59),GDP (-7.89) is greater than the critical value 1% (-3.51), 5% (-2.90) and 10% (-2.59),and INF (-8.56) is greater than the critical value 1%(-(-3.51), 5% (-2.90) and 10% (-2.59). And also these almost all variables‘ the p-value is 0.0000 which is less than 5% at significant all level, therefore all these independent variables are based on this test.

4.4.1.3 Phillips-Perron (PP)

Table 3: Phillips-Perron (PP) Test Result Variables

Variables	ROI	SIZE	AGE	LIQ	VOC	URR	RED	MKS	GDP	I
t-Statistic Prob	-8.40	-3.77	-3.95	-9.12	-4.03	-30.03	-6.74	-4.94	-46.87	-38.37
Prob.	0.00	0.02	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
1% level	-3.51	-4.07	-4.07	-4.07	-4.07	-4.07	-4.07	-4.07	-4.07	-4.07
5% level	-2.90	-3.46	-3.46	-3.46	-3.46	-3.46	-3.46	-3.46	-3.46	-3.46
10% level	-2.59	-3.16	-3.16	-3.16	-3.16	-3.16	-3.16	-3.16	-3.16	-3.16

Significance level at 1%, 5% & 10%

Source: Own the study from Eviews

PP Test Analysis: 1St Level with Intercept

The analysis of the PP output presented in Table 3 looks first at first level with intercept all the variables are the same critical value that is 1%(-3.51),5%(-2.90) and 10%(-2.59) less than the absolute t-statistics value which are ROI(-8.294), SIZE(-3.77), AGE(-377), LIQ(- 9.12), VOC(-4.03), URR(-30.03), RED(-6.74), MKS(-4.94), GDP(-46.87) and I(-38.37) and also almost all variables the p- values 0.0000 which is less than 5% so those variables significant at all level.

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

4.4.1.4 Autocorrelation Test Result

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

In this study, the Durbin-Watson test statistic value in Table 4 was 1.534774. As mentioned in the previous chapter to empirically analyze factors affecting the profitability of insurance companies in Ethiopia, 85 observations were used in the model. Moreover, there were 9 independent variables and an intercept term in the model.

Therefore, this study proved in Table 4 in the Durbin-Watson test. Moreover, the R – squared in Table 4, equals 0.709725; the study can be made that 71% of the dependent variable is explained by its regression on the independent variables.

This means the explanatory variables are highly explained in the dependent variables; because in the regression model, most of the econometrics researchers‘ proved that, a good regression model the R-squared is greater than 60 %. That is it will increase as long as explanatory variables, regardless of their true significance.

Table 4: Regression result of Durbin-Watson Test R-squared

R-squared	0.709725	Mean dependent var	0.368106
Adjusted R-squared	0.674892	S.D. dependent var	0.376903
S.E. of regression	0.214903	Akaike info criterion	-0.127125
Sum squared resid	3.463760	Schwarz criterion	0.160245
Log likelihood	15.40283	Hannan-Quinn criter.	-0.011537
F-statistic	20.37510	Durbin-Watson stat	1.534774
Prob(F-statistic)	0.000000		

Source: Own the study from Eviews

4.4.1.5 Model Stability

Stability test the most common measurement was Ramsey RESET (Regression Equation Specification Error Test) test among the many "diagnostic tests" that econometricians routinely use, some variant or other of the RESET test is widely employed to test for a non- zero mean of the error term; that is, it tests implicitly whether a regression model is correctly specified in terms of the repressors that have been included.

Among the reasons for the popularity of this test is the fact that it is easily implemented, and the fact that it is an exact test, whose statistic follows an F-distribution under the null. The construction of the test does, however, require a choice to be made over the nature of the null.

The construction of the test does, however, require a choice to be made over the nature of certain "augmenting regressors" that are employed to model the misspecification, the RESET test statistic has a non-null distribution which may be doubly non-central F, or maybe non-standard. Although this has no bearing on the size of the test, it has obvious implications for its power.

The Ramsey RESET test was performed to find out the stability of the model. Ramsey RESET test was aimed at testing for specification errors or non-normality which violate the assumption

that the disturbances are distributed N (0, I). It tests for the omitted variables (that is; the vector of the regressors does not include all relevant variables), incorrect functional form, and the correlation between the dependent and independent variables.

Under such specification errors, Ordinary Least Squares estimators would be biased and inconsistent, and conventional inference procedures would be invalidated (In SisiayHosa study explain Ramsey, 1969). The null hypothesis that the model is stable (H0: Model is stable) was tested against the alternative hypothesis of no stability in the model (H1: No stability in the model). The null hypothesis is rejected in favor of the alternative hypothesis if the probability F-statistic of the Ramsey RESET test statistic is significant at five percent. The results from Ramsey RESET test are presented in appendix F and X2 versions of the test show that the functions are linear and are stable since the p-value of the dependent variable Table 4 is significant at 5%. So using the number of fitted terms two our model was the probability F-statistic of the test (0.0001) is significant at a five percent level. Classical Linear Regression Model (CLRM) will be violated, and including non-influential explanatory variables, since the variable does not belong to the correct model, its population coefficient should be equal to zero and none of the CLRM assumptions is violated and OLS estimators are both unbiased and consistent. Therefore, based on this result we fail to reject the null hypothesis that the models are linear and stable.

Table 5: Ramsey RESET Test Result

	Value	df	Probability
F-statistic	10.52188	(2, 73)	0.0001

Source: Own the study from Eviews

4.4.1.6 Heteroscedasticity Test Result

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

(uncorrelated with one another). If the errors were correlated with one another, it would be stated that they are autocorrelated.

This test is conducted to ascertain that the disturbance or the errors have the same variance such that OLS estimators are best leaner unbiased error (BLUE), that is the coefficient estimates are efficient, consistent, and unbiased. To detect heteroscedasticity, different techniques can be used. In this study, we will use the white test to assess the stability of the variance for both models.

The null hypothesis of no heteroscedasticity is stated as follows for both models: H0 =heteroscedasticity

The null hypothesis, which in this case is a hypothesis for the value of the profitability model, will not be rejected in favor of the alternative hypothesis if the probability F-statistics of the white heteroscedasticity test is significant at five percent.

For the economic growth model, as we can be seen under next Table 4 and Table 5, both the common heteroscedasticity model in this study focus on heteroscedasticity Breusch – Pagan – Godfrey, and White heteroscedasticity; and the F-and X2 (LM) version of the test statistics give the same conclusion that there is no evidence for the presence of heteroscedasticity since the p-values are considerably in less than 5 % or 0.05.

Heteroscedasticity an important assumption assumed by the classical linear regression model is that the error term should be homogeneous. Whenever that assumption is violated, then one can assume that heteroscedasticity has occurred in the data. In this study as shown in Table 6 and Table.7, both the F-statistic and Chi-Square versions of the test statistic gave the same conclusion that there is no evidence for the presence of heteroscedasticity, since the p-values were in less than 0.05.

The third version of the test statistic, Scaled explained, which as the name suggests is based on a normalized version of the explained sum of squares from the auxiliary regression, also gave the same conclusion that there is no evidence for the presence of heteroscedasticity problem, since the p-value was considerably in less than of 0.05 the common heteroscedasticity test are Breusch-Pagan-Godfrey and White tests approved this study.

Table 6: Breusch-Pagan-Godfrey Test Result F-statistic

F-statistic	8.455919	Prob. F(9,75)	0.0000
Obs*R-squared	42.81031	Prob. Chi-Square(9)	0.0000

Source: Own the study EVIEWS Table

Table 7: White Test Result

F-statistic	7.926756	Prob. F(50,34)	0.0000
Obs*R-squared	78.28435	Prob. Chi-Square(50)	0.0065

Source: Own the study Eviews

4.4.1.7 Normality Test Result

A normality test: In statistics, it is needed to assess the normality of a given set of data; for many statistical processes, and used to determine if a data set is well-modeled by a normal distribution and to compute how likely it is for a random variable underlying the data set to be normally distributed. It is a prerequisite to assessing the normality of the data since it is an important assumption in parametric testing. There are various normality tests are available for the determination of the normality of data. In statistics, the normality tests are used to determine whether a given set of data is well-defined by a normal distribution.

They are also used to measure how likely a set of data to be normally distributed for a random variable. In probability theory and statistics, the probability distributions are the set of probabilities assigned to all the possible outcomes for an event or a set of events. There are several different types of probability distributions.

Normality test among the many "diagnostic tests" that econometricians routinely use, several tests of normality are discussed in the literature, we will consider two common normality tests: histogram of residuals and the Jarque–Bera test.

A) Histogram of Residuals: A histogram of residuals is can be used to check whether the variance is normally distributed or the variance is a constant. Asymmetric bell-shaped histogram of residual which is distributed around zero indicates that the normality assumption is likely to be true. The study showed in Figure 2 the right side looks like a bell-shaped normal distribution curve on the histogram, you would get some idea as to whether normal approximation may be appropriate. It is always a good practice to plot the histogram of the residuals as a rough and ready method of testing for the normality assumption.

B) Jarque–Bera (JB) Test of Normality: Jarque–Bera (JB) Test of Normality has created by two econometrics scientists from the second named; Carlos Jarque and Anil K.Bera; The Jarque–Bera (JB) test is the goodness of fit of whether sample data have the skewness and kurtosis matching a normal distribution. In the study, 85 sample size observations and 10 variables including one dependent and constant variable were taken. Figure 2. And Jarque– Bera (JB) Test normality is an asymptotic, or large-sample, test. It is also based on the OLS residuals.

This test first computes the skewness and kurtosis measures of the OLS residuals and uses the following test statistic:

The normality tests to applied only the mechanical formula for this study shown in Figure .2 below in the right side where the coefficient of kurtosis is almost around 3, which in this study 11.0777 and the Bera-Jarque statistic had a P-value of 0.003932 implying that the probability is less than 5%, therefore, the data were consistent with a normal distribution assumption.

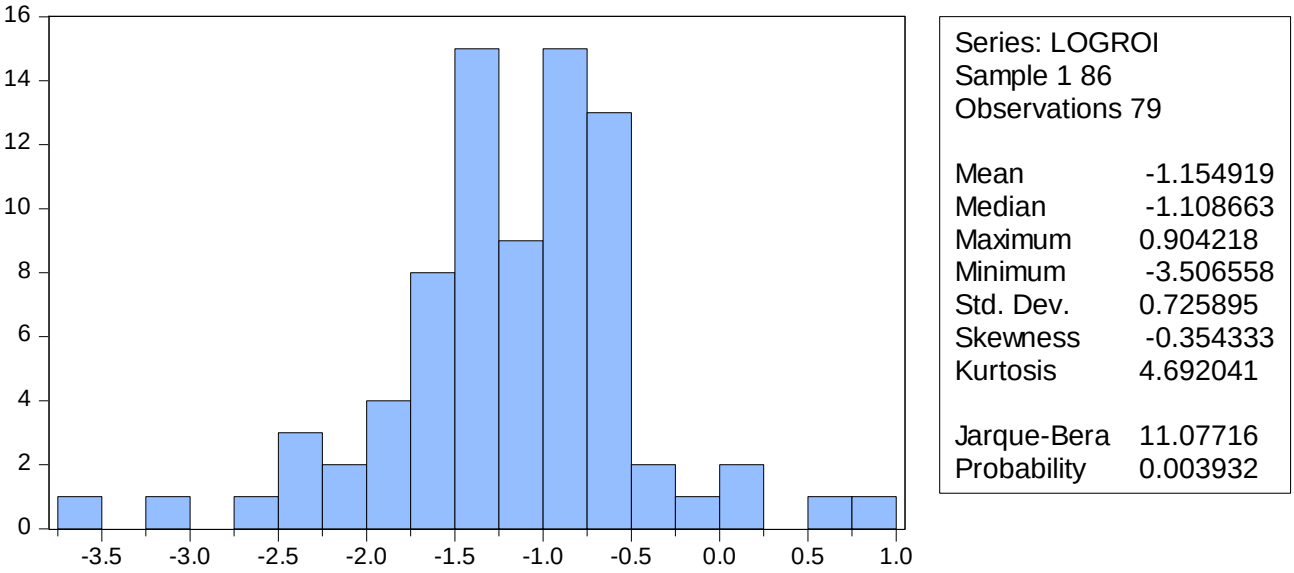


Figure 2: Normality Test Result;

Source: results from Eviews

Therefore, based on the above Figure 2 the Jarque –Bera assumption our model was a normal distribution of the data and the shape of the residual some like to bell shape, so the study proved Histogram of Residuals assumption.

4.4.1.8 Correlation Analysis among Variables

The problem of multicollinearity usually arises when certain explanatory variables are highly correlated. Usually, that as any correlation coefficient above 0.7 could cause a serious multicollinearity problem leading to inefficient estimation and less reliable results. Accordingly, this research paper utilizes Generalized Least Squares regression (GLS) which corrects the standard errors for panel heteroscedasticity, and as the results are believed to be unbiased coefficients and consistent panel-corrected standard errors.

Most of the econometrics studies suggest that all variables free from the multicollinearity coefficient bellow 0.70 or 70%. As this study, there is no multicollinearity problem through these all variables are below 70% or less than 0.70.

Table 8: Correlation Analysis

	ROI	SIZE	AGE	LIQ	VOC	URR	RED	MKS	GDP	I
ROI	1.00									
SIZE	0.55	1.00								
AGE	0.54	0.81	1.00							
LIQ	0.14	0.10	0.23	1.00						
VOC	0.34	0.72	0.80	0.28	1.00					
URR	0.07	-0.08	-0.17	-0.02	-0.02	1.00				
RED	0.57	0.30	0.24	0.03	0.12	-0.12	1.00			
MKS	0.67	0.78	0.85	0.19	0.78	-0.01	0.32	1.00		
GDP	0.11	-0.09	-0.17	0.11	0.00	-0.22	0.23	0.01	1.00	
I	0.00	0.09	0.16	-0.08	-0.01	0.27	-0.19	-0.01	-0.88	1.00

Source: Results from correlation analysis done using Eviews

4.4.2 Results of Regression Analysis

This section presents the empirical findings from the econometric results this study covers the empirical regression model used in this study and the results of the regression analysis. Empirical estimation model. As presented in the third chapter the empirical model used in the study to identify the factors that can affect profitability, how much percent contribution independent variables contribute to the model regression as follows.

Table 9: Regression Result

Dependent Variable: ROI
Method: Least Squares
Date: 05/27/20 Time: 15:23
Sample (adjusted): 1 85
Included observations: 85 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.18720	0.652623	-3.351436	0.0013
AGE	0.00401	0.004098	0.978208	0.3311
SIZE	0.00626	0.004307	1.453147	0.1504
LIQ	0.00090	0.000909	0.989208	0.3257
VOC	-4.34200	1.045862	-4.151571	0.0001*
URR	0.85572	0.447771	1.911070	0.0598
RED	1.35257	0.301153	4.49131	0.0000*
MKS	2.91401	0.620855	4.693547	0.0000*
GDP	12.7773	4.287442	2.980161	0.0039*
I	6.11088	2.384249	2.563022	0.0124*
R-squared	0.70973	Mean dependent var		0.368106
Adjusted R-squared	0.67489	S.D. dependent var		0.376903
S.E. of regression	0.21490	Akaike info criterion		-0.127125
Sum squared resid	3.46376	Schwarz criterion		0.160245
Log likelihood	15.4028	Hannan-Quinn criter.		-0.011537
F-statistic	20.3751	Durbin-Watson stat		1.534774
Prob(F-statistic)	0			

*** denote significance at 5% levels**

Source: Regression results from Eviews

Table 9 showed profitability or return on asset(ROI) of concluded that; the age of the company, size of the company, liquidity, underwriting of risk, reinsurance of dependence, market share, GDP, and inflation are positively correlated variables profit or ROI.

On the other hand, the volume of capital, are negatively correlated with profitability. So, the volume of capital was to be a negative relation to profitability.

Source: Estimation Equation from Eviews

ROI = C(1) + C(2)*SIZE + C(3)*AGE + C(4)*LIQ + C(5)*VOC + C(6)*LOGURR + C(7)*RED + C(8)*MKS + C(9)*GDP + C(10)*I

Source: Substituted Coefficients from Eviews

ROI = -2.18722306123 + 0.0040085034763*AGE + 0.00625942153534*SIZE

+0.000899393557946*LIQ - 4.34196967751*VOC + 0.855720866595*URR

+1.35257276702*RED + 2.91401036954*MKS + 12.7772669819*GDP + 6.11088163702*I

The estimation result of the operational regression model used in this study is presented in Table 9 the R-squared statistics and the Adjusted-R squared statistics of the model were 71% and 67% respectively. The result indicates that the changes in the independent variables explain 71% of the changes in the dependent variable. Which is the above all variables; collectively explain 71% of the profitability. The remaining 29% of changes were explained by other factors, which are not included in the model thus unobserved variables may explain chapter three empirical analysis.

Thus, independent variables collectively, are good explanatory variables of the profitability of insurance companies. The null hypothesis of F-statistic (the overall test of significance) that the R-squared is equal to zero was rejected at a significant level as the p-value.

Based on the results shown in Table 9, five of nine independent variables had a statistically significant impact on economic growth in the insurance companies in Ethiopia. Among the significant variables, the volume of capital, market share, reinsurance dependency, inflation, and GDP was significant at 5% significance level since the p-value for all the four variables was greater than 5% or insignificance. The results of the tests for the classical linear regression model showed that the data fits the basic assumptions On the other hand; the remaining results of the documentary analysis were used to assess the link that exists between factors affecting the profitability of the insurance industry in the economic growth.

4.4.3 Hypotheses of the Study

The previous section presented mainly the outputs of the documentary analysis and checked the appropriateness of the model selected. Accordingly, based on the outputs presented in the previous section, this section presents the analysis and discussion which is organized in two parts, part one presents the research hypotheses presented in chapter three and part two discusses the results and attempts to test hypotheses.

As stated in chapter two the broad objective of this study was to identify the factors affecting the profitability of insurance. Further, as noted in the previous chapters (chapters two), to achieve this chapter objective, the study developed and analyzed the nine research hypotheses, and two corresponding research questions are the following details.

To be able to investigate whether each of the research hypotheses presented holds in the context of profitability problem and to address the specific research question presented above, this section tries to present the analysis at the same time as here next.

4.4.4 Analysis Results and Impact

This section of the chapter discusses the analysis of the results. The analysis is based on the theoretical framework and the data collected through the data collection instruments. The data are analyzed in light of the specific research objectives and hypotheses stated.

Hence, the analysis focuses mainly on the results of the regression analysis for the selected factors that have an impact on the profitability of insurance. These selected factors are the size of the company, age of the company, liquidity, volume of capital, underwriting risk, reinsurance dependency, market share, GDP, and inflation.

4.4.4.1 Impact of Size (SIZE) of the company on Return on Investment(ROI)

This baseline study result is concerned with size, the result of the study is the same truth, and the above Table 9 reveals that size has a positive and insignificant effect on the profitability of insurance companies, indicating a one percent increase in size results in 0.006259 unit increase in profitability insignificantly. Profitability increase the bigger an insurance firm grows suggesting diseconomies of scale because of the Insurance Commission‘s tighter regulation of large firms. The commission‘s stricter regulation of larger firms, specifically on companies‘ capital adequacy

requirements and their use of scarce economic resources, could have led the big players in the insurance industry to become more risk. The diseconomies happen if instead of a large asset base providing firms with additional resources intended for growth, such assets are idled or not used productively as to result in higher profits. The result of this study is similar to the result of (Horsa, 2019), according to (Hailegebreal, 2016) and (Gashaw, 2012) positive relationship and statistically significant for ROA.

4.4.4.2 Impact of Age of Company(AGE) on Return on Investment (ROI)

The result showed that the Age of Company(AGE) influence on profitability is a positive relationship but insignificant. The result of the age of Company(AGE) indicates that the above Table 9 the Age of Company(AGE) increases by 1 percent, there is a positive increase by 0.00401 in profitability. This means that the age of the company and profitability in this study moves in the same direction. This may due to continuously and time after time growing. The result is the same as (Gashaw, 2012) but (Tariku Ashenafe, 2019) study the relationship between profitability and age is a positive and statically significant effect concerning ROA.

4.4.4.3 Impact of Liquidity (LIQ) on Return on Investment (ROI)

The result of regression analysis confirmed the hypothesis raised at the beginning of the paper, so there is a statistically less significant (insignificance) and a positive correlation between the profitability of insurance and their liquidity. The reason for this result in Table 9 is explained by the fact that the greater is the current ratio (through which represented liquidity) the smaller is the profitability and some study said that funds held in the form of liquidity can be invested and ensure higher profitability. For liquidity (Tariku Ashenafe, 2019) and (Hailegebreal, 2016) the same resalt presented a positive and statistically insignificant but (Gashaw, 2012) presented negative yet statistically significant respect with ROA.

4.4.4.4 Impact of Volume of Capital (VOC) on Return on Investment (ROI)

The volume of capital (VOC) has a negative sign and statistically significant in explaining profitability in the long- run. From the above Table 9 the result of the volume of capital, and increased capital by 1%, will decrease profitability by -4.342 significantly. The negative sign indicates the inverse relationship between VOC and ROI by the expectation of the theory mentioned and accepted sign the previous chapter. (Gashaw, 2012) study results from a positive

relationship between profitability and volume of capital and statistical significance concerning ROA but (Horsa, 2019) negative relationship and statically significance for ROA.

4.4.4.5 Impact of Underwriting Risk(UUR) on Return on Investment (ROI)

The result showed that underwriting risk (UUR) influence on profitability is a positive relationship and insignificant. The result of the underwriting risk(UUR) indicates that above Table 9 the underwriting risk increases by 1 percent, there is a positive increase by 85.57% in profitability. This means that underwriting risk and profitability in this study moves in the same direction. This may due to constantly and consistently growing. For (Suheyli, 2015) study a negative relationship and statistically significant for ROA.

4.4.4.6 Impact of Reinsurance Dependancy(RED) on Return on Investment (ROI)

The reinsurance dependency(RED) control is positive, 1.35257 Table 9, and statistically significant indicating that its impact big. The significant parameter indicates that an increase in reinsurance dependency does significantly affect Ethiopian insurance profitability. In the multivariate analysis, the evidence that reinsurance dependency and profitability are positively related. More specifically, insurers in states with greater reinsurance concentration are more profitable than insurers in states. The study of (Suheyli, 2015) results in a negative relationship and statistical insignificance for profitability to ROA.

4.4.4.7 Impact of Market Share (MKS) on Return on Investment (ROI)

The market share which is measured as a ratio of total Revenue of the company to total gross revenue written premium of the industry in this study was positive, 2.91401 Table 9, and statistically significant indicating that its impact big. The significant parameter indicates that a 1% increase in market share does significantly affect Ethiopian insurance profitability by 1 %. In the multivariate analysis, the evidence that market concentration and insurers‘ underwriting profits are positively related. More specifically, insurers in states with greater market concentration are more profitable than insurers in states with lower levels of market concentration, which is consistent with this study too. According to (Horsa, 2019) positive and significance for ROA.

4.4.4.8 Impact of Gross Domestic Product (GDP) on Return on Investment (ROI)

Gross domestic product is the market value of all finished goods and services produced in a country within a specified period, mostly one year. It is a gauge of economic recession and recovery and an economy's general monetary ability to address externalities. No country can experience meaningful development without the presence of formidable insurance industry, thereby making insurance business in any nation indispensable irrespective of its quota to the gross domestic product. The insurance industry is perceived as an indispensable tool of economic progress, growth, and development. The growth rate of GDP reflects economic activity as well as level of economic development and as such effect, the various factors related to the supply and demand for insurance products and services. If the GDP grows, the likelihood of selling insurance policies also grows and insurers are likely to benefit from that in the form of higher profits. However, Table 9 result of this study shows that a positive coefficient of 12.77 and it was statistically significant (P-value 0.039) indicating that growth in economic condition measured in terms of the gross domestic product has a positive impact on the profitability of Ethiopian insurers for the study period (C.-Y. Lee, 2014).

4.4.4.9 Impact of Inflation (I) on Return on Investment (ROI)

The study has found and direct relationship between Profitability and inflation (I) as per Table 9. Increases of inflation by a 1 percent increase in the economy by 6.11088. The coefficient I is positive 6.11088 and is significant. This result is confirming the positive relation between profitability and inflation rate. Therefore Profitability can be facilitated even by increasing moderate inflation.

CHAPTER FIVE

5. SUMMARY, CONCLUSION, AND RECOMMENDATIONS

This chapter organized into three subsections. The first section presents the presents there a summary of the result, the second section is the conclusion and the final sections present the recommendations. The study summarizes, concluded, and recommend some policy recommendations which need to be applied to increase the profitability of insurance companies using the studied variables and in some the areas to contribute to making insurance companies of Ethiopia profitable and is to be often considered as a train of in Ethiopia economic growth.

5.1 Summary of the Results

The main objective of this study was to investigate the most important determinants of insurance companies' profitability in Ethiopia. Profitability is affected by both internal and external factors; in this study to measures of profitability were used ROI. The empirical analysis of investigating the determinants of the profitability of Ethiopian insurance companies was conducted using a panel data set consisting of financial data of seventeen insurers from 2014 to 2018, which were analyzed using descriptive statistics, and multiple linear regression analysis. The panel data of seventeen insurance companies for five years was used for the analysis purpose.

Concerning the regression result measured by ROI; the size of the company, the age of the company, liquidity, underwriting of risk, reinsurance dependency, market share, GDP, and inflation was positive relation, but the volume of the capital was negative relation with ROI. Statistically, the volume of the capital, reinsurance dependency, market share, GDP and inflation statistical significance and the size of the company, the age of the company, liquidity, and underwriting of risk statistically insignificantly.

5.2 Conclusions

This study revealed that Reinsurance dependency, Market share, gross domestic product, and inflation is positively and significantly affect profitability and volume of the capital is negatively and significantly affect the profitability of insurance companies in Ethiopia, while the size of the

company, age of the company, liquidity and underwriting risk is positively and insignificantly affect the profitability of insurance companies in Ethiopia. The study provides evidence that the company volume of capital, market share, reinsurance dependency, inflation, and GDP are important factors affecting the profitability of insurance companies in Ethiopia. Therefore, the study recommends that Ethiopian insurance companies should give due consideration to these factors to address profitability issues.

5.3 Recommendation

The study particularly examined some firm-specific/micro, and macro factors profitability affecting insurance companies in Ethiopia because it leads this study to small sample size and resource limitation. Thus, future research should be focused on the areas particularly by considering some variables such as customers, branch expansion, regulation, and ownership to identify which variables are the powerful factors affecting profitability. Despite, further research should investigate the profitability determinants of insurance business by using the same variable used in the current study. Therefore, this study explained profitability; other researchers shall identify and clarify the path for including other variables.

• Volum of the capital, reinsurance dependency, and market share of the company are the most important factors affecting the insurer‘s profitability, insurance companies should grow more and expand their activities to be more profitable. To increase the profitability or return on investment, a concerted effort should be directed towards the sector economy to enhance sustainable economic growth through increased profitability of insurance.

• Regarding the two macro-economic variables, GDP and Inflation, though there was positive and statistically significant as per this study, constant flow up and keeping track of their impact on insurers activities should be taken seriously.

• Age of the company, size of the company, liquidity, and underwriting of risk was showed an insignificant and positive relationship with profitability that is a sign that Ethiopian insurance companies largely have to manage their expansion of branches, short-term liabilities, which need to, match their assets to these liabilities and insufficient volume of premium. It is recommended that managers of insurance companies exercise caution in their operations by keeping costs to the minimum whiles increasing their revenue.

• Finally, the study sought to identify the factors that affect the profitability of insurance companies in Ethiopia. However, the variables used in the statistical analysis did not include all factors that can affect the profitability of insurers' company in Ethiopian it only includes few firm-specific/micro and macro quantitative variables. Hence, the research advises scholars to do further investigation to assist the insurance industry in Ethiopia like government regulation policy and management bodies of insurance companies should strive to emphasize to firm-specific factors, and macro factors because, those firm-specific factors have a significant effect on the profitability of the company.

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Appendixes

Appendix 1 Regression Result

Dependent Variable: ROI
Method: Least Squares
Date: 05/27/20 Time: 15:23
Sample (adjusted): 1 85
Included observations: 85 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.187223	0.652623	-3.351436	0.0013
AGE	0.004009	0.004098	0.978208	0.3311
SIZE	0.006259	0.004307	1.453147	0.1504
LIQ	0.000899	0.000909	0.989208	0.3257
VOC	-4.341970	1.045862	-4.151571	0.0001
URR	0.855721	0.447771	1.911070	0.0598
RED	1.352573	0.301153	4.491310	0.0000
MKS	2.914010	0.620855	4.693547	0.0000
GDP	12.77727	4.287442	2.980161	0.0039
I	6.110882	2.384249	2.563022	0.0124

R-squared	0.709725	Mean dependent var	0.368106
Adjusted R-squared	0.674892	S.D. dependent var	0.376903
S.E. of regression	0.214903	Akaike info criterion	-0.127125
Sum squared resid	3.463760	Schwarz criterion	0.160245
Log likelihood	15.40283	Hannan-Quinn criter.	-0.011537
F-statistic	20.37510	Durbin-Watson stat	1.534774
Prob(F-statistic)	0.000000		

Appendix 2 Ramsey RESET Test Result

Ramsey RESET Test
Equation: UNTITLED
Specification: ROI C AGE SIZE VOC RED URR LIQ MKS I GDP
Omitted Variables: Powers of fitted values from 2 to 3

	Value	df	Probability
F-statistic	10.52188	(2, 73)	0.0001
Likelihood ratio	21.53057	2	0.0000

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.775070	2	0.387535
Restricted SSR	3.463760	75	0.046183
Unrestricted SSR	2.688689	73	0.036831
Unrestricted SSR	2.688689	73	0.036831

LR test summary:

	Value	df
Restricted LogL	15.40283	75
Unrestricted LogL	26.16811	73

Unrestricted Test Equation:
Dependent Variable: ROI
Method: Least Squares
Date: 06/01/20 Time: 15:21
Sample: 1 85
Included observations: 85

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.675283	0.794822	-2.107746	0.0385
AGE	0.002394	0.003809	0.628569	0.5316
SIZE	0.004016	0.004150	0.967660	0.3364
VOC	0.202911	2.025561	0.100175	0.9205
RED	1.601749	0.602579	2.658155	0.0096
URR	0.460150	0.451286	1.019640	0.3113
LIQ	0.000602	0.000859	0.700126	0.4861
MKS	0.095235	1.548644	0.061496	0.9511
I	5.674673	2.588848	2.191969	0.0316
GDP	9.540607	4.844013	1.969567	0.0527
FITTED^2	-0.175906	0.587396	-0.299467	0.7654
FITTED^3	0.320995	0.220958	1.452745	0.1506

R-squared	0.774679	Mean dependent var	0.368106
Adjusted R-squared	0.740726	S.D. dependent var	0.376903
S.E. of regression	0.191915	Akaike info criterion	-0.333367
Sum squared resid	2.688689	Schwarz criterion	0.011478
Log likelihood	26.16811	Hannan-Quinn criter.	-0.194661
F-statistic	22.81654	Durbin-Watson stat	1.588016
Prob(F-statistic)	0.000000		

Appendix 3 Heteroskedasticity Test: Breusch-Pagan-Godfrey

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	8.455919	Prob. F(9,75)	0.0000
Obs*R-squared	42.81031	Prob. Chi-Square(9)	0.0000
Scaled explained SS	81.47831	Prob. Chi-Square(9)	0.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/01/20 Time: 15:44
Sample: 1 85
Included observations: 85

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.065325	0.205229	-0.318303	0.7511
AGE	0.000274	0.001289	0.212406	0.8324
SIZE	-0.000406	0.001355	-0.299657	0.7653
VOC	-0.924667	0.328891	-2.811468	0.0063
RED	0.586019	0.094703	6.187950	0.0000
URR	0.191662	0.140810	1.361141	0.1775
LIQ	-0.000140	0.000286	-0.488054	0.6269
MKS	0.394604	0.195239	2.021129	0.0468
I	-0.418745	0.749772	-0.558496	0.5782
GDP	-0.084217	1.348267	-0.062463	0.9504

R-squared	0.503651	Mean dependent var	0.040750
Adjusted R-squared	0.444089	S.D. dependent var	0.090640
S.E. of regression	0.067580	Akaike info criterion	-2.440866
Sum squared resid	0.342533	Schwarz criterion	-2.153495
Log likelihood	113.7368	Hannan-Quinn criter.	-2.325277
F-statistic	8.455919	Durbin-Watson stat	2.129818
Prob(F-statistic)	0.000000		

Appendix 4 Heteroskedasticity Test: White

Heteroskedasticity Test: White

F-statistic	7.926756	Prob. F(50,34)	0.0000
Obs*R-squared	78.28435	Prob. Chi-Square(50)	0.0065
Scaled explained SS	148.9939	Prob. Chi-Square(50)	0.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/01/20 Time: 15:57
Sample: 1 85
Included observations: 85
Collinear test regressors dropped from specification

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.46331	23.18695	0.451258	0.6547
AGE^2	-3.68E-05	0.000211	-0.174472	0.8625
AGE*SIZE	-0.000159	0.000233	-0.682404	0.4996
AGE*VOC	-0.074974	0.080108	-0.935917	0.3559
AGE*RED	-0.051864	0.032644	-1.588768	0.1214
AGE*URR	0.005357	0.028970	0.184916	0.8544
AGE*LIQ	-0.000467	0.000411	-1.134653	0.2645
AGE*MKS	0.140690	0.098756	1.424630	0.1634
AGE*I	0.021029	0.099741	0.210836	0.8343
AGE*GDP	0.115764	0.212389	0.545054	0.5893
AGE	-0.006463	0.039262	-0.164604	0.8702
SIZE^2	-0.000114	0.000357	-0.318852	0.7518
SIZE*VOC	-0.018293	0.103709	-0.176392	0.8610
SIZE*RED	0.003294	0.036875	0.089318	0.9294
SIZE*URR	-0.020447	0.021855	-0.935573	0.3561
SIZE*LIQ	-0.000253	0.000349	-0.724504	0.4737
SIZE*MKS	0.170181	0.151754	1.121424	0.2700
SIZE*I	0.013262	0.104544	0.126856	0.8998
SIZE*GDP	-0.002273	0.196354	-0.011574	0.9908
SIZE	0.013731	0.030165	0.455205	0.6519
VOC^2	18.27472	17.48311	1.045279	0.3033
VOC*RED	1.503327	12.77631	0.117665	0.9070
VOC*URR	-19.16760	10.28398	-1.863831	0.0710
VOC*LIQ	0.028776	0.113842	0.252768	0.8020
VOC*MKS	-1.335006	11.48710	-0.116218	0.9082
VOC*I	7.688318	39.77274	0.193306	0.8479
VOC*GDP	-86.14179	67.14553	-1.282912	0.2082
VOC	19.69283	12.82188	1.535876	0.1338
RED^2	2.615028	1.638768	1.595729	0.1198
RED*URR	-1.322477	2.721327	-0.485968	0.6301
RED*LIQ	-0.008081	0.047031	-0.171828	0.8646
RED*MKS	12.68450	9.345128	1.357338	0.1836
RED*I	19.63330	12.56485	1.562557	0.1274
RED*GDP	21.94831	22.44378	0.977924	0.3350
RED	-2.795113	3.460780	-0.807654	0.4249
URR^2	-50.18725	109.8663	-0.456803	0.6507

URR*LIQ	-0.035659	0.036522	-0.976371	0.3358
URR*MKS	23.88905	10.43586	2.289131	0.0284
URR*I	1304.909	2822.581	0.462311	0.6468
URR*GDP	288.0324	617.2625	0.466629	0.6437
URR	-80.49833	173.5297	-0.463888	0.6457
LIQ^2	-4.76E-06	2.03E-05	-0.234731	0.8158
LIQ*MKS	0.090723	0.110822	0.818631	0.4187
LIQ*I	0.095526	0.168000	0.568608	0.5734
LIQ*GDP	0.109211	0.250302	0.436317	0.6654
LIQ	0.014307	0.045387	0.315215	0.7545
MKS^2	-28.93145	13.06378	-2.214631	0.0336
MKS*I	-45.73843	36.54437	-1.251586	0.2193
MKS*GDP	-6.497867	42.31271	-0.153568	0.8789
MKS	-15.88787	10.27024	-1.546982	0.1311
I^2	-3644.856	7878.957	-0.462606	0.6466

R-squared	0.920992	Mean dependent var	0.040750
Adjusted R-squared	0.804805	S.D. dependent var	0.090640
S.E. of regression	0.040045	Akaike info criterion	-3.313895
Sum squared resid	0.054524	Schwarz criterion	-1.848304
Log likelihood	191.8405	Hannan-Quinn criter.	-2.724393
F-statistic	7.926756	Durbin-Watson stat	1.663543
Prob(F-statistic)	0.000000		

Appendix 5Correlation Analysis

	ROI	SIZE	AGE	LIQ	VOC	URR	RED	MKS	GDP	I
ROI	1	0.55115	0.53634	0.13576	0.33608	0.0692	0.57417	0.66768	0.10532	0.00485
C										
SIZE	0.55115	1	0.81098	0.10066	0.72215	-0.0783	0.29792	0.77853	-0.0921	0.08899
AGE	0.53634	0.81098	1	0.22744	0.8004	-0.1652	0.24175	0.85419	-0.1687	0.16405
LIQ	0.13576	0.10066	0.22744	1	0.2777	-0.0214	0.03015	0.19422	0.11043	-0.0818
VOC	0.33608	0.72215	0.8004	0.2777	1	-0.0221	0.12278	0.78374	0.00161	-0.0067
URR	0.0692	-0.0783	-0.1652	-0.0214	-0.0221	1	-0.1171	-0.0104	-0.2224	0.27085
RED	0.57417	0.29792	0.24175	0.03015	0.12278	-0.1171	1	0.31737	0.23173	-0.191
MKS	0.66768	0.77853	0.85419	0.19422	0.78374	-0.0104	0.31737	1	0.00557	-0.0064
GDP	0.10532	-0.0921	-0.1687	0.11043	0.00161	-0.2224	0.23173	0.00557	1	-0.8841
I	0.00485	0.08899	0.16405	-0.0818	-0.0067	0.27085	-0.191	-0.0064	-0.8841	1

Appendix 6: Data used for analysis year

Insurance	year	ROI	SIZE	AGE	LIQ	VOC	URR	RED	MKS	GDP	I
EIC	2014	2.47	39.00	62	14.12	0.06	0.72	0.18	0.42	0.103	0.081
EIC	2015	1.04	40.00	66	21.31	0.22	0.64	0.17	0.37	0.104	0.076
EIC	2016	1.01	41.00	70	24.08	0.20	0.69	0.17	0.4	0.08	0.097
EIC	2017	1.18	42.00	75	30.64	0.20	0.54	0.19	0.36	0.101	**0.072**
EIC	2018	1.61	43.00	85	48.29	0.20	0.65	0.13	0.38	0.077	**0.131**
Awash	2014	0.53	20.00	33	18.94	0.10	0.72	0.1	0.08	0.103	0.081
Awash	2015	0.64	21.00	36	14.77	0.06	0.64	0.1	0.07	0.104	0.076
Awash	2016	0.4	22.00	38	8.32	0.07	0.69	0.09	0.09	0.08	0.097
Awash	2017	0.41	23.00	41	16	0.09	0.54	0.1	0.08	0.101	0.072
Awash	2018	0.57	24.00	44	2.21	0.08	0.65	0.07	0.08	0.077	0.1313
Global	2014	0.57	17.00	11	1.35	0.04	0.72	0.13	0.023	0.103	0.081
Global	2015	0.36	18.00	12	1.63	0.03	0.64	0.1	0.02	0.104	0.076
Global	2016	0.32	19.00	13	1.47	0.03	0.69	0.08	0.02	0.08	0.097
Global	2017	0.17	20.00	15	1.25	0.04	0.54	0.05	0.01	0.101	0.072
Global	2018	0.25	21.00	16	1.25	0.04	0.65	0.08	0.01	0.077	0.131
Nile	2014	0.58	19.00	28	11.33	0.09	0.72	0.11	0.074	0.103	0.081
Nile	2015	0.31	20.00	31	7.69	0.08	0.64	0.12	0.07	0.104	0.076
Nile	2016	0.11	21.00	36	7.59	0.07	0.69	0.08	0.06	0.08	0.097
Nile	2017	0.61	22.00	39	5.93	0.06	0.54	0.14	0.07	0.101	0.072
Nile	2018	0.31	23.00	40	7.28	0.07	0.65	0.08	0.05	0.077	0.131
Nice	2014	0.39	20.00	21	1.12	0.04	0.72	0.05	0.017	0.103	0.081

Nice	2015	2.01	21.00	22	1.21	0.03	0.64	0.46	0.08	0.104	0.076
Nice	2016	0.56	22.00	29	1.07	0.02	0.69	0.16	0.04	0.08	0.097
Nice	2017	0.5	23.00	34	1.09	0.03	0.54	0.51	0.08	0.101	0.072
Nice	2018	0.6	24.00	34	1.09	0.03	0.65	0.32	0.03	0.077	0.131
Africa	2014	0.51	20.00	15	27.76	0.04	0.72	0.01	0.034	0.103	0.081
Africa	2015	0.3	21.00	18	4.41	0.07	0.64	0.02	0.04	0.104	0.076
Africa	2016	0.26	22.00	22	0.7	0.06	0.69	0.01	0.04	0.08	0.097
Africa	**2017**	0.22	23.00	27	10.24	0.06	0.54	0.01	0.02	0.101	0.072
Africa	2018	0.39	24.00	28	2.74	0.06	0.65	0.01	0.05	0.077	0.131
Nib	2014	0.56	12.00	25	6.2	0.12	0.72	0.12	0.083	0.103	0.081
Nib	2015	0.29	13.00	28	3.05	0.10	0.64	0.11	0.07	0.104	0.076
Nib	2016	0.2	14.00	30	3.78	0.09	0.69	0.09	0.08	0.08	0.097
Nib	2017	0.21	15.00	37	3.11	0.09	0.54	0.08	0.05	0.101	0.072
Nib	2018	0.3	16.00	39	3.69	0.08	0.65	0.09	0.05	0.077	0.131
Nyala	2014	0.62	19.00	21	3.56	0.11	0.72	0.12	0.081	0.103	0.081
Nyala	2015	0.52	20.00	23	2.57	0.10	0.64	0.11	0.05	0.104	0.076
Nyala	2016	0.46	21.00	23	2.76	0.09	0.69	0.1	0.06	0.08	0.097
Nyala	2017	0.61	22.00	30	2.03	0.09	0.54	0.31	0.15	0.101	0.072
Nyala	2018	0.62	23.00	31	1.96	0.09	0.65	0.1	0.09	0.077	0.131
Unic	2014	0.58	20.00	28	9.35	0.11	0.72	0.14	0.073	0.103	0.081
Unic	2015	0.41	21.00	28	13.51	0.09	0.64	0.14	0.07	0.104	0.076
Unic	2016	0.24	22.00	28	17.34	0.09	0.69	0.09	0.06	0.08	0.097
Unic	2017	0.29	23.00	31	13.02	0.08	0.54	0.1	0.05	0.101	0.072

Unic	2018	0.53	24.00	37	13.14	0.09	0.65	0.09	0.07	0.077	0.131
Oromia	2014	0.38	5.00	25	3.46	0.08	0.72	0.07	0.03	0.103	0.081
Oromia	2015	0.56	6.00	29	249.76	0.09	0.64	0.12	0.05	0.104	0.076
Oromia	2016	0.29	7.00	33	-2.83	0.09	0.69	0.05	0.04	0.08	0.097
Oromia	2017	0.26	8.00	37	13.63	0.08	0.54	0.01	0.05	0.101	0.072
Oromia	2018	0.53	9.00	38	5.76	0.05	0.65	0.08	0.05	0.077	0.131
Lion	2014	0.33	7.00	20	0.87	0.06	0.72	0.11	0.02	0.103	0.081
Lion	2015	0.36	8.00	25	0.81	0.03	0.64	0.12	0.05	0.104	0.076
Lion	2016	-0.21	9.00	28	0.7	0.03	0.69	0.004	0.01	0.08	0.097
Lion	2017	0.23	10.00	31	0.68	0.02	0.54	0.06	0.03	0.101	0.07
Lion	2018	0.49	11.00	31	0.68	0.02	0.65	0.09	0.03	0.077	0.13
Abay	2014	0.31	4.00	14	1.26	0.02	0.72	0.26	0.03	0.103	0.081
Abay	2015	0.51	5.00	17	1.44	0.03	0.64	0.17	0.03	0.104	0.076
Abay	2016	0.54	6.00	19	1.44	0.04	0.69	0.17	0.05	0.08	0.097
Abay	2017	0.55	7.00	23	1.4	0.04	0.54	0.16	0.04	0.101	0.07
Abay	2018	0.64	8.00	25	1.72	0.04	0.65	0.08	0.03	0.077	0.13
Berhan	2014	0.1	3.00	7	1.08	0.02	0.72	0.16	0.01	0.103	0.081
Berhan	2015	0.08	4.00	7	1.45	0.02	0.64	0.13	0.01	0.104	0.076
Berhan	2016	-0.09	5.00	8	1.34	0.03	0.69	0.03	0.01	0.08	0.097
Berhan	2017	0.11	6.00	11	1.31	0.03	0.54	0.09	0.01	0.101	0.07
Berhan	2018	0.23	7.00	13	1.22	0.03	0.65	0.04	0.02	0.077	0.13
Tsehay	2014	0.14	2.00	8	1.15	0.03	0.72	0.16	0.01	0.103	0.081
Tsehay	2015	0.27	3.00	8	1.27	0.02	0.64	0.15	0.02	0.104	0.076

Tsehay	2016	0.24	4.00	12	1.24	0.02	0.69	0.05	0.01	0.08	0.097
Tsehay	2017	0.3	5.00	15	1.18	0.03	0.54	0.06	0.01	0.101	0.07
Tsehay	2018	0.42	6.00	19	1.18	0.03	0.65	0.07	0.01	0.077	0.13
ELIG	2014	0.13	6.00	7	8.08	0.03	0.72	0.02	0.002	0.103	0.081
ELIG	2015	0.04	7.00	12	6.89	0.02	0.64	0.07	0.01	0.104	0.076
ELIG	2016	-0.01	8.00	16	8.06	0.03	0.69	0.02	0.01	0.08	0.097
ELIG	2017	0.22	9.00	19	7.17	0.03	0.54	0.09	0.01	0.101	0.07
ELIG	2018	0.29	10.00	20	4.74	0.03	0.65	0.03	0.02	0.077	0.13
Bunna	2014	0.18	1.00	4	1.34	0.01	0.72	-0.04	0.00003	0.103	0.081
Bunna	2015	0.17	2.00	10	1.25	0.03	0.64	-0.06	-0.002	0.104	0.076
Bunna	2016	0.01	3.00	13	1.18	0.03	0.69	0.02	0.01	0.08	0.097
Bunna	2017	0.15	4.00	16	1.05	0.03	0.54	0.04	0.01	0.101	0.07
Bunna	2018	0.27	5.00	17	0.81	0.03	0.65	-0.02	0.01	0.077	0.13
Lucy	2014	0.48	2.00	3	1.35	0.01	0.72	0.16	0.01	0.103	0.081
Lucy	2015	-0.2	3.00	5	2.1	0.03	0.64	0.12	0.01	0.104	0.076
Lucy	2016	0.19	4.00	8	1.82	0.03	0.69	0.01	0.01	0.08	0.097
Lucy	2017	0.09	5.00	11	1.59	0.03	0.54	0.08	0.01	0.101	0.07
Lucy	2018	0.27	6.00	15	1.31	0.04	0.65	0.05	0.02	0.077	0.13