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**COLLEGE OF BUSINESS AND ECONOMICS
DEPARTMENT OF ACCOUNTING AND FINANCE
POSTGRADUATE PROGRAMS**

**FACTORS AFFECTING PROFITABILITY OF INSURANCE
COMPANIES IN ETHIOPIA**

**A THESIS SUBMITTED 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 has been duly acknowledge.

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This is to certify that the thesis entitled, Factors affecting profitability of insurance companies in Ethiopia: A case prepared by Sisay Horsa. 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 with respects to originality and quality.

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Acronyms and Abbreviations

ADF	Augmented Dickey-Fuller
AIC	Awash Insurance Company
AR	Auto Regression
ATA	Agriculture Transformation Agency
BLUE	Best Liner Unbiased Error
BPG	Bruserch –Pagan-Godfrey
CE	Capital Employed
CLRM	Critical Linear Regression model
DW	Durbin-Watson
GDP	Gross Domestic Product
LEV	Leverage
LOG	Logarithm
CLMT	Classical Linear Regression Model
GDP	Gross Domestic Product
MKS	Market share
MGTEF	Managerial efficiency
NBE	National Bank of Ethiopia
INF	Inflation
OLS	Ordinary Least Square
PBIT	Profit before interest and tax
POA	Profitability of asset
RD	Research and Development
RESET	Regression Equation Specification Error Test
ROA	Return on asset
GDP	Gross Domestic Product
RQ	Research Questions
SIZ	Size the company
TA	Total asset
TOA	Tangibility of Asset
VOC	Volume of capital

Abstract

Insurance is one of the major risks mitigating mechanism in modern economy. The existence and survival of financially strong insurance companies is therefore inevitable. For insurers to be reliable and financially sound, their profitability and most importantly knowing what factors makes them profitable is very crucial objective. In order to achieve this objective, this study used quantitative research approach using Panel data covering ten-year period from 2009–2018 for nine insurance companies. The study used linear regression model to see the effect of independent variables, which were the factors under study, on dependent variable profitability peroxide by ROA. Data was analyzed with software Eviws8. The findings of the study showed that market share and managerial efficiency have statistically significant relationship with insurers' profitability, and liquidity is positively less significant relationship with profitability. Whereas the Volume of capital, inflation and GDP are significantly negative with profitability and size, liquidity, leverage and growth rate are negative but insignificant relationship with profitability. The study provides evidence that company volume of capital, market share, managerial efficiency, and inflation and GDP are important factors affecting 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.

Key words: Factors of profitability, Firm Specific and Macro-economic Factors, linear regression model, and purposive sampling.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

In a modern economy, the importance of financial institutions such as Banks, Insurance, saving and credit unions, cooperatives and the likes is unarguable. These institutions play a great role in facilitating and lubricating the economy of nations. A.Saunders 2004 the financial institutions perform essential function of channeling funds from those with surplus funds (supplier of funds) to those with shortage of funds (user of fuds) Fredric Ekins (2009) financial institutions not only affect our everyday life but also involve huge flows of funds, which in turn affect business profits, the production of goods and services, and even the economic well-being of countries. Dereje Workie (2012) stated that financial institutions serve as a medium of exchange and facilitate business activities, support mobilization of resources through savings and allocate resources to activities with highest returns; follow up investments exert corporate governance, and offer a diversity of financial instruments.

(Abate, 2012) stated that financial institutions such as insurance companies play in insuring economic activity and contribute to the stability of the financial system in particular, the stability of the economy of concerned country in general ((Naveed, 2011)). The efficiency of financial intermediation and transfer of risk can affect economic growth, while at the same time; institutional insolvencies can result in systemic crises, which have unfavorable consequences for the economy as a whole.

As part of the important segment of the financial sector, in 2007,Hailu study insurance industry plays an important role in the economy of most developed and developing countries contributing to economic growth, efficient resource allocation, reduction of transaction costs, creation of liquidity, facilitation of economics of scale in investment, and spread of financial losses. Insurance companies have importance for both businesses and individuals as they indemnify the losses and put them in the same positions as they were before the occurrence of the loss.

In addition, insurers provide economic and social benefits in the society that is prevention of losses, reduction in anxiousness, fear and increasing employment. Insurance is a financial product that legally binds the insurance company to pay losses of the policyholder when a specific event occurs. The insurer accepts the risk that the event will occur in exchange for a fee, the premium.

The insurer, in turn, may pass some of that risk to other insurers or reinsurers. Insurance makes possible ventures that would otherwise be prohibitively expensive if one party had to absorb all the risk. (Pfeiffer, 1956) defines Insurance is a device for the reduction of uncertainty of one party called the insured, through the transfer of particular risks to another party, called the insurer, who offers a restoration, at least in part of economic losses suffered by the insured. Priegett (1996) defines Insurance as a social device, in which a group of individuals (called “Insureds”) transfer risk to another party (called the “insurer”) in order to combine loss experiences, which statistical prediction of losses and provides for payment of losses from fund contributed (premiums) by all members who transferred risk. Therefore, the current business world without insurance companies is unsustainable, because risky businesses have no capacity to retain all types of risk in the current extremely uncertain environment.

From the above literature reviews, it could be understood that the importance and the role that insurance companies play to a society in a modern economy is very crucial. On the other hand, insurance companies can be reliable and sustainable if they are financially strong. Consequently, they have to be profitable and make sure that they are dependable for policyholders (customers) in particular and the economy in general. Therefore, profitability and the factors affecting profitability of insurers is a great concern for the stakeholders, managers, policy makers, regulators, investors, customers, employees and so on.

According to (Hifza, 2011) Profitability is one of the most important objectives of financial management, since one goal of financial management is to maximize the owners’ wealth. Profitability is very important measure of performance. A business that is not profitable cannot survive. Conversely, a business that is highly profitable has the ability to reward its owners with a large return on their investment. Hence, the ultimate goal of a business entity is to earn profit in order to make sure the sustainability of the business in prevailing market conditions.

A financial benefit is realized when the amount of revenue gained from a business activity exceeds the expenses, costs and taxes needed to sustain the activity. Although there are numerous approaches, generally, insurers' profitability is estimated through the examination of premium and investment income and of the underwriting results or of the overall operating performance. In general, the important role that insurance companies play in an economy entails their financial strength and survival.

To keep track of this financial soundness and reliability knowing the factors that affect insurers' profitability and identifying them clearly is important job for researchers and financial analysts. Therefore, the objective of this study will be to assess the factors affecting insurance companies' profitability in Ethiopia. These factors are, size of the company, liquidity, leverage, volume of capital, management efficiency, growth rate, market share, GDP and Inflation.

1.2 Statement of the Problem

Profitability is one of the major objectives of business companies. Profit is the essential prerequisite for an 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 macroeconomic context since the insurance industry is one of the financial system components fostering economic growth and stability. Therefore, the determinants of an insurance company's performance have attracted the interest of academicians, practitioners, managers, regulatory body, and policy makers. Different scholars have been doing empirical investigation on the determinants of insurer's profitability and arrived at different conclusions. Swiss (2008) insurers' profitability is determined first by underwriting performance (losses and expenses, which are affected by product pricing, risk selection, claims management, and marketing and administrative expenses) and second, by investment performance, which is a function of asset allocation and asset management as well as asset leverage.

Kahan (2013) revealed that leverage and size are significant determinants of profitability while growth rate and liquidity are not significant determinants of profitability. Ahmed

(2008) examined the determinants of insurers' profitability that size, volume of capital and leverage are significant determinants of profitability.

Abate (2012) studied company specific factors affecting insurance profitability in Ethiopia found out that size and volume of capital are positively and significantly related with profitability; whereas liquidity, and leverage are negatively but significantly related.

(Daniel, 2013) Studied that insurers' size, and leverage are significant and positively related with profitability; however, inflations statistically significant and negatively related with ROA. (Gashaw, 2012) studied firm specific factors but they also ignored macro-economic factors affecting profitability. The absence of comprehensive empirical evidences in Ethiopia, concerning determinants of insurance company's profitability on the one hand, and the lack of consistency of the findings on the other, is then what motivated the researcher to put forward possible contribution in this study.

As per the researcher's possible effort to review the studies conducted on factors affecting financial performance of insurance companies, the factors have not been adequately investigated. While taking into consideration the absence of sufficient empirical inquiry, the researcher attempted to supplement empirical evidence in the country by incorporating insurance specific determinants (variables) which are untouched by previous researchers such as the effect of growth rate and managerial efficiency which are considered as firm specific and market share is industry factors. By taking this in to account, the researcher attempted to examine these factors along with other determinants of insurance companies' profitability, which are previously studied.

The study therefore, tried to fill the gap by addressing the factors that have not been touched so far by other researchers in Ethiopia and try to augment the findings to the existing literature.

Hence, those may be important issues to be considered for the insurance managers, professionals, regulators and policy makers to support the industry in achieving its goals so that required economic outcomes could be obtained from the industry in Ethiopia by understanding the important factors of profitability.

1.3 Research Question

In line with the statement of the problem, the following research questions were administered.

- What are the significant firms (insurances') profitability factors of companies of Ethiopian?
- What are the significant industry factors of insurances' profitability of insurances companies of Ethiopian?
- What are the significant macroeconomic factors of insurances' profitability of companies of insurances of Ethiopian?

1.4 Object of the Study

1.4.1 General Objectives

There are different factors that affects insurance's profitability. This study is focused on identifying the three major factors of profitability insurance specific, industry specific and macroeconomic factors in Ethiopian for insurance companies.

1.4.2 Specific Objectives of the Study

Based on the above general objective, the researcher explicated the following specific objectives:-

- To identify the firm specific factors that determines the profitability of insurance companies in Ethiopia.
- To identify the macroeconomic factors that determines the profitability of insurance companies in. Ethiopia.
- To find out the relationship between the profitability and firm specific determinants.
- To find out the relationship between the profitability and macroeconomic determinants.
- To rank the determinants according to their degree of influence on insurance company's profitability with a view suggest best strategies to increases private insurance companies' profitability.

1.5 Significance of the Study

The fundamental reason of this study was that previous studies on determinants of financial performance of insurance companies in Ethiopia have been insufficient. Most of the studies previously focused on banks not on insurance companies. Furthermore, concerned parties would benefit from the results that emerged from the study. This parties may include, regulatory authorities, insurance companies, customers, employees, investors, policy makers, scholars, researchers, and others who are interested in the area.

In addition, the study tried to provide additional input to the literature and sort out the important factors (firm-specific, industry specific and macro-economic) affecting profitability of insurance companies and serve as a reference for other studies to be conducted in the future. Therefore, this study attempted to provide additional empirical evidence on financial performance of insurance companies in Ethiopia.

1.6 Scope of the Study

The study mainly focused on identifying the main factors of insurance companies' profitability in Ethiopia. The study was limited to the its period for its examination of the internal and external factors affecting insurers' profitability of purposively selected insurance companies which are registered by the NBE and that have at least ten years data i.e. 2009-2018.

These periods were selected, because, ten years and above was the recommended length of time in most finance literatures. In addition, all private insurance companies were established following 1994 financial liberalization and the period has significant structural change in profitability of Ethiopian insurance industry.

Also, in order to get an accurate picture of insurers' profitability determinants; the researcher believed that, it was important to consider at least ten years quantitative data. The study was conducted based on secondary data that were collected from the audited financial statements of those insurance companies in Ethiopia specifically from balance sheet, revenue account, and income statement for the period and from National Bank of Ethiopia (NBE) for macro-economic factors.

Profitability is influenced by variables such as industry dynamics and competitive market position, the perspective of the study encompasses company specific factors: company size, liquidity, leverage, Volume of Capital, managerial efficiency and industry factor ,growth rate and macro-economic variables: growth rate, gross domestic product (GDP), and inflation, which are potentially liable for being determinants of insurers' profitability.

The secondary data, both industry and Macro- economic were taken from insurances companies income statement, balance sheet and revenue and from National Bank of Ethiopia (NBE) respectively.

1.7 Organization of the Study

The study was organized into five chapters. Chapter one is introduction, where back ground of the study, statement of the problem, research hypotheses, objectives of the study, significance of the study, scope/delimitation of the study, organization of the study and finally limitations of the study were discussed. Chapter two focused on review of literature in which theories, empirical evidence and conceptual frame work were framed out. Chapter three elaborated statement of the research methodology that was employing in the study. Chapter four focused on findings and discussions in which the finding results were interpreted. Finally, Chapter five deal summary with conclusion and possible recommendations up on the outcome of the study.

1.8 Limitations of the study

The study focused on the factors mentioned in the scope of the study section however; there are other variables that have been used in literatures as determinant of insurance profitability like, return on asset, earning volatility, retention ratio, expense ratio, asset quality, management efficiency and so on. Some variable, as management efficiency ratio 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.

Financial report of insurance company was not available on their website, so, cannot easily collect data. Some company managers appoint long time to submit their data. Challenges, negative attitude and opinion of some finance managers and their staff towards study.

CHAPTER TWO

LITERATURE REVIEW

This chapter, section one deals with theoretical literature reviews, section two is empirical literature reviews, definition and concepts, its role in the economy, historical highlights of insurance and the concept of profitability, Section three generalize the hypothesis, section three is the whole summary of review, section four summary of knowledge gap and section five conceptual Framework.

2.1 Theoretical Literature Review

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 much smaller certain cost of 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, in addition, 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.

2.1.1. Concepts of insurance and its role in the economy

Insurance is protection against financial loss arising on the happening of unexpected event. Insurance companies collect premium to provide security for the purpose and bear risk in return for fee-collected premium. Insurance Companies are risk bearers, accept or underwrite the risk in return for an insurance premium. The term insurance may also defined as, a cooperative mechanism to spread the loss caused by a particular risk over a number of persons who are exposed to it, and who agree to ensure themselves against that risk. Risk is uncertainty of financial loss. Insurance company is a business firm 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 the loss to determine the premium amount. Several factors influence insurance profitability and hence renewing, recognizing and understanding the profit determinant factors is essential in order to vouch results and analyses.

Hence, this chapter deals with the concept of insurance, profitability and provides investigations on factors affecting the profitability or financial performance in insurance companies. Earlier researches with regard to profitability mostly focused on financial institutions. Most of the researches conducted with regard to determinants of insurance's profitability could be classified in to two: internal and external factors. Internal factors that are under the control of the management of insurance and external factors those are beyond the control of the management.

Therefore, it would be possible to presuppose that organizational performance has attracted scholarly attention in corporate finance literature. However, in the context of insurance sector, it has received a little attention (Hafiz Malik 2011). Hence, it is reasonable to conduct research up on such area. Current study examines the impact of firms' level characteristics (size, leverage, tangibility, risk, growth, and liquidity) on performance of listed life insurance companies. This study analyzes the determinant of profitability of insurance company in Ethiopia over the period of 2009 to 2018 by using purposive judgment non-probability sampling design of insurance companies for the econometrics analysis and multiple regressions of fixed effect approach of panel data.

2.1.2. The Concept of Profitability

In (Shami-Al, 2008) studied that, there are different ways to measure profitability, such as return on asset (ROA), return on equity (ROE) and return on invested capital (ROIC). ROA is an indicator of how profitable a company is relative to its total assets. It gives us an idea how efficient management is in using its assets to generate earnings. Whereas

ROE measures a company's profitability, which reveals how much profit a company generates with the money shareholders have invested. ROIC is a measure used to asses a company's efficiency in allocating the capital under its control in profitable investments. This measure gives a sense of how well a company is in using its money to generate returns.

Comparing a company's, ROIC with its weighted average cost of capital (WACC) reveals whether invested capital is used efficiently or not. In contrast (William, 2013) argued that the performance of insurance companies in financial terms is normally expressed in net premium earned, profitability from underwriting activities, annual turnover, return on investment and return on equity.

These measures could be classified as profit performance measures and investment performance measures. However, most researchers in the field of insurance and their profitability stated that the key indicator of a firm's profitability is ROA defined as the profit before interest and tax (PBIT) divided by its total assets. Hafis Malik (2011) is among others, who have suggested that although there are different ways to measure profitability it is better to use ROA.

Therefore, being profitable means that insurance companies are earning more revenues than being disbursed as expenses. As explained above just to analyze the drivers of profitability, it is useful to decompose either the return on asset ROA or ROE into their main components. Swiss Re (2008) profits are determined first by underwriting performance (losses and expenses, which are affected by product pricing, risk selection, claims management, marketing and administrative expenses); and second, by investment performance, which is a function of asset allocation and asset management as well as asset leverage. Earnings determine the first division of the decomposition shows that an insurer's ROE after taxes realized for each unit of net premiums (or profit margin) and by the amount of capital funds used to finance and secure the risk exposure of each premium unit (solvency). That is why most researchers use ROA as a measure of profitability in financial institutions. The term profit can take either its economic meaning or accounting concept, which shows the excess of income over expenditure viewed during a specified period.

On one hand, profit is one of the main reasons for the continued existence of every business organization. On the other hand, profit is expected to meet the required return by owners and other outsiders. (John, 2013) clarified profitability ratio as a class of financial metrics that are used to assess business's ability to generate earnings as compared to its expenses and other relevant costs incurred during a specific period.

Accordingly, the term 'profitability' is a relative measure where profit is expressed as a ratio, generally as a percentage. Profitability depicts the relationship of the absolute amount of profit with various other factors. Kozak (2015) in his investigation, he argued that profitability is the most important and reliable indicator as it gives a broad indicator of the ability of an insurance company to raise its income level. In practice, executives define profits as the difference between total earnings from all earning assets and total expenditure on managing entire asset-liabilities portfolio (Kagur, 2013).

The variation of profit among insurance companies over the years in a given country would result to suggest that internal factors or firm specific factors play a crucial role in influencing their profitability. It is therefore, imperative 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 different individuals considered in previous times. The following points are some of the work of others among many others.

2.2. An Empirical Review

In this part of the study, the researcher looked at the studies conducted by other researchers regarding insurer's profitability factors in Ethiopia and outside Ethiopia. Determinants of insurance profitability have been thoroughly examined for insurance operating in the developed and emerging economies. However, such studies are extremely rare for insurances operating in Ethiopia. Thus, in this section, studies on determinants of insurance profitability were carried out elsewhere are briefly accounted for. A number of determining factors could affect profitability in insurance companies. These factors, as explained above could be further classified as internal, industry, and macroeconomic factors. However, as will be discussed in the coming consecutive sections of the review, in most literatures, profitability with regard to insurance companies usually expressed in as a function of internal determinants. Rather, most researches concerning determinants of profitability in insurance companies are divided in to two, such as determinants of profitability in property/liability or general insurance companies and in life/health insurance companies.

The determinants can be categorized under internal and external. Internal factors affecting profitability includes age of company, size of company, leverage ratio, growth rate, volume of capital, tangibility of assets, and liquidity ratio and the external factors include, Market share, Gross Domestic Product (GDP) and Inflation (Kozak ,2011).

2.2.1. Internal Determinants of Profitability

The internal determinants of insurance company's profitability are those management controllable factors, which account for the inter-firm differences in profitability, given the external environment. Hafiz Malik (2011) defines internal determinants of profitability as factors that could be influenced by management decisions.

As stated by Ali-Al-Alshami (2011) internal determinants can be broadly classified into two sub-categories namely financial statement variables and non-financial statements variables. The financial statement variables are determining factors, which are directly driven from items in a balance sheet and profit & loss accounts of the insurance companies. On the other hand, the non-financial statement variables are those factors, which are not directly, displayed on the financial statements accounts.

Financial institutions and non-financial statements variables are classified as management quality, efficiency and productivity, age and number of branches. Most researches concerning insurance companies are conducted with respect to only financial statement variables. Ali Al-Shami (2008) in his dissertation regarding UAE used financial statement variables such as size, leverage, liquidity, tangibility of assets, volume of capital, and premium growth.

Similarly, Hafiz Malik (2011) in Pakistan used such variables mentioned above and age as a non-financial statement variable. The following are the variables used in researches concerning profitability of insurance companies and related financial institutions and the details of internal financial statement and one non-financial statement variable are discussed in detail in this section (Ali Al-Shami 2008).

2.2.1.1. Firm Size

Flaminus (2009) indicated that size is used to capture the fact that larger firms are better placed than smaller firms in harnessing economies of scale in transactions and enjoy a higher level of profits. One of the most important questions underlying bank policy is which size optimizes bank profitability. (Athanasoglous, 2005) the effect of a growing size of a bank on profitability has been proved positive to a certain extent.

Consequently, a positive relationship is expected between size and profitability by many insurance area researchers. However, for firms that become extremely large, the effect of size could be negative due to bureaucratic and other reasons. Hence, the size profitability relationship may be expected to be non-linear. Therefore, most studies use the real assets in logarithm and their square in order to capture the possible non-linear relationship.

It has been suggested that company size is positively related to profitability. The main reasons behind this can be summarized as follows. First, large insurance companies normally have greater capacity for dealing with adverse market fluctuations than small ones. Second, large firms usually can relatively easily recruit able employees with professional knowledge compared with small firms. Third, large insurance companies have economies of scale in terms of the labor cost, which is the most significant production factor for delivering insurance services. A positive linkage between company size and its profitability is expected, since larger firms have more resources, a better risk diversification, complex information systems and a better expenses management. In most literatures the effect of size on banks profitability are represented by total asset. In general, majority of studies indicated that performance of large size insurance companies is better than small size companies. But the size growth should be limited to a certain stage, and that certain stage could be defined based on the ability of the management. If the company size keeps on increasing above the optimal point it is obvious that the increase in insurance's size provides diseconomies of scale, therefore, up to the optimal point increase in size gives the above-mentioned advantages to the firm.

(Hadush, 2015) explained commercial banks profitability in Ethiopian Commercial Banks size represented by banks assets which increased significantly, this increase leads to the profitability of banks; the result implies that larger banks enjoy the higher profit than smaller banks in Ethiopian banking sector because they are exploiting the benefit of economies of scales. Therefore, from the above theoretical discussions it may be inferred that there is a positive relationship between size of a company and profitability as long as the size is manageable and to the optimum level. Therefore, size is one of the important factors of insurer's profitability.

2.2.1.2. Liquidity

Liquidity from the context 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.

For an insurer, cash flow (mainly premium and investment income) and liquidation of assets are the main sources of liquidity. Empirical evidences with regard to liquidity revealed almost inconsistent results. Ahmed N (2011) in his investigation in Pakistan found that ROA has statistically insignificant relationship with liquidity. Similarly, several other studies also have been conducted to measure the performance of the insurance companies. In contrast, Chen (2004) examined that, liquidity is the important determinants of financial health of insurance companies with a negative relationship. Liquidity, current capital and investment are the important determinants of banks profitability. In their investigation regarding Sub-Saharan countries found significant and negative relationship between bank profitability and liquidity.

2.2.1.3.Leverage

The trade of theory suggests a positive relationship between profitability and leverage ratio and justified by taxes, agency costs and bankruptcy costs push more profitable firms towards higher leverage. Hence, firms that are more profitable should prefer debt financing to get benefit from tax shield. In contrast to this pecking order, theory of capital structure is designed to minimize the inefficiencies in the firms' investment decisions. Due to asymmetric information cost, firms prefer internal finance to external finance and, when outside financing is necessary, firms prefer debt to equity because of the lower information costs.

The pecking order theory states that there is no optimal capital structure since debt ratio occurs because of cumulative external financing requirements. Insurance leverage could be defined as reserves to surplus or debt to equity. The risk of an insurer may increase when it increases its leverage. Literatures in capital structure confirm that a firm's value will increase up to optimum point as leverage increases and then declines if leverage is further increased beyond that optimum level. In 2008 Chen stated that leverage beyond the optimum level could result in higher risk and low value of the firm. Empirical evidences with regard to leverage found to be statistically significant relationship but negative.

The relationship between leverage and profitability has been studied extensively to support the theories of capital structure and argued also that insurance companies with lower leverage will generally report higher ROA, but lower ROE. Since an analysis for ROE pays no attention to the risk associated with high leverage ((Harrington, 2005).

2.2.1.4. 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 total asset. Insurance companies" equity capital can be seen in two ways. Narrowly, it can be seen as the amount contributed by the owners of an insurance (paid-up share capital) that gives them the right to enjoy all the future earnings.

More comprehensively, it can be seen as the amount of owners" funds available to support a business. The later definition includes reserves, and is termed as total shareholders' funds. No matter the definition adopted, volume of capital is widely used as one of the determinants of insurance companies" profitability since it indicates the financial strength of the firm. As it has been expected positive relationship between profitability and volume of capital has been demonstrated by (Athanasoglou et al. ,2005).

Studies conducted in different countries found that for non-life insurance companies, size of capital is one of the important factors that affect ROA. Hifza Malik (2011) examined the relationship between volume capital and return on asset for Pakistan insurance industry and found positive and statistically significant relationship between insurance capital and profitability. Similarly, Ali Al-Shami (2008) found in his investigation that there exists a positive and significant relationship between volume of capital and profitability of the UAE insurance companies. (Anthanasoglou, 2005)

2.2.1.5 Managerial efficiency

The expense management variable, which is defined as the ratio of operating expenses to total income, provides information on variations in operating costs and it used as a proxy to measure the management quality of insurance.

The total cost of insurance excluding interest expense, includes operating cost and other expenses such as depreciation and taxes. From these only operating expenses can be viewed as the outcome of the insurance management decision. Therefore, expense management is captured by the ratio of these operating expenses to total assets.

2.2.1.6 Growth Rate

Growth as measured by the percentage change in total assets or sometimes percentage change in premiums of insurance companies is expected to positively related with profitability of insurance companies in Ethiopia. Insurance companies having more and more assets over the years have also better chance of being profitable for the reason that they do have internal capacity though it depends on their ability to exploit external opportunities.

Empirical evidence by in Pakistan, in UK and in UAE of their investigation found a positive and statistically significant relationship between growth and profitability of insurance companies (Ahmed ,2011& Al-Shami ,2008).

2.2.2. External factors

2.2.2.1 Market share

Market share is the percentage share of an industry 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 greater scale in operations and improve profitability.

Companies are always looking to expand their share of 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 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 customer relationship, smart hiring practices and acquiring competitors. High market share puts companies at a competitive advantage. Companies with better market share often receive 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 relationship 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 focusing on their core competencies.

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 a number of 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.

2.2.2.2. Gross Domestic Product (GDP)

GDP is one of the primary indicators used to gauge the health of a country's economy. It represents the total dollar value of all goods and services produced over a specific time. Usually, GDP expressed as a comparison to the previous quarter or year. Growth rate of GDP reflects economic activity as well as level of economic development and as such affect, the various factors related to the supply and demand for insurance products and services.

GDP is the most informative single indicator of progress in economic development. Poor economic conditions can worsen the quality of the finance portfolio, thereby reducing profitability. If GDP grows, the likelihood of selling insurance policies also grows and insurers are likely to benefit from that in the form of higher profits. (Outreville, 1990)

investigated the economic significance of insurance in developing countries. He compares 45 developed and developing countries and concludes that there is a positive but non-linear relationship between general insurance premiums and GDP per capita.

The examined GDP growth positively affects insurers profitability i.e. growth of overall economic activity encourage demand for insurers services and indirectly result in higher. 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 economy and there by enhances the profit of insurers.

2.2.2.3 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 has adverse impact on many aspects of insurance operations, such as claims, expenses and technical provisions (L.Pierre, 1989). Expected inflation is taken into account when actuaries set actuarially fair premiums, inflation itself is unlikely to seriously impact on the performance of insurance companies. Nevertheless, if inflation is significantly greater than expected, it could cause insurance companies financial difficulty. For instance, unexpected inflation makes real returns on fixed-rate bonds lower than expected.

As a consequence, profit margins of insurance companies are compressed and financial performance is accordingly impaired ((Browne, 1999). The inflation could affect insurance companies' profitability influencing both their liabilities and assets. In expectation of inflation claim payments increases as well as reserves that are required in anticipation of the higher claims, consequently reducing technical result and profitability. Taking into consideration that inflation affects assets side of the balance sheet, as the bond markets adjust to the higher level of inflation, interest rates begin to rise. This result in bond prices fall, negatively affecting value of 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.

2.3. Hypotheses of the Study Variables

According to (Jonker, 2010) a hypothesis is an educated and testable –guess about the answer to your research question. It is often described as an attempt by the researcher to explain the phenomenon of interest. 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. 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 review of relevant and related literatures, it is hypothesized that volume of capital, growth, size of company, leverage ratio, and liquidity ratio are expected to factors affecting firms' profitability as measured by Return on Assets (ROA).

Accordingly, the following hypotheses were formulated in this study:

H1. Size of a company has a positive and statistically significant effect on Performance of insurance companies in Ethiopia.

H2. Liquidity has a negatively and statistically significant effect on performance of insurance companies in Ethiopia.

H3. Leverage has a negative and statistically significant effect on profitability of insurers in Ethiopia.

H4. Volume of capital has a positively and statistically insignificant effect on Performance of insurance companies in Ethiopia.

H5. Managerial efficiency has a positively and statistically insignificant effect on Performance of insurance companies in Ethiopia.

H6. Market Share has a positive and statistically significant effect on Performance of insurance companies in Ethiopia.

H7. Growth rate has positively and statistically significant effect on Performance of insurance company's in Ethiopia.

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

H9. Inflation has negative and statistically significant effect on performance of Insurance companies in Ethiopia.

2.4 Summary of the Literature Review and knowledge Gap

2.4. 1.Summary of the Literature Reviews

In performance measurement, financial industry's profitability has attracted scholarly attention in recent studies and there has been a growing number of studies recently that test for measures and determinants of insurance company's profitability. Some of researchers who conduct about the determinants of insurance company's profitability. The results find by the researchers mentioned above in the empirical revealed inconsistencies according to the country and the type of insurance company in which the research is conduct regarding selected variables. Moreover, as it can see in empirical evidences, most literatures focus on factors affecting profitability of banks rather than insurance companies. Therefore, there are fewer literatures concerning insurance companies as compared to banks and most of them focus on firm specific factors.

As per knowledge of the researcher, there are few researches, which considered the effects of macroeconomic factors on the profitability of insurance companies such. In addition, in Ethiopia it has received little attention. Accordingly, this research includes both firm specific and macroeconomic factors of insurance companies' profitability and adds literature on determinants of profitability of insurance companies in Ethiopia (Kozak, 2015).

2.4.2. Summary of the knowledge Gap

In line with the above theoretical as well as empirical reviews, profitability is important to all business especially for insurance industry. Virtually every financial transaction or commitment has implications for insurance's profitability. Effective return on asset (profitability) management helps to ensure insurance's profitability, which are uncertain, as they are affected by external events and other agents' behavior.

As it was discussed in the literature review part, profitability of insurance can be affected by insurances specific, macroeconomic factors as well as Industry factors. It was also discussed that some factors which have significant impact on profitability of insurance in one country may not have the same impact on another country. Thus, it is important to identify the factors of profitability of selected Ethiopian Insurance companies.

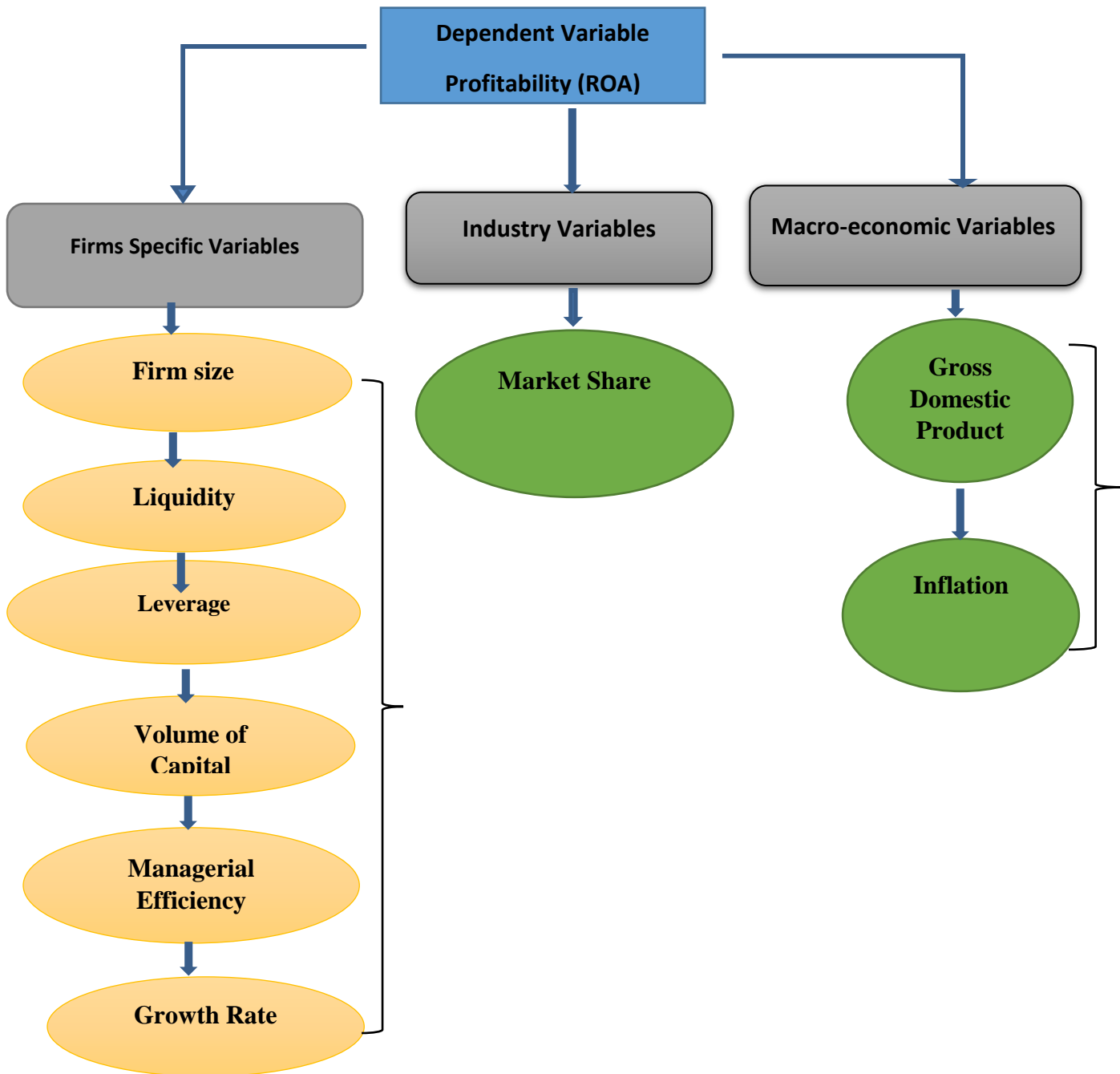
In addition, as we see from the empirical studies, all the researchers were focused on insurances specific and macro-economic factors of profitability. Therefore, the industry specific factors were not considered like the impact market share has ignored but it has direct influence on insurance's profitability position. This research incorporates one new insurances specific factor other than the study made by others which is managerial efficiency. Again in addition to the listed variables, this research has also accommodate new variable in macro-economic perspectives those are inflation which has significant impact on profitability of insurance companies.

2.5. Conceptual Framework

A conceptual framework is an analytical tool with several variations and contexts. It is used to make conceptual distinctions and organize ideas. Strong conceptual framework captures something real and does this in a way that is easy to remember and apply.

Below the diagram shows the relationship between determinants of profitability and profitability as measured by ROA.

Figure 1. Conceptual framework



Source: - Self developed

CHAPTER THREE

METHODOLOGY

3. Research Design and 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 determinants of profitability of insurance companies in Ethiopia. This chapter explains about 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 choice of dependent variable and independent variables, and model specification.

3.1 Research Approach

Research approach is a plan and procedure that consists of the steps of broad assumptions to detailed method of data collection, analysis and interpretation. This study is used a quantitative research approach to see the relationship between the profitability of selected insurance companies and insurance specific, industry and macro-economic factors that affects insurance's profitability by establishing causal relationship. This study also adopted an explanatory approach by using balanced panel research design to meet the research objective. Explanatory research attempts to identify causal factors and outcomes of the target phenomenon (Bhattacharjee, 2012).

Brooks (2008) a panel of data has embody information across both time and space and it measures some quantity about them over time. Hence, the advantage of using panel data model has the ability to acknowledge both time 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 blue print for collection, measurement, and analysis of data.

According to the nature of research problem and the research perspective, a research design and method could be based on the both of quantitative and qualitative or a combination of these two approaches, a mixed method approach. For this study, the researcher used quantitative method (Creswell, 2009). Using explanatory research design

Secondary sources are the most reliable one, as these financial statements are already audited by independent auditors and accepted by the users of the information. 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 Why do quantitative research?

Quantitative research method is based on numeric figures or numbers. Quantitative research aim to measure the quantity or amount and compares it with past records and tries to project for 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 hypothesis pertaining to phenomena.

The process of measurement is central to quantitative research because it provides fundamental connection between empirical observation and mathematical expression of quantitative relationships. Statistics is the most widely used branch of mathematics in quantitative research. Statistical methods are used extensively with in fields such as economics and commerce.

In sum, the research using the normative approach conducts why 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 What is 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 in to two categories; probability technique and non-probability technique (William G. Zikmund, et al 2013). The probability sampling is a sample procedure, which gives each one in the population 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.

According to National Bank of Ethiopia (NBE), there are seventeen (17) listed insurance companies in Ethiopia. Through purposive Sampling, companies established before the year 2009 were selected. Accordingly, nine (9) insurance companies were included in this study during the years 2009-2018.

Insurance companies sampled in the study were;

Ethiopian Insurance Corporation, Africa Insurance company, Awash insurance company, National Insurance Company of Ethiopia, Nyala Insurance company, Nile Insurance company, The United Insurance company, NIB insurance company, and Global Insurance Company.

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 (Koul 2006). Accordingly, document review were 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, in order to analyze the relationship that exists between profitability and macroeconomic variables, macro-economic 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 public enquiry. Therefore, enhance the reliability of the data. The principal secondary data sources for this paper was individual insurance companies annual reports that contain detailed consolidated balance sheets, income statements, revenue accounts, and NBE for macro -economic 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 2009 to 2018. Thus, study used the 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 (William,2010). In order 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 (we will call these ‘entities’) and measures some quantity about them over time (Chris Brook, 2008).

Panel data is favored over pure time-series or cross-sectional data because it can control for individual heterogeneity and there is a less degree of multi-linearity between variables (Altai, 2005). Thus, the collected panel data was 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 2009 to 2018 based on the sample of nine insurance companies and a correlation matrix is used to examine the relationship between the dependent variable and explanatory variables. In addition, ordinary least square (OLS) was conducted using 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, industry specific, and macro-economic 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 dependence methods. Multiple regression improves the prediction of 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 ordinary least square (OLS) regression model to analyze the panel data and examine the effects of firm specific factors and macroeconomics on 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.

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

$$ROA_{it} = C + \beta(X_{it}) + U_{it}$$

Where ROA is return on assets, X_{it} is dependent variables for insurers “i” at time “t”, C is constant, β is the coefficient and U is the error term.

One assumption of classical linear regression model (CLRM) is the normal distribution of the residual part of the model. As noted by (Gujarati, 2004), OLS estimators are 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 β 's.

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.

3.6.2. 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 (Gujarati, 2004). 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 in excess of 0.8.

3.6.3. Heteroscedasticity

According to (Gujarati, 2004) 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.

3.6.4. 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.

It involved the estimation of the effect of individual independent variables on 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 number of independent variables. Note that multiple regressions means multiple number of independent variables.

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

$$ROA_{it} = \beta_0 + \beta_1(ISD)_{xt} + \beta_2(MED)_{yt} + \beta_3(IED)_t + e_t \quad (1)$$

Where; ROA_{it} is a dependent variable for insurance i at time t ; β_0 , β_1 and, β_2 , represent estimated coefficients including the intercept; $(ISD)_{xt}$ represent the x -th insurance specific determinants at time t ; $(MED)_{yt}$ represent the y -th macroeconomic determinants at time t , (IED) is industry specific determinant, and e_{it} is the error term.

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

$$ROA_{it} = \beta_0 + \beta_1 SIZ_{it} + \beta_2 LIQ_{it} + \beta_3 LEV_{it} + \beta_4 VOC_{it} + \beta_5 GR_{it} + \beta_6 MGTEF_{it} + \beta_7 MKS_{it} + \beta_8 GDP_{it} + \beta_9 INF_{it} + e_t \quad (2)$$

Where;

ROA_{it} = Return on Asset (profitability)

SIZ = size

LIQ =liquidity

LEV =Leverage

VOC =Volume of Capital

GR=Growth Rate

MGTEF=Managerial efficiency

MKS=Market Share

GDP = Gross domestic products

INF = inflation.

The issue that may raise 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.

In addition, as noted in Gujarati (2004) if T (the number of time series data) is large and N (the number of cross-sectional units) is small, there is likely to be little difference in the values of the parameters estimated by fixed effect model and random effect model. Hence, the choice here is based on computational convenience. On this score, fixed effect model was preferable than random effect model. Since, the number of time series N (N=10 year) is greater than the number of cross-sectional units (i.e.= 9 insurance companies) and adjusted R2 value and Durbin-Watson stat value increases with the use of cross-sectional fixed effect model, fixed effect model was preferable than random effect model in this study (Gujarati,2003).

3.7 Model Validity Assumptions

As mentioned in (Chris Brookes,2008), there are basic assumptions required to show that the estimation technique, OLS has a number of 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 determined by OLS will have a number of desirable properties, and are known as Best Linear Unbiased Estimators.

Therefore, for the purpose of 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. Brooks (2008) when the assumptions are satisfied, it means that all the information available from the patterns are used. However, if there is assumption violation in the data it usually means that there is a pattern of data that have not included in the model and suggested to find a model that fits the data better. Second assumption is homoscedasticity.

The assumption of homoscedasticity is 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 (Gujarati, 2004). In order 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, Durbin-Watson (DW) value in the main regression table is considered and used to test the presence of autocorrelation. According to Brooks (2008) 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 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, 2008).

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 paradoxical effect, whereby the regression model fit the data well, but none of the explanatory variables (individually) has a significant impact in predicting the dependent variable (Gujarati, 2004). A Pearson correlation used for testing multicollinearity in this study.

The Pearson correlation matrix is a technique of testing multicollinearity of explanatory variables by investigating the relationship of bivariate variables (Wooldridge, 2010). The regression analysis as a statistical tool has a number of uses, or utilities for which it is widely used in various fields relating to almost all the natural, physical and social sciences.

The specific uses or utilities of such a technique may be outlined as under:

- 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.
- 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 high degree of errors involved therein.
- It provides a measure of coefficient of correlation between the two variables which can be calculated by taking the square root of the product of the two regression.
- It provides a measure of 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 its turn give 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 (r^2), the better is the fit, and more useful are the regression equations as the estimating devices.
- It provides a formidable tool of statistical analysis in the field of business and commerce where people are interested in predicting the future events viz.: consumption, production, investment, prices, sales, profits, etc. and success of businessmen depends very much on the degree of accuracy in their various estimates.
- 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. In fact,

economists have propounded many types of production function by fitting regression lines to the input and output data.

- This technique is highly used in our day-to-day life and sociological studies as well to estimate the various factors viz. 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 suffers from the following serious limitations:

- 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 on the basis of the regression equation may lead to erroneous and misleading results.
- The functional relationship that is established between any two or more variables on the basis of some limited data may not hold good if more and more data are taken into consideration. For example, in case of the Law of Return, the law of diminishing return may come to play, if too much of inputs are used with a view to increasing the volume of output.
- It involves very lengthy and complicated procedure of calculations and analysis.
- It cannot be used in case of qualitative phenomenon.

The Expected outcome of profitability of insurance companies:

Table 3.1 The Expected relation between profitability of insurance companies and determinant

S.No	Determinants	Expected relation
1	Size of the company	Positive
2	Liquidity	Negative
3	Leverage	Negative
4	Volume of Capital	Positive/ Negative
5	Managerial efficiency	Positive/ Negative
6	Growth rate	Positive
7	Market Share	Positive
8	GDP	Positive
9	Inflation	Negative

Source:-Self developed

3.8 Ethical Issues

Ethics refer to norms or standards of behavior that guide the moral choices about our behavior and our relationship with others. The researcher exercised utmost caution while collecting the data to ensure the rights and privacy of the insurance companies. Before administering the data collection, the researcher took time to explain to the organizations personnel why taking part in the study and got consent before proceeding. The documents were in utmost confidence and no disclosures would be made on the identity of the result.

CHAPTER FOUR

ANALYSIS AND DISCUSSIONS

4.1 Introduction

This chapter presents the research methods adopted in the study to test the outcomes of the analysis for nine insurance companies in Ethiopia during the period of 2009 to 2018. The chapter is organized into four sections. Section one presents descriptive statistics of variables, model specification 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 of the Variables

The major purpose of this study is to identify the internal as well as the external factors affecting profitability of insurance companies in Ethiopia. In this section, the study examined the descriptive statistics for dependent variables; Return on Asset (ROA), and the explanatory variables; size, liquidity, leverage, volume of capital, managerial efficiency, growth rate, market share, gross domestic product, and inflation involved in the regression model are presented. Mean, maximum, minimum and standard deviation values are included in the **Table 4.1** below. These figures give the overall description about data used in the regression models. Descriptive statistics summarizes the information in a data set by revealing the average indicators of the variables used in the study and presents that information in a convenient way. Each of 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 4.1** below.

Table 4.1 Descriptive Statistics

Statistics	ROA	SIZ	LIQ	LEV	VOC	MGTEFF	GR	MKS	GDP	INF
Mean	0.11	8.65	2.18	2.01	0.34	2.27	0.22	0.10	0.10	0.15
Maximum	1.00	9.65	7.70	3.83	0.73	4.49	1.00	0.45	0.11	0.36
Minimum	-0.64	7.71	0.00	0.57	0.00	1.00	0.00	0.01	0.08	0.03
Std. Dev.	0.17	0.41	1.61	0.83	0.10	0.74	0.19	0.11	0.01	0.11

Source: Results were generated from e views

The above **Table 4.1** shows that the descriptive statistics of the study during 2009-2018 and nine insurance companies in Ethiopia context which includes the mean, maximum, minimum, and the standard deviations. The study has used ten variables for the analysis purpose including nine explanatory variables and one dependent variable.

Those are return on asset(ROA)) as a dependent variable and Size(SIZ)), liquidity(LIQ), leverage (LEV), volume of capital (VOC), managerial efficiency (MGTEF), growth rate(GR),market share(MKS),gross domestic product (GDP) and inflation(INF) as an independent variables The Above Descriptive statistics in Table 4.1 has the following variables discussion in details:

- **Return on Asset(ROA)**

According to **Table 4.1**, all variables comprised 90 observations and the profitability measure used in this study namely; ROA indicates that the Ethiopian Insurance companies attained profit before interest and tax over the last ten years. From the total sample, the average of ROA was 0.11 with a minimum of-0.64 and a maximum of 1.00 that means, the most profitable insurance among the sampled insurances earned 100% of profit before interest and tax for a single birr invested in the assets of the firm. On the other hand, the least profitable of the sampled insurance lose 64%of profit before interest and tax for each birr invested in the assets of the firm.

The standard deviation statistics for ROA was 0.17 over the last ten years, which indicates that the profitability variation between the selected insurance was insignificant. The result implies that these insurance companies need to optimize the use of their assets to increase the return on their assets.

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

With regard to total asset (size) as shown in the **Table 4.1** above, the average size is 8.65 and there exists significant variation across the sample insurance companies for the reason that the mean value of size is 8.65 and the value of the standard deviation is 0.41. The maximum and minimum values of size were 9.65 and 7.71 respectively. Hence, the varieties of size among insurance companies might have significant impact on profitability of insurance companies.

- **Liquidity(LIQ)**

Liquidity has been defined in the model as the ratio of current assets to current liabilities. According to the descriptive statistics **Table 4.1** insurance firm's current assets, pay their current liabilities 0.00 times and at most 7.70times. Similarly, the mean value of liquidity ratio is 2.18 with the value of standard deviation 1.61, which also shows us the existence of moderate difference among the values of liquidity ratio for insurance companies under consideration. The maximum and minimum values of liquidity are 7.70and 0.00respectively. 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.

- **Leverage(LEV)**

The leverage in this study is defined as total debts divided by total assets. This study used leverage as one of the determinants variables of profitability of insurance firms in Ethiopia. From the descriptive statistics **Table 4.1**, insurance firms in Ethiopia total debts as a proportion of their total assets ranges from minimum of 0.57 to 3.83.The mean value and standard deviation of leverage is 2.01 and 0.83 respectively. This implies that, there were differences among leveraged level as measured by debt to equity ratio across the sample insurance companies under this study, and it also indicates those insurance companies are leveraged because they used debt than equity for financing purpose

The maximum value of leverage was 3.83 and the minimum was 0.83. The trade-off theory suggests a positive relationship between profitability and leverage ratio. It says more profitable firms should prefer debt financing to get benefit from tax shield. In contrast to this, pecking order theory implies due to asymmetric information cost, firms prefer internal finance to external finance and, when outside financing is necessary, firms prefer debt to equity because of the lower information costs. This theory states that there is no optimal capital structure since debt ratio occurs because of increasing external financing requirements.

- **Volume of capital(VOC)**

The average value for volume of capital (VOC) has become 0.34 with a standard deviation of 0.10. The maximum value of volume of capital was 0.73 and the minimum was 0.00. Therefore, on **Table 4.1** there exists very significant variation among the values of volume of capital across the sample insurance companies included in this study.

- **Management Efficiency(MGTEF)**

The average management efficiency used for profitability of the insurance industry was 2.27 and the maximum and minimum is 4.49 and 1.00 respectively. Also on **Table 4.1**, the standard deviation of the management efficiency is 0.74. The management of some insurance companies has to employ their capacity to the profitability of their company.

- **Growth Rate(GR)**

The mean value of growth is 0.22 and the value of standard deviation for the same variable is 0.19 on **Table 4.1**, which shows that there were no significant variations among the values of growth as measured by the change in total assets over the last ten years across the sample insurance companies. The maximum and minimum rate is 1.00 and 0.00 rate respectively.

- **Market Share(MKS)**

The average market share rate was 0.10 and; the maximum and minimum rate is 0.45 and 0.01 respectively and **Table 4.1**, the standard deviation was 0.11 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 0.10 with the of standard deviation value 0.01 which also shows us the existence of big difference among the values of GDP for insurance companies under consideration. **Table 4.1**, the maximum and minimum rate of GDP was 11% and 8% respectively. Therefore, this study is conducted to what extent the variations in factors affect the profitability of insurance companies in Ethiopia.

■ **Inflation(INF)**

Finally, other variable employed in this study was inflation, had rate 15% of the country on average over the past ten years. **Table 4.1**, the maximum inflation was recorded in the year 36% and the minimum was 3%. The rate of inflation was highly dispersed over the periods under study towards its mean with standard deviation of 11%. This implies that inflation rate in Ethiopia during the study period was somewhat unstable.

4.3 Econometrics Analysis

Econometrics analyzes is data using statistical methods in order 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 on 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).

4.3.1 Test and Results

4.3.1.1 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 scrutiny 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 lead to the problem of spurious regression 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 ten years by using size of the company, liquidity, leverage, volume of capital, management efficiency, growth rate, market share, GDP and inflation for the Augmented Dickey-Fuller and Phillips-Peron tests.

The results of 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 first level at difference level.H0 accept or not reject the H0 and PP tests is first level H0 accept H0 accept or not reject the H0. So based on this, both test first guide line of the unit root test method ,in this study all the variables are stationery at first level by this implication all critical value at 1%, 5% and 10% are proved that the critical value and the second guide line 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.

4.3.1.2 Augmented Dickey-Fuller (ADF) Test Result

Table 4.2: Augmented Dickey-Fuller (ADF) Test Result

Variables	ROA	SIZ	LIQ	LEV	VOC	MGTEFF	GR	MKS	GDP	INF
t-Statistic	-8.21	-8.68	-4.06	-10.87	-7.83	-6.30	-8.19	-8.61	-13.44	-16.00
Prob	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1% level	-3.51	-4.08	-3.51	-3.51	-4.08	-3.51	-3.51	-3.51	-4.07	-4.07
5% level	-2.89	-3.47	-2.89	-2.89	-3.47	-2.89	-2.89	-2.89	-3.46	-3.46
10% level	-2.58	-3.16	-2.58	-2.58	-3.16	-2.58	-2.58	-2.58	-3.16	-3.16

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 4.5** looks at first level form with intercept the dependent variable ROA is the absolute t-statics value (-8.213) is greater than the critical value 1%(-3.505),5%(-2.894) and 10%(-2.584) also the dependent variables 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, SIZ (-8.683) is greater than the critical value1% (-4.081), 5% (-3.469) and 10% (-3.161), LIQ (-4.056) is greater than the critical value 1% (-3.506),5% (-2.894) and 10% (-2.584), LEV (-10.865) is greater than the critical value 1% (-3.506),5% (-2.894) and 10% (-2.584),VOC (-7.833) is greater than the critical value 1% (-4.080),5% (-3.468) and 10% (-3.161),MGTEF (-6.295) is greater than the critical value 1% (-3.506),5%(-2.894) and 10% (-2.584),GR (-8.189) is greater than the critical value 1% (-3.506),5% (-2.894) and 10%(-2.584),,GDP (-13.44) is greater than the critical value 1% (-4.068),5% (-3.463) and 10% (-3.158),and INF (-15.99) is greater than the critical value 1%(-4.06),5%(-3.46) and 10%(-3.15). And also these 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.

4.3.1.3 Phillips-Perron (PP) Test Result

Table 4.3: Phillips-Perron (PP) Test Result

Variables	ROA	SIZ	LIQ	LEV	VOC	MGTEFF	GR	MKS	GDP	INF
t-Statistic	-8.29	-4.33	-4.00	-11.01	-5.71	-6.50	-8.19	-8.59	-39.37	-10.71
Prob.	0.00	0.00	0.00	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	-2.89	-2.89	-2.89	-2.89	-2.89	-2.89	-2.89	-2.89	-2.89	-2.89
10% level	-2.58	-2.58	-2.58	-2.58	-2.58	-2.58	-2.58	-2.58	-2.58	-2.58

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 4.2** looks first at first level with intercept all the variables are the same critical value that is 1%(-3.505),5%(-2.894) and 10%(-2.584) less than the absolute t-statistics value which are ROA(-8.294),LOGSIZ(-4.003) ,LIQ(-4.003,LEV(-11.01,VOC(-5.707,MGTEF(-6.500), GR(-8.189),MKS(-8.587),GDP(-39.36)and INF(-10.70)and also 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 show that the ADF test statistic and Phillips-Peron (PP) in 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% that 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 long run relationship among the variables. Hence there are significance at first level both ADF and PP analysis; hence the data of the study are stationary.

4.3.1.4 Autocorrelation Test Result

Autocorrelation is one of the basic assumptions in 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 time period is used as an independent variable in the model; most econometric software programs calculate the Durbin-Watson statistic automatically.

This study, the Durbin-Watson test statistic value in **Table 4.3** was 1.819316. As mentioned in the previous chapter to empirically analyze factors affecting profitability of insurance companies in Ethiopia, 90 observations were used in the model. Moreover, there were 9 independent variables and an intercept term in the model.

Therefore, this study proved by **Table 4.3** in the Durbin-Watson test. And more ever the R – squared in the **Table 4.3**, equals 0.626988; the study can be made that 63% of variation in the dependent variable is explained by its regression on the independent variables.

Which 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 4.4: Regression result of Durbin-Watson Test

R-squared	0.626988	Mean dependent var	0.112095
Adjusted R-squared	0.585024	S.D. dependent var	0.166929
S.E. of regression	0.107534	Akaike info criterion	-1.517587
Sum squared resid	0.925079	Schwarz criterion	-1.239830
Log likelihood	78.29140	Hannan-Quinn criter.	-1.405579
F-statistic	14.94116	Durbin-Watson stat	1.819316
Prob(F-statistic)	0.000000		

Source: Own the study from EViews

4.3.1.5 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 regressors that have been included.

Among the reasons for the popularity of this test are 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 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 may be totally 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 (Ramsey, 1969). The null hypothesis that the model is stable (H_0 : Model is stable) was tested against the alternative hypothesis of no stability in the model (H_1 : No stability in the model). The null hypothesis is rejected in favour 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 X^2 versions of the test show that the functions are linear and are stable since the p -value of the dependent variable **Table 4.7** is significant at 5%. So using number of fitted term two our model was the probability F-statistic of the test (0.0001) is significant at 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 assumption 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 4.5: Ramsey RESET Test Result

	Value	df	Probability
F-statistic	10.12006	(2, 78)	0.0001

Source: Own the study from EVIEWS

4.3.1.6 Heteroscedasticity Test Result

Heteroscedasticity test is the popular, which include Bruserch –Pagan-Godfrey (BPG) test, and White test would be employed in this study. For 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 auto correlated.

This test is conducted in order to ascertain that the disturbance or the errors has the same variance such that OLS estimators are best leaner unbiased error (BLUE), that is the coefficient estimates are efficient, consistent and unbiased. In order to detect heteroscedasticity, there are different techniques that 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:

H_0 =heteroscedasticity

The null hypothesis, which in this case is a hypothesis for value of 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 economy growth model, as we can be seen under next **Table 4.4** and **Table 4.5**, 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 in nature. Whenever that assumption is violated, then one can assume that heteroscedasticity has occurred in the data. In this study as shown in **Table 4.5**and **Table 4.6**, 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 4.6: Breusch-Pagan-Godfrey Test Result

F-statistic	4.600918	Prob. F(9,80)	0.0001
Obs*R-squared	30.69596	Prob. Chi-Square(9)	0.0003

Source: Own the study EViews

Table 4.7: White Test Result

F-statistic	Prob. F(9,80)	0.0000
Obs*R-squared	Prob. Chi-Square(9)	0.0002

Source: Own the study EViews

4.3.1.7 Normality Test Result

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 prerequisite to make the assessment of 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 normality of a data. In statistics, the normality tests are used in order 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 test: histogram of residuals and the Jarque–Bera test.

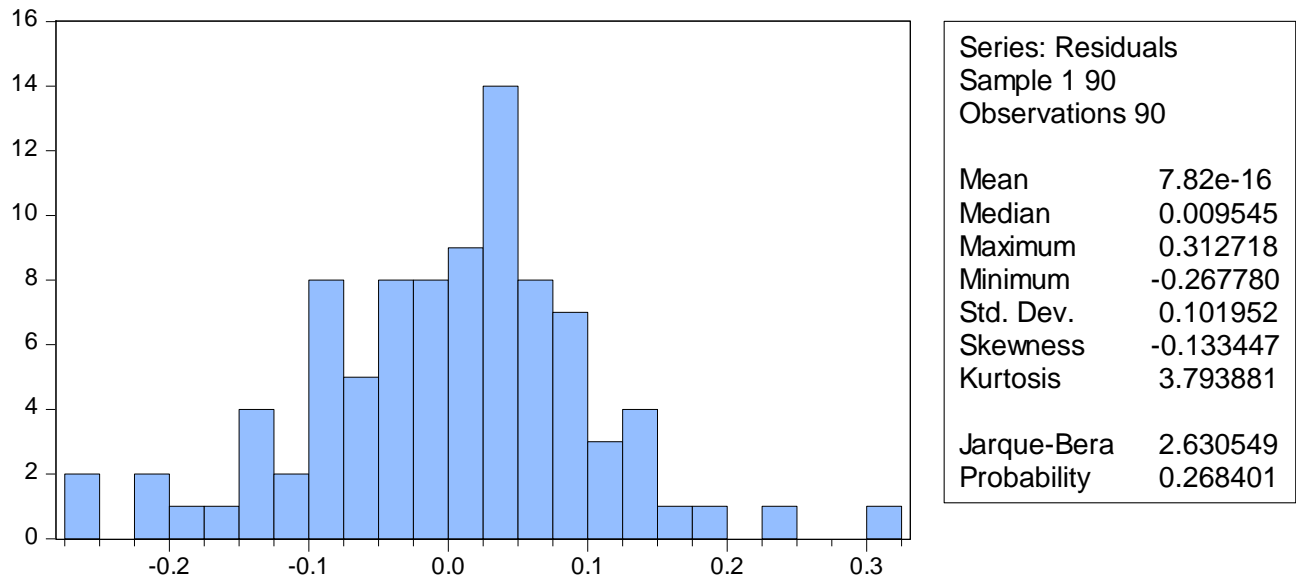
A) Histogram of Residuals: A histogram of residuals is can be used to check whether the variance is normally distributed or the variance is a constant. A symmetric bell shaped histogram of residual which is distributed around zero indicates that the normality assumption is likely to be true. The study showed in Figure 2 the right side look 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 goodness of fit of whether sample data have the skewness and kurtosis matching a normal distribution. In the study, 90 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 mechanically formula for this study shown in **Figure .2** below in the right side where the coefficient of kurtosis is around 3, which is this study 2.630549 and the Bera-Jarque statistic had a P-value of 0.268401 implying that the probability is greater 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 normal distribution of the data and the shape of the residual some like to bell shape, so the study proved Histogram of Residuals assumption.

4.3.2 Correlation Analysis among Variables

The problem of multicollinearity usually arises when certain explanatory variables are highly correlated. Usually, Kennedy (2008) argued 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 study suggest that all variables free from 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 4.8: Correlation Analysis

Correlation	ROA	SIZ	VOC	MKS	MGTEF	LIQ	LEV	INF	GR	GDP
ROA	1.000									
SIZ	-0.015	1.000								
VOC	-0.378	-0.137	1.000							
MKS	0.374	0.463	-0.410	1.000						
MGTEF	0.285	0.276	0.086	0.296	1.000					
LIQ	0.069	-0.003	-0.238	0.314	-0.087	1.000				
LEV	-0.028	0.121	-0.592	0.449	-0.142	0.089	1.000			
INF	-0.203	-0.232	-0.123	0.038	-0.181	-0.019	0.282	1.000		
GR	-0.083	-0.179	-0.035	-0.070	-0.059	0.082	0.000	0.368	1.000	
GDP	-0.210	-0.155	0.005	0.060	-0.156	0.097	0.052	-0.250	-0.220	1.000

Source: Results from correlation analysis done using EVIEWS

we observed from the **Table 4.7**, profitability or return on asset(ROA) of was conclude that; market share, managerial efficiency and liquidity are positively correlated variables profit or ROA.

On the other hand, the size, volume of capital, leverage, inflation, growth rate and GDP are negatively correlated with profitability. So, inflation was to be the negative relation to profitability,

$$\begin{aligned}
 ROA &= C(0) + C(1) * SIZ + C(2) * VOC + C(3) * MKS + C(4) * MGTEF + C(5) \\
 &\quad * LIQ + C(6) * LEV + C(7) * INF + C(8) * GR \\
 &= C(9) * GDP + \epsilon t \text{ --- (3)}
 \end{aligned}$$

Source: Estimation Equation from EVIEWS

$$\begin{aligned}
 ROA &= 2.879 - 0.206 * SIZ - 0.846 * VOC + 1.015 * MKS + 0.017 * MGTEF \\
 &\quad - 0.018 * LIQ - 0.086 * LEV - 0.526 * INF - 0.075 * GR - 5.328 \\
 &\quad * GDP + \epsilon t \text{ --- (4)}
 \end{aligned}$$

Source: Substituted Coefficients from EVIEWS

4.3.3 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 in order to identify the factors that can affect profitability, how much percent contribution independent variables contribute to the model regression as follows.

Table 4.9: Regression Result

Dependent Variable: ROA

Method: Least Squares

Date: 06/08/19 Time: 11:16

Sample: 1 90

Included observations: 90

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SIZ	-0.206627	0.034703	-5.954202	0.0000*
VOC	-0.846553	0.142816	-5.927586	0.0000*
MKS	1.015443	0.160244	6.336873	0.0000*
MGTEF	0.017513	0.018224	0.9610220.3394	
LIQ	-0.018706	0.007976	-2.345462	0.0215*
LEV	-0.086135	0.019440	-4.430872	0.0000*
INF	-0.526023	0.129202	-4.071320	0.0001*
GR	-0.075921	0.068058	-1.1155270.2680	
GDP	-5.328957	1.090025	-4.888839	0.0000*
C	2.879583	0.362032	7.9539530.0000	
R-squared	0.626988	Mean dependent var		0.112095
Adjusted R-squared	0.585024	S.D. dependent var		0.166929
S.E. of regression	0.107534	Akaike info criterion		-1.517587
Sum squared resid	0.925079	Schwarz criterion		-1.239830
Log likelihood	78.29140	Hannan-Quinn criter.		-1.405579
F-statistic	14.94116	Durbin-Watson stat		1.819316
Prob(F-statistic)	0.000000			

* denote significance at 5% levels

Source: Regression results from EVIEWS

The estimation result of the operational regression model used in this study is presented **Table 4.9** the R-squared statistics and the Adjusted-R squared statistics of the model was 63% and 58% respectively. The result indicates that the changes in the independent variables explain 63% of the changes in the dependent variable. Which is the above all variables; collectively explain 63% of the profitability.

The remaining 37% of changes was explained by other factors, which are not included in the model thus unobserved variables to 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 significant level as the p-value.

Based on the results shown in **Table 4.9**, seven of nine independent variables had statistically significant impact on economic growth in Ethiopia. Among the significant variables, size, volume of capital ,market share, leverage, inflation and GDP were significant at 5% significance level since the p-value for all the nine variables were 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 profitability of the industry in the economy growth.

4.3.4 Hypotheses of the Study

The previous section presented mainly the outputs of the documentary analysis and checked 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, 4.2.4.1 presents the research hypotheses presented in chapter three and part 4.2.4.2 discusses the results and attempts to test hypotheses.

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

In order to be able to investigate whether each of the research hypotheses presented hold in the context of profitability problem and in order to address the specific research question presented above, the next section tries to present the analysis concurrently.

4.3.5 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 question and hypotheses stated.

Hence, the analysis focuses mainly on the results of the regression analysis for the selected factors that have an impact on profitability of insurance. These selected factors are: size of the company, liquidity, leverage, volume of capital, managerial efficiency, market share, GDP and inflation.

4.3.5.1 Impact of Size Log (SIZ) of the company on Return on Asset (ROA)

This baseline study result is concerned with size, the result of the study is not the same true, and the above **Table 4.9** reveals that size has a negative and significant effect on profitability of insurance companies, indicating a one percent increase in size results in -0.20 unit decrease in profitability significantly. Profitability decreases 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-averse. The diseconomies happen if instead of a large asset base providing firms with additional resources intended for growth, such assets are idled (e.g., placed in a reserve) or not used in a productive manner as to result to higher profits.

4.3.5.2 Impact of Volume of Capital (VOC) on Return on Asset (ROA)

The natural logarithm of volume of capital (VOC) has negative sign and statistically significant in explaining the profitability in the long-run. From the above **Table 4.9** the result of volume of capital, an increase capital by 1%, will decrease profitability by 84% significantly. The negative sign indicates the inverse relationship between VOC and ROA by expectation of the theory mentioned and accepted sign the previous chapter.

The significance condition of the capital is indicating high level of investment and high capital-intensive economy of insurance. Some study also showed a negative relation between VOC and profitability.

4.3.5.3 Impact of Market Share (MKS) on Return on Asset (ROA)

The coefficient of market share which is measured as ratio of total Revenue of the company to total gross revenue written premium of the industry in this study was positive, (1.015) **Table 4.9** 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 1.02% significantly. 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 to this study too. The determinants of profitability in the Bosnia and Herzegovina insurance industry between the years of 2005–2010.

4.3.5.4 Impact of Managerial Efficiency (MGTEF) on Return on Asset (ROA)

The result showed that, managerial efficiency (MGTEF) influence on profitability is positive relationship but insignificant. The result of the managerial efficiency (MGTEF) indicates that the above **Table 4.9** the managerial efficiency increases by 1 percent, there is positively increase by 1.75% in profitability. This means that managerial efficiency and profitability in this study moves in the same directions. This may due to constantly and consistently growing. Human capital is growing due to expanding education, skill and training facilities.

4.3.5.5 Impact of Liquidity (LIQ) on Return on Asset (ROA)

The result of regression analysis confirmed the hypothesis raised at the beginning of the paper, so there is a statistically less significant negative correlation between the profitability of insurance and their liquidity. The reason for this result on **Table 4.9** is explained by the fact that the greater is the current ratio (through which represented liquidity) the smaller is the profitability (Chen & Wong, 2004) as funds held in the form of liquidity can be invested and ensure higher profitability (Chen, 2004) & Wong, 2004). For liquidity Ayele (2013) presented a negative yet statistically significant.

The study also shows, an increase by 1 % in liquidity, there is negatively (decrease) in profitability by 1.19% significantly.

4.3.5.6 Impact of Leverage (LEV) on Return on Asset (ROA)

Table 4.9 shows a decrease leverage level by 1 % will decrease profitability by 8.6%. The standardized beta value of 0.871 indicates that an increase in liquidity by 1% causes a decrease in profitability by 8.71%. The findings indicated that leverage had significant effect on profitability levels of the insurance companies. This implied that firms with high leverage levels have lower profit levels. The findings revealed that the levels significantly affect the profitability of insurance firms. Additional research written by Macroeconomic and Firm Specific Determinants of Profitability of Insurance Industry in Ethiopia By.

4.3.5.7 Impact of Inflation (INF) on Return on Asset (ROA)

The study has found an inverse relationship between Profitability and inflation (INF) as per **Table 4.9**. Increases of inflation by 1 percent decreases economic decline by -0.5260 percent. The coefficient INF is negative 0.5260 and is significant. This result is confirming the negative relation between profitability and inflation rate. Therefore Profitability can be facilitated even by lowering moderate inflation. This result was share the following researcher such as; (Ghosh and Phillips,1998), (Christoffersen and Doyle ,1998), (Khan and Senhadji ,2001),(Gokal and Hanif,2004) and (Noula ,2014) who have previously examined the relationship between inflation and profitability and found the inverse relationship between them.

4.3.5.8 Impact of Growth Rate (GR) on Return on Asset (ROA)

The result of correlation analysis on **Table 4.9** showed that the impact of the growth rate of the insurance companies in their profitability is negatively and statistically insignificant at 7.5% This result disagrees hypothesis raised at the beginning of the paper, where we assumed that there was a positive correlation between the growth rate and profitability of insurance companies. **Table 4.9** shows that a 1% increase in growth rate will decrease profitability by - 7.59 % significantly.

The result is explained that by the idea that by collecting more premiums insurance companies provide more funds to carry out investment, have more capacity to respond to

complaints in case of damage, manage to increase their market share, which reflected negatively on profitability.

4.3.5.9 Impact of Gross Domestic Product (GDP) on Return on Asset (ROA)

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.(Oshinloye et al ,2009), showed that 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. According to Ezirim (2002) insurance industry is perceived as an indispensable tool of economic progress, growth and development. Growth rate of GDP reflects economic activity as well as level of economic development and as such affect, the various factors related to the supply and demand for insurance products and services. If GDP grows, the likelihood of selling insurance policies also grows and insurers are likely to benefit from that in form of higher profits. However, **Table 4.9** result of this study shows that a negative coefficient of -5.328 and it was statistically significant (P-value 0.00) indicating that growth in economic condition measured in terms of gross domestic product has negative impact on profitability of Ethiopian insurers for the study period (Lee ,2014). However, their finding was not significantly different from zero.

The current study found that economic growth is not positively affect the insurer's profitability in Ethiopia and thus the conclusion about the impact of Ethiopian economic growth on insurers' profitability remains ambiguous and further research is required.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

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

5.1 Summary of the Results

1. **The size of the company Log(SIZ):** the methodology development for size was positive relation, but the result found a negative relationship between size and profitability with strong statistical significance, this is an increase in size results in a decrease in profitability. Some previous empirical studies proved this result. However, the results of the long run showed a positive and significant association between the size of the company and the profitability of insurance companies.
2. **Volume of Capital (VOC):** From hypothesis, the VOC on the methodology was negatively and significantly affected profitability. The impact on profitability was relatively highest as compared with other all variables, showing that an increase in VOC increased the consequence of decreasing profitability. Therefore, the study also showed us that the VOC is the dominant factor in Ethiopian insurance companies, consequently the higher VOC investment to have obtained the less profit (return on asset).
2. **Market Share (MKS):** as expected result and the found result showed a positive relationship between market share and profitability. The evidence from this study suggests that market share and profitability significantly influence profitability. In standard economic market rate at which the economy would stay at full employment is related positively to the profitability and the higher market share can affect the profitability.

4. Managerial Efficiency (MGTEF): as expected result on the methodology development and the found result a positive relationship managerial efficiency and profitability but insignificance. From this, the study showed insignificant and that managerial efficiency impact of economic growth on profitability has to be increased; human capital is growing due to expanding education, skill and training facilities. Also on the efficiency by which growth translates into profitability.

5. Liquidity (LIQ): The result of regression analysis confirmed the hypothesis raised at the beginning of the paper, so there is a statistically significant but negative correlation between the profitability of insurance and their liquidity. As the funds held in the form of liquidity can be invested and ensure higher profitability.

6. Leverage (LEV): as expected result on the methodology, development and the found result showed was negatively and significantly affect profitability. The impact on profitability relatively highest as compared with other all variables, showing that and a decrease in leverage decreases profitability The findings indicated that leverage had significant effect on profitability levels of the insurance companies. This implied that firms with high leverage levels have lower profit levels. The findings revealed that the levels insignificantly affect the profitability of insurance firms.

7. Inflation (INF): as expected result on the methodology development and the found result a negative relationship and significance on economy growth. The prices of goods and services fluctuate over time, but when prices change too much and too quickly, the effects can shock an economy. The economic theory suggested that one of the major instrument to stable the country economy; it is used to adjust wages, retirement benefits, tax brackets, and other important economic indicators. According to NBE argued this study; Inflation in Ethiopia both in the short and long run is not only a monetary phenomenon such as money expansion via credit and money printing; government spending and the real interest rate but also the result of structural factors like shocks to the real sector mainly insurance sector dominates the country's economy.

8. Growth Rate (GR): as expected result on the methodology development, the result found negative relationship and insignificance on profitability. The prices of services fluctuate over time, but when prices change too much and too quickly, the result of correlation analysis showed that the impact of the growth rate of the insurance companies in their profitability is negatively and statistically insignificant.

This result disagrees hypothesis raised at the beginning of the paper, where we assumed that there was a positive correlation between the growth rate and profitability of insurance companies.

9. Gross Domestic Product (GDP): As expected result on the methodology development was a positive but the study result is, negative relationship between Profitability is significance. 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.

Growth rate of GDP reflects economic activity as well as level of economic development and as such affect, the various factors related to the supply and demand for insurance products and services. If GDP grows, the likelihood of selling insurance policies also grows and insurers are likely to benefit from that in form of higher profits. The conclusion about the impact of Ethiopian economic growth on insurers' profitability remains ambiguous and further research is required.

5.2 Conclusions

Major determinants of profitability in the insurance companies are not well understood in the current different finance literatures in both developed and less developed countries because profitability determinants are not the same from one country to another country; even from one sector to another sectors. In some countries, the firm-specific factor is highly affects profitability of the organizations whereas industry-specific and macroeconomic factor are most powerful determinants of profitability in some or other countries.

Besides, different firm-specific operational environments, overall industry condition and macro-economic environment are one of the main causes and consequences of the profitability variation and determination among the insurance companies.

The basic question is what is the perceived determinants of profitability and how can we identifying and measure these perceived profitability determinants for general insurance business? To answer this, a large body of research has attempted to identify these factors; however, the findings of prior empirical studies have provided varying evidence related to the impact of those factors on insurance companies' profitability measured by Return on Asset (ROA). Besides, the majority of these studies have been conducted in developed countries that have many institutional similarities and developed regulatory framework, but few studies are conducted in developing countries like Ethiopia.

When we come to this study, the main objective was to understand the overall profitability of insurance companies in Ethiopia for the last ten years of annual data. In addition, descriptive and panel data techniques were used to determine the trends of profitability and to evaluate the impact of these independent variables on profitability. In econometrics empirical analysis using such as; Unit root tests (ADF and PP tests), Autocorrelation test, Stability test (Ramsay RESET test), Heterodisisty test and finally Normality test to know the existence of long-run relationships between profitability and independent variables. Based on the review, the previous related studies and theories relevant to these factors on profitability of insurance observed for the last ten years of panel data of annual secondary data of insurance companies, which are related to this study, were used to analyze the variables.

Market share is positively and significantly affect profitability and managerial efficiency rate is positively and insignificantly affect profitability of insurance companies in Ethiopia, while size of the company, volume of capital, inflation and GDP rate are negatively and significantly affect profitability of insurance companies in Ethiopia; finally ,liquidity, leverage and growth rate are negatively and insignificantly affect profitability of insurance companies in Ethiopia.

5.3 Recommendations

Based on the findings of the study, the following policy recommendations are advised:

The purpose of this study was to identify the major determinants of profitability of insurance companies in Ethiopia that were in operation over the periods of 2009-2018. It used return on assets (ROA) as a measure of profitability against which a number of internal and external variables were regressed.

The internal variables were size of insurance companies, liquidity ratio, and leverage ratio, volume of capital, managerial efficiency, and growth rate. Moreover, external variables were market share, growth rate of GDP, and inflation rate.

Results of the analysis indicated that size of insurance, Volume of capital; market share, inflation, and GDP were the key determinants that significantly affect the profitability of insurance companies. However, factors such as managerial efficiency, liquidity, leverage ratio, and growth rate were found to have insignificant impact on profitability.

The study particularly examined some firm specific, industry specific and macro-economic profitability determinants of insurance companies in Ethiopia because short time frame which leads this study to small sample size and resource limitation. Thus, future research may be conducting more researches on the areas particularly by considering some variable such as customers, branch expansion, regulation, and ownership to identify which variables are the powerful determinants of profitability. Despite, the further research should investigate the profitability determinants of insurance business by using the same variable used in the current study. Therefore, this study explained only 64% of variation in profitability; other researchers shall identify and clarify the path for including other variables.

- As size of company is the most important determinant of insurer's profitability, insurance companies should grow more and expand their activities to be more profitable. In order to increase the profitability or return on asset, a concerted effort should be directed towards the sector economy to enhance sustainable economic growth through increased profitability.
- Companies should set their optimum mix of debt to equity to have leverage which contributes positively to profit.

Highly leveraged insurance companies perform better in Ethiopia. Companies should therefore raise the majority of their capital by borrowing rather than by capital. Borrowed money can be used to increase production volume, and thus sales and earnings. It also enables a company to modernize, add to its product line, or expand internationally. The additional diversification will likely result in the company performing better.

- Insurance companies, which have short-term liabilities, which need to, match their assets to these liabilities.

The greatest threat to liquidity may occur during a catastrophe when a large number of claims are received at once or there may be prospects of a significantly large claim and they need to be prepared. Short-term insurance companies should therefore invest a large proportion of their assets in short term investments and should desist from investing in illiquid investments such as pension funds and properties.

- Insurance companies should also take out long-term loans instead of short-term debt. Since long-term debt often has smaller monthly payments and lower interest rates, the company may save money in the long-term while also improving their liquidity. In addition, insurance companies should monitor the amount of money that is being withdrawn business accounts for non-business purposes.

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

- Management efficiency showed insignificant and positive relationship with profitability that is a sign that Ethiopian insurance companies are largely has to manage managing their costs. It is recommended that managers of insurance companies exercise caution in their operations by keeping costs to the minimum whiles increasing their revenue.

- Modern market systems of return on asset must be quickly introduced to upgrade the traditional methods and encouraging large commercial insurance firms by providing opportunities and enforcing the implementation of different incentives given for the sector. Therefore, profitability is now a priority of the companies because it is the most important earnings to insurance companies in Ethiopia.

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APPENDIX

Appendix 1: Ramsey RESET Test

Ramsey RESET Test

Equation: UNTITLED

Specification: ROA SIZ VOC MKS MGTEF LIQ LEV INF GR GDP C

Omitted Variables: Powers of fitted values from 2 to 3

	Value	df	Probability
F-statistic	10.12006	(2, 78)	0.0001
Likelihood ratio	20.76354	2	0.0000

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.190591	2	0.095296
Restricted SSR	0.925079	80	0.011563
Unrestricted SSR	0.734488	78	0.009417
Unrestricted SSR	0.734488	78	0.009417

LR test summary:

	Value	df
Restricted LogL	78.29140	80
Unrestricted LogL	88.67317	78

Unrestricted Test Equation:

Dependent Variable: ROA

Method: Least Squares

Date: 06/08/19 Time: 11:46

Sample: 1 90

Included observations: 90

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SIZ	-0.232114	0.038627	-6.009063	0.0000
VOC	-0.451442	0.161101	-2.802230	0.0064
MKS	1.181780	0.182740	6.467017	0.0000
MGTEF	0.020541	0.016475	1.246782	0.2162
LIQ	-0.017348	0.007293	-2.378787	0.0198
LEV	-0.059027	0.019123	-3.086727	0.0028
INF	-0.565794	0.123632	-4.576438	0.0000
GR	-0.102629	0.062230	-1.649194	0.1031
GDP	-5.928005	1.105665	-5.361484	0.0000
C	2.989188	0.420603	7.106906	0.0000
FITTED^2	-2.203464	0.527305	-4.178730	0.0001
FITTED^3	2.675760	0.595130	4.496096	0.0000
R-squared	0.703839	Mean dependent var		0.112095
Adjusted R-squared	0.662072	S.D. dependent var		0.166929
S.E. of regression	0.097039	Akaike info criterion		-1.703848
Sum squared resid	0.734488	Schwarz criterion		-1.370540
Log likelihood	88.67317	Hannan-Quinn criter.		-1.569439
F-statistic	16.85182	Durbin-Watson stat		1.630087
Prob(F-statistic)	0.000000			

Source: Own the study from EVIEWS

Appendix 2: Heteroscedasticity Test: Breusch-Pagan-Godfrey

F-statistic	4.600918	Prob. F(9,80)	0.0001
Obs*R-squared	30.69596	Prob. Chi-Square(9)	0.0003
Scaled explained SS	33.88084	Prob. Chi-Square(9)	0.0001

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 06/08/19 Time: 11:48

Sample: 1 90

Included observations: 90

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.058031	0.049801	1.165264	0.2474
SIZ	-0.011434	0.004774	-2.395161	0.0190
VOC	0.102579	0.019646	5.221408	0.0000
MKS	0.058773	0.022043	2.666293	0.0093
MGTEF	0.002766	0.002507	1.103546	0.2731
LIQ	0.001210	0.001097	1.102717	0.2735
LEV	0.006407	0.002674	2.395963	0.0189
INF	-0.010393	0.017773	-0.584779	0.5603
GR	-0.009938	0.009362	-1.061555	0.2916
GDP	-0.084541	0.149944	-0.563814	0.5745
R-squared	0.341066	Mean dependent var		0.010279
Adjusted R-squared	0.266936	S.D. dependent var		0.017277
S.E. of regression	0.014792	Akaike info criterion		-5.484973
Sum squared resid	0.017505	Schwarz criterion		-5.207216
Log likelihood	256.8238	Hannan-Quinn criter.		-5.372965
F-statistic	4.600918	Durbin-Watson stat		2.088903
Prob(F-statistic)	0.000066			

Source: Own the study from EVIEWS

Appendix 3: Heteroskedasticity Test: White

F-statistic	4.965274	Prob. F(9,80)	0.0000
Obs*R-squared	32.25562	Prob. Chi-Square(9)	0.0002
Scaled explained SS	35.60232	Prob. Chi-Square(9)	0.0000

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 06/08/19 Time: 11:50

Sample: 1 90

Included observations: 90

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.022263	0.025135	0.885749	0.3784
SIZ^2	-0.000493	0.000274	-1.801110	0.0755
VOC^2	0.116197	0.021337	5.445906	0.0000
MKS^2	0.101830	0.043279	2.352891	0.0211
MGTEF^2	0.000514	0.000484	1.060702	0.2920
LIQ^2	8.22E-05	0.000148	0.556111	0.5797
LEV^2	0.001274	0.000623	2.045409	0.0441
INF^2	0.001660	0.041290	0.040213	0.9680
GR^2	-0.015959	0.011323	-1.409468	0.1626
GDP^2	-0.057008	0.781282	-0.072968	0.9420

R-squared	0.358396	Mean dependent var	0.010279
Adjusted R-squared	0.286215	S.D. dependent var	0.017277
S.E. of regression	0.014597	Akaike info criterion	-5.511624
Sum squared resid	0.017045	Schwarz criterion	-5.233868
Log likelihood	258.0231	Hannan-Quinn criter.	-5.399617
F-statistic	4.965274	Durbin-Watson stat	2.058363
Prob(F-statistic)	0.000027		

Source: Own the study from EVIEWS

Appendix 4: Regression Variables (Uses: logarithms, growth, and rate)

Dependent Variable: ROA

Method: Least Squares

Date: 06/08/19 Time: 11:16

Sample: 1 90

Included observations: 90

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SIZ	-0.206627	0.034703	-5.954202	0.0000*
VOC	-0.846553	0.142816	-5.927586	0.0000*
MKS	1.015443	0.160244	6.336873	0.0000*
MGTEF	0.017513	0.018224	0.961022	0.3394
LIQ	-0.018706	0.007976	-2.345462	0.0215*
LEV	-0.086135	0.019440	-4.430872	0.0000*
INF	-0.526023	0.129202	-4.071320	0.0001*
GR	-0.075921	0.068058	-1.115527	0.2680
GDP	-5.328957	1.090025	-4.888839	0.0000*
C	2.879583	0.362032	7.953953	0.0000
R-squared	0.626988	Mean dependent var		0.112095
Adjusted R-squared	0.585024	S.D. dependent var		0.166929
S.E. of regression	0.107534	Akaike info criterion		-1.517587
Sum squared resid	0.925079	Schwarz criterion		-1.239830
Log likelihood	78.29140	Hannan-Quinn criter.		-1.405579
F-statistic	14.94116	Durbin-Watson stat		1.819316
Prob(F-statistic)	0.000000			

* denote significance at 5% levels

Source: Regression results from EViews

Appendix 5: Variable table

Insurance	Year	ROA	SIZ	LEV	VOC	GR	MKS	GDP	INF	LIQ	MGTE
EIC	2009	0.000000	9.081433	3.006530	0.249593	0.291114	0.436162	0.100000	0.364000	2.965970	2.300134
EIC	2010	0.074066	9.100863	2.987422	0.277138	0.045756	0.414188	0.105700	0.028000	3.428795	3.288052
EIC	2011	0.078461	9.217048	3.452447	0.224596	0.306728	0.409378	0.114000	0.181000	3.238553	2.414599
EIC	2012	0.343831	9.272763	3.827525	0.244093	0.136880	0.445326	0.087000	0.341000	3.133527	2.289802
EIC	2013	0.304832	9.353143	3.675893	0.248932	0.203317	0.409086	0.099000	0.135000	3.331917	2.989505
EIC	2014	0.364143	9.462475	3.176317	0.239445	0.286271	0.419955	0.103000	0.081000	3.530060	3.296225
EIC	2015	0.308675	9.497366	2.372967	0.295946	0.083654	0.372253	0.104000	0.077000	3.707291	3.318316
EIC	2016	1.000000	8.292307	2.359403	0.000000	0.182200	0.418402	0.080000	0.097000	3.742181	3.305741
EIC	2017	0.125872	9.615058	2.000000	0.408882	0.000000	0.357359	0.109000	0.072000	4.075953	3.188666
EIC	2018	0.155426	9.651444	2.601950	0.277683	0.087391	0.162209	0.077000	0.168000	2.538853	2.475541
Awash	2009	0.640000	8.302112	2.768775	0.734662	0.200900	0.061926	0.100000	0.364000	1.662069	1.820544
Awash	2010	0.101537	8.382257	2.377064	0.703885	0.002319	0.080145	0.105700	0.028000	1.696910	2.430776
Awash	2011	0.085470	8.559081	2.745324	0.265338	0.091879	0.094234	0.114000	0.181000	1.548830	1.866758
Awash	2012	0.162457	8.711127	3.458981	0.296115	0.001934	0.072350	0.087000	0.341000	1.599226	2.120170
Awash	2013	0.129765	8.810823	3.020248	0.245438	0.001538	0.093300	0.099000	0.135000	1.735246	3.379792
Awash	2014	0.102272	8.845873	2.627854	0.218968	0.004651	0.076230	0.103000	0.081000	1.796476	2.068209
Awash	2015	0.100579	8.896409	2.707092	0.248741	0.005556	0.076298	0.104000	0.077000	1.793736	2.215805
Awash	2016	0.357686	8.773972	2.178037	0.275645	0.000921	0.090508	0.080000	0.097000	1.385683	1.896306
Awash	2017	0.141547	8.856531	2.100585	0.269753	0.000924	0.075884	0.109000	0.072000	1.421930	1.894135
Awash	2018	0.158230	8.298143	1.209022	0.533680	0.999177	0.080136	0.077000	0.168000	1.304379	2.475541
Nile	2009	0.019730	8.331965	3.100746	0.243858	0.518114	0.095834	0.100000	0.364000	1.314076	1.150521
Nile	2010	0.295258	8.385920	2.097656	0.322825	0.289909	0.118898	0.105700	0.028000	2.053303	2.097202
Nile	2011	0.090200	8.463278	1.950786	0.338893	0.216518	0.102539	0.114000	0.181000	2.321737	1.739204
Nile	2012	0.093476	8.599023	2.264463	0.314351	0.530715	0.083889	0.087000	0.341000	2.660051	1.835605
Nile	2013	0.099423	8.668824	2.023415	0.330752	0.093234	0.070575	0.099000	0.135000	1.003925	2.085139
Nile	2014	0.105260	8.738253	1.960594	0.337770	0.253797	0.073875	0.103000	0.081000	0.785509	2.076937
Nile	2015	0.075580	8.810697	1.810393	0.355822	0.169583	0.067772	0.104000	0.077000	1.497795	1.670691
Nile	2016	0.027312	8.865529	2.176102	0.314851	0.092097	0.055352	0.080000	0.097000	1.234569	1.255812
Nile	2017	0.103315	9.048351	1.350798	0.425387	0.138865	0.067423	0.109000	0.072000	4.122212	2.492898
Nile	2018	0.056820	8.475144	1.350798	0.425387	0.273830	0.059504	0.077000	0.168000	3.557875	4.485342
Nyala	2009	0.000000	8.222199	0.711454	0.415701	0.105996	0.115806	0.100000	0.364000	1.469097	2.649002
Nyala	2010	0.121801	8.326986	0.598979	0.374601	0.272878	0.101303	0.105700	0.028000	1.696439	3.200610
Nyala	2011	0.251169	8.394695	0.623144	0.383912	0.168715	0.089308	0.114000	0.181000	0.521736	2.706832
Nyala	2012	0.220563	8.562176	0.635257	0.388475	0.426369	0.090956	0.087000	0.341000	2.968078	2.706832
Nyala	2013	0.202069	8.677648	0.629713	0.386395	0.344998	0.088346	0.099000	0.135000	3.174981	2.354312
Nyala	2014	0.073376	8.790940	0.721132	0.418987	0.298050	0.080603	0.103000	0.081000	3.354545	2.000000
Nyala	2015	0.030475	8.919585	0.595044	0.373058	0.348300	0.051003	0.104000	0.077000	7.278639	2.519493
Nyala	2016	0.447118	8.991561	0.569768	0.362223	0.177158	0.152793	0.080000	0.097000	3.271856	2.536289
Nyala	2017	0.107961	9.084321	0.608852	0.378439	0.260453	0.055090	0.109000	0.072000	5.810112	2.178740
Nyala	2018	0.064592	9.280812	0.593086	0.372287	0.375827	0.055090	0.077000	0.168000	3.658327	2.000000
Africa	2009	0.000000	8.418816	2.570500	0.280073	0.059154	0.054052	0.100000	0.364000	1.036368	1.858009
Africa	2010	0.198577	8.433916	2.303221	0.302735	0.035382	0.055092	0.105700	0.028000	1.082543	1.797315
Africa	2011	0.168883	8.677151	3.040150	0.247516	0.750791	0.060171	0.114000	0.181000	0.931028	1.682246
Africa	2012	0.012449	8.748257	2.807763	0.262621	0.177894	0.048099	0.087000	0.341000	0.787417	1.903552
Africa	2013	0.055013	8.754030	2.223525	0.310219	0.013382	0.043713	0.099000	0.135000	0.548183	2.047082
Africa	2014	0.004987	8.808647	1.935616	0.340644	0.134010	0.033598	0.103000	0.081000	0.840129	2.416116

Africa	2015	0.050910	8.864234	1.494159	0.400937	0.136546	0.040517	0.104000	0.077000	0.602050	1.725705
Africa	2016	0.116417	8.884775	1.277435	0.439090	0.048433	0.038678	0.080000	0.097000	0.267549	1.491366
Africa	2017	0.169604	8.936355	1.420201	0.413189	0.126108	0.024261	0.109000	0.072000	0.964652	1.535786
Africa	2018	0.068918	8.989533	2.436436	0.290999	0.130259	0.073123	0.077000	0.168000	0.698106	2.852663
Nib	2009	0.090588	8.317974	2.305167	0.302557	0.518114	0.120708	0.100000	0.364000	0.996977	2.073446
Nib	2010	0.087484	8.428533	2.507364	0.284054	0.289909	0.103721	0.105700	0.028000	1.028467	2.002086
Nib	2011	0.084225	8.513652	2.437902	0.290875	0.216518	0.112682	0.114000	0.181000	1.047693	2.758724
Nib	2012	0.084178	8.698546	3.140018	0.241545	0.530715	0.091109	0.087000	0.341000	1.001701	2.733054
Nib	2013	0.105379	8.737259	2.432105	0.291366	0.093234	0.089096	0.099000	0.135000	1.088598	2.698829
Nib	2014	0.107207	8.835486	2.064417	0.326326	0.253797	0.083268	0.103000	0.081000	1.151076	2.791039
Nib	2015	0.014489	8.903518	1.907899	0.343891	0.169583	0.075927	0.104000	0.077000	1.127678	2.000000
Nib	2016	0.194876	8.941779	1.659656	0.375988	0.092097	0.078417	0.080000	0.097000	1.104644	2.000000
Nib	2017	0.122372	8.998251	1.759996	0.362319	0.138865	0.051618	0.109000	0.072000	1.077062	1.567997
Nib	2018	0.053084	9.103363	2.997841	0.250135	0.273830	0.057010	0.077000	0.168000	0.802645	3.472338
Unic	2009	0.041224	8.296289	2.435942	0.291041	0.654014	0.073854	0.100000	0.364000	1.677984	1.485314
Unic	2010	0.123828	8.382704	1.913374	0.343245	0.220155	0.079412	0.105700	0.028000	2.040636	3.816518
Unic	2011	0.076710	8.469900	2.133715	0.319110	0.222349	0.067965	0.114000	0.181000	2.151099	2.240658
Unic	2012	0.100091	8.609087	2.122332	0.320273	0.377804	0.075217	0.087000	0.341000	2.210059	2.483816
Unic	2013	0.152337	8.691435	1.929221	0.341388	0.208780	0.081515	0.099000	0.135000	2.120729	3.666558
Unic	2014	0.132387	8.768024	1.805690	0.356419	0.192861	0.073315	0.103000	0.081000	1.613623	2.896802
Unic	2015	0.112110	8.811363	0.948857	0.513121	0.104940	0.068816	0.104000	0.077000	0.195043	2.423293
Unic	2016	0.071035	8.892833	0.884316	0.530696	0.206340	0.060025	0.080000	0.097000	0.286016	2.083944
Unic	2017	0.076336	8.963098	1.113584	0.473313	0.175616	0.045451	0.109000	0.072000	1.791082	2.189389
Unic	2018	0.044827	9.126079	1.200636	0.454414	0.455395	0.058487	0.077000	0.168000	0.000000	3.746599
Global	2009	0.054110	7.732358	1.362273	0.423321	0.219762	0.022600	0.100000	0.364000	0.961882	1.619515
Global	2010	0.369010	7.783706	1.469964	0.404864	0.125505	0.021245	0.105700	0.028000	0.839504	1.823034
Global	2011	0.147285	7.815313	1.348240	0.425851	0.075491	0.016222	0.114000	0.181000	0.919467	1.322677
Global	2012	0.199383	7.971257	2.139460	0.318526	0.432005	0.009979	0.087000	0.341000	0.915967	1.243551
Global	2013	0.264458	8.094143	1.836620	0.352532	0.327044	0.022079	0.099000	0.135000	1.134974	3.149080
Global	2014	0.202031	8.187766	1.325256	0.430060	0.240575	0.023378	0.103000	0.081000	1.351905	3.363516
Global	2015	0.403402	8.270533	0.953813	0.511820	0.209949	0.020656	0.104000	0.077000	1.631958	3.178252
Global	2016	0.117261	8.343563	1.012046	0.497006	0.183124	0.022400	0.080000	0.097000	1.469099	2.853443
Global	2017	0.073574	8.378741	0.897736	0.529600	0.084371	0.011840	0.109000	0.072000	1.247280	2.098243
Global	2018	0.083310	8.481772	1.055337	0.486538	0.267743	0.010186	0.077000	0.168000	1.212812	3.245190
Nice	2009	0.046253	7.708654	2.127236	0.319771	0.057951	0.095834	0.100000	0.364000	7.700223	1.780005
Nice	2010	0.058833	7.799541	2.365409	0.297141	0.232783	0.118898	0.105700	0.028000	5.871897	2.097202
Nice	2011	0.002904	7.937098	3.692842	0.213090	0.372641	0.102539	0.114000	0.181000	6.309079	1.070318
Nice	2012	0.174276	8.159833	3.017720	0.248897	0.670072	0.083889	0.087000	0.341000	4.993516	1.243551
Nice	2013	0.139289	8.293122	2.245706	0.308099	0.000000	0.070575	0.099000	0.135000	2.877962	1.000000
Nice	2014	0.069469	8.405269	2.245706	0.237981	0.182588	0.073875	0.103000	0.081000	4.576780	1.000000
Nice	2015	0.120233	8.448210	2.103611	0.322205	0.087297	0.067772	0.104000	0.077000	4.961955	1.000000
Nice	2016	0.067779	8.527134	2.565579	0.280459	0.202917	0.055352	0.080000	0.097000	3.163720	1.989385
Nice	2017	0.069862	8.601651	2.317526	0.301429	0.184048	0.067423	0.109000	0.072000	4.588666	1.189443
Nice	2018	0.090225	8.694383	2.328361	0.300448	0.688754	0.033924	0.077000	0.168000	3.940352	1.000000

Source: NBE and 9 respective insurance co

Appendix 6: List of Insurance companies in Ethiopia

S. No	Name of Company	Established Date	Type	Ownership
1	Ethiopian Insurance Corporation	1975	General	Governmental
2	Africa Insurance company S.C	1/12/1994	General	Private
3	Awash insurance company S.C	1/10/1994	General	Private
4	National Insurance co. of Ethiopia S.C	23/09/1994	General	Private
5	Nyala Insurance company S.C	6/1/1995	General	Private
6	Nile Insurance company S.C	11/4/1995	General	Private
7	The United Insurance S.C	1/4/1997	General	Private
8	Global Insurance Company S.C	11/1/1997	General	Private
9	Nib Insurance Company S.C	1/5/2002	General	Private
10	Lion Insurance Company S.C	1/7/2007	General	Private
11	Oromia Insurance Company S.C	26/01/2009	General	Private
12	Abay Insurance Company S.C	6/7/2010	General	Private
13	Berhan Insurance Company S.C	24/05/2011	General	Private
14	Tsehay Insurance Company S.C	8/3/2012	General	
15	Ethio life and General Insurance Co. S.	23/10/2008	life and General	Private
16	Lucy Insurance Company S.C	1/10/2012	General	Private
17	Bunna Insurance Company S.C	21/05/2013	General	Private