SCHOOL OF GRADUATE STUDIES

MBA in General Management

Factors Determining Profitability of Insurance Companies In Ethiopia

By: Roman Mekcha

February, 2018

Addis Ababa, Ethiopia

FACTORS DETERMINING PROFITABILITY OF INSURANCE COMPANIES IN ETHIOPIA

A THESIS SUBMITTED TO ST.MARY'S UNIVERSITY SCHOOL OF GRADUATES STUDIES IN PARTIAL FULFILMENT OF THE REQEIRMENT FOR THE DEGREE OF MASTERS OF BUSINESS ADMINISTRATION

By: Roman Mekcha

ID No. SGS/0054/2008B

Advisor: Letenah Ejigu (PHD)

February, 2018

ADDIS ABABA, ETHIOPIA

ST.MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES MBA PROGRAM

FACTORS DETERMINING PROFITABILITY OF
INSURANCE COMPANIES IN ETHIOPIA

By: Roman Mekcha

ID No. SGS/0054/2008B

APPROVED BY BORRD OF EXAMINERS

_____   _____

Dean, Graduate Studies   Signature & Date

Letenah Ejigu   07/02/2018

Advisor   Signature & Date

_____   _____

External Examiner   Signature & Date

_____   _____

Internal Examiner   Signature & Date

DECLARATIONS

I would like to affirm that, as to my best knowledge, this thesis is a result of my own effort and not submitted to any other university before. Besides, any source used in this thesis is properly acknowledged & included in the list of references.

Roman Mekcha   Signature_____

St. Mary's University, Addis Ababa   February, 2018
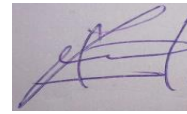
ENDORSEMENT

This thesis has been submitted to St. Mary's University, School of Graduate studies for examination with my approval as a university advisor.

Letenah Ejigu (PHD)

Advisor   Signature

St. Mary's University, Addis Ababa   February, 2018

TABLE OF CONTENTS

ACKNOWLEDGMENTS

LIST OF ACRONYMS/ABBREVIATIONS

- EG: Economic Growth
- GDP: Gross domestic Product
- Infr: Inflation rate
- LQ : Liquidity
- LOR : Loss ratio
- Lev : Leverage
- NBE: National Bank of Ethiopia
- ROA : Return on Asset
- S.C : Share Company
- TOA: Tangibility of assets
- USD : United States Dollar
- VIF: Variance Inflation Factor
- VOC: Volume of capital

LIST OF TABLES

LIST OF APPENDICES

LIST OF FIGURES

ABSTRACT

The main objective of this study is to examine the internal and external factors that determine profitability of Insurance Companies in Ethiopia. Profitability in terms of Return on Asset (ROA) is taken as a dependent variable while age of company, volume of capital, leverage ratio, tangibility of assets, liquidity ratio, loss ratio inflation and economic growth are taken as independent variables. From the total seventeen insurance companies, nine insurance companies which have ten years data were selected based on purposive sampling method. Ten years (2007-2016) Secondary data obtained from National Bank of Ethiopia (NBE) and financial statements of sampled nine insurance companies are analyzed. By conducting Random effect regression model, liquidity, loss ratio and GDP growth Rate are identified as the most important factors that determine the of profitability of insurance companies in Ethiopia. Liquidity has a positive while loss ratio and GDP growth rate have a negative and statically significance impact on profitability. In contrast, Age, leverage, tangibility of Asset, volume of capital and inflation has insignificant relation with profitability of insurance companies in Ethiopia. Based on the findings of the study, insurance companies need to give prime emphasis on liquidity, loss ratio and GDP growth that have significant influence on their performance. The Ethiopian Insurance Association has to be strong to coordinate all insurance companies to work together on their common interests and in creating public awareness about insurance by preparing workshops and different researches regarding insurance sector. The supervisory body (NBE) is recommended to focus on ensuring the healthy competition of insurance companies by setting regulation that control unfair competition and price cutting.

Key Terms: Insurance, Profitability Determinants, Return on Asset (ROA)

CHAPTER ONE: INTRODUCTION

1.1. BACKGROUND OF THE STUDY

Insurance is a contract, the insurer agreeing to make good any financial loss the insured may suffer within the scope of the contract and the insured agreeing to pay a consideration. Every plan of insurance is in its simplest term, merely a method of spreading over a large number of persons a possible financial loss too serious to be conveniently borne by an individual. Ndedi Bod (2016)

The insurance Industry plays an important role in nation's economy. Studies have demonstrated that insurance sector can play a critical role in financial and economic development of a country. It is one of the key pillars of the financial services sector in the world. United Nations Conference on Trade and Development in 2007 reported insurance has both an infrastructural and commercial service; a well-functioning insurance sector plays a crucial role in economic development not just at a macroeconomic level but also in terms of the activities of individuals and businesses[1].

Insurance also benefits society by encouraging activities and devices that reduce the amount of losses and their economic impact. Banks and credit institutions rely on insurance to make sure they can recover loans if disaster occurs. Insurance allows borrowers to guarantee creditors that their investment is protected against disasters.

Africa is home to 15% of the World's population but generates barely 1.5% of global insurance premiums which generate USD 4,778 Billion in 2014(SIGMA-Swiss Re Report). The continent has around 600 active insurance businesses in 54 countries. The region's Top

---

[1]*allAfrica.com. Written by Dr Sreepada Hegde, Madawalabu University, Ethiopia 2015*

ten markets generate more than 90% of premium income, particularly South Africa (75%), followed by Morocco, Egypt, Nigeria and Kenya. Others counties of Africa insurance has still way to go. Private Sector & Development Prospero's (2016).According to the report, there are a number of reasons for this. First, low mean individual incomes: before paying over insurance premiums, people first have to eat and put a roof over their heads. These priorities tend to make such outlays look like "extravagant" expenditure.

Many people simply view mandatory insurance as additional taxes and this colors their perception of insurers in general. Despite these obstacles, insurance still has huge development potential in Africa both in the individual and business sector as borne out by the Continent's economic and demographic momentum.

In Ethiopia, there are 17 insurance companies, of which 16 were private and 1 public. Total insurance branches were 426 where 53.50% percent were located in Addis Ababa. During 2015/16, the total capital of insurance companies reached 3.6 Billion with growth rate of 25.3% from the previous year, of which 76.7 percent was that of the private insurance companies. NBE (2015/16)

Ethiopian insurance sector is also known by its low public awareness, less accessibility and insignificant penetration rate compared with the potential of the economy and the bigger population. Based on the information obtained from NBE, the insurance industry contributed only 0.48% to the national 2015/16 GDP which indicates the poor performance of the sector compared to national economy and contribution of other sectors.

Financial performance is a measure of an organization's earnings, profits, appreciations in value as evidenced by the rise in the entity's share price. In insurance, performance is normally expressed in net premiums earned, profitability from underwriting activities, annual turnover, returns on investment and return on equity. Mirie Mwangi (2015).

According to Adams and Buckle (2000), insurer's profitability is influenced by both internal and external factors. The internal factors focus on an insurer's specific characteristics. Some of the internal factors are age of the company, Volume of paid up capital, leverage ratio, tangibility of Asset, level of liquidity, loss Ratio. Whereas the external factors concern both industry features and macroeconomic variables like economic growth and inflation which is out of the control of the company. Mirie Mwangi (2015).

1.2. STATEMENT OF THE PROBLEM

Profitability is one of the most important determinants of any company performance and shows its healthiness. It is one of the most important objectives of financial management since one goal of financial management is to maximize the owners' wealth. It is reflection of how companies are run, given the environment in which they operate. Hifza Malik (2011)

The insurance sector plays an important role in the financial services industry, 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. Haiss and Sumegi (2008). Insurance has evolved as a process of safeguarding the interest of people from loss and uncertainty. It may be described as a social device to reduce or eliminate risk of loss to life and property. Studies have demonstrated that economic growth and insurance development are interdependent and that a world without insurance would be much less developed and much less stable.

Despite its critical economic and social benefits of the insurance sector, in Africa and particularly in Ethiopia the insurance sector is characterized by under developed. According to the Ethiopia Economic Outlook 2016 report, the Ethiopian insurance industry is relatively under developed in comparison to that of other African countries. All insurance companies, are relatively weak and small-scale. Information obtained from NBE (2015/16), witnessed that Ethiopian insurance industry contributed only 0.48% to the national 2015/16 GDP, which shows very minimum contribution to the economy. In this

regard, when we compare with the Bank Sector, the Bank Industry contributes 5.7 % to the National GDP in the year 2015/16 which shows better contribution than Insurance sector.

Increasing profitability is one of the most important tasks of the business managers. Managers constantly look for ways to change the business to improve profitability. Identifying the key success indicators of insurance companies can help in facilitating the design of policies that may improve the profitability of the insurance industry. Hence, the determinants of insurers' profitability have attracted the interest of investors, researchers, financial markets analysts and insurance regulators.

There are a number of papers that studies factors which affect the profitability of insurance companies but their result contradict each other in identifying the relationship of each determinates with the profitability. For instance Meaza (2014) on her study find that liquidity has negative and economic growth has positive relationship with profitability of insurance companies but Suhiliy Reshid (2015) on his study find that liquidity has positive relation and economic growth has negative relation with profitability.

In addition, most of the studies are focused only on internal determinants of profitability. As far as the researcher knowledge, there are only two papers which were Meaza (2014) & Suhili Reshid (2015) that focus on both internal and external determinants of insurance profitability but their result also contradict each other in identifying the relationship of each determinates with the profitability.

Thus, this paper extended prior research and contributes to the literature on the determinants of profitability in a number of ways and also the study seeks to fill the above explained gap by providing information about the internal and external factors that affects profitability of insurance companies by examining all insurance company operating in the country that have 10 years data.

1.3. OBJECTIVES OF THE STUDY

1.3.1. GENERAL OBJECTIVE

The overall objective of this study is to analyze factors affecting profitability of the insurance sector in Ethiopia.

1.3.2. SPECIFIC OBJECTIVES

Bearing the general objective in mind, the paper attempted to address the following specific objectives:-

- To assess the current status of insurance companies in Ethiopia.
- To examine the effect of internal factors on insurance sector profitability in insurance companies. I.e. Age of the company, volume of capital, leverage ratio, Tangibility of Asset, Liquidity Ratio & Loss ratio.
- To examine the effect of external factors on insurance sector profitability in insurance companies. This are inflation and economic growth.

1.4. HYPOTHESIS OF THE SUDY

The following hypotheses were developed regarding the determinants of profitability in Ethiopia insurance companies based on different empirical research and theoretical reviewed made.

Accordingly, the following hypotheses are tested by the study:

H1: There is a positive and significant relationship between age and profitability of insurance companies in Ethiopia.

H2: There is a positive and significant relationship between increases in volume of capital and profitability of insurance companies in Ethiopia.

H3: There is a negative and significant relationship between leverage and profitability for Ethiopian insurance companies.

H4: There is a negative and significant relationship between Tangibility of assets and profitability of insurance companies in Ethiopia.

H5: There is a negative and significant relationship between Liquidity ratio and profitability of Insurance companies in Ethiopia

H6: There is a negative and significant relationship between loss ratio and profitability of insurance company in Ethiopia.

H7. There is a negative and significant relationship between Inflation and profitability of insurance company in Ethiopia.

H8: There is a positive and significant relationship between Economic growth and profitability of insurance company in Ethiopia.

1.5. SIGNIFICANCE OF THE STUDY

This study attempted to assess what determine the profitability of insurance companies in Ethiopia. Therefore, it drops light on the scarcity of these types of study in Ethiopia and give shading light on what determines insurance company's profitability. Accordingly, the concerned body likes insurance companies, government, management, investor and customer benefit from the result that emerged from this study and thereby takes appropriate actions to increase profitability of insurance industry.

Moreover, the researcher also believe that this study can potentially serve as a stepping stone for further research and provides an insight of the insurance industry and the performance of insurance company in Ethiopia.

1.6. SCOPE AND LIMITATION OF THE STUDY

The study focused only on the determinants of profitability of insurance companies in Ethiopia and also the scope of the study confined merely on the quantitative measure of determinates of insurance companies profitability in Ethiopia. The determinant of insurance in Ethiopia can be influenced by many internal and external factors. But, this study focused on selected internal factors and only two of the external factor, which is economic growth of the nation& Inflation.

From seventeen insurance companies registered by the NBE, only nine of the seventeen insurance companies were addressed by this paper while 10 years data from 2007 until 2016 were taken for each variable as length of the data need to be fairly large in order to have significant relationship. Eight Insurance companies operating for less than 10 years are excluded in this study because they did not have full data for the study period.

1.7. ORGANIZATION OF THE STUDY

This paper have five chapters, the first one include an Introductory which contains background of the study, statement of the problem, objective of the study, significance of the study , scope and limitation of the study.
The second chapter deals with review of different Literature and present previous studies findings that focuses on profitability and the factors that determine profitability of insurance companies and provide empirical evidences.

The third chapter is about research methodology of the study and Chapter four deals with data analysis and interpretation. Finally, Chapter five presents the conclusion and possible recommendations of the research.

CHAPTER TWO: LITERATURE REVIEW

This section presented theoretical and empirical review on the determinants of insurance companies' profitability. Accordingly, the first part presented theoretical literature on the concept of insurance and also explained the determinant of profitability in insurance. The second part discussed on various empirical studies about the determinants of Insurance companies Profitability.

2.1. THEORETICAL LITERATURE

2.1.1. MEANING OF INSURANCE

Insurance is risk-transfer mechanism that ensures full or partial financial compensation for the loss or damage caused by event(s) beyond the control of the insured party. Under an insurance contract, a party (the insurer) indemnifies the other party (the insured) against a specified amount of loss, occurring from specified eventualities within a specified period, provided a fee called premium is paid[2] .

Insurance provides economic protection from identified risks occurring or discovered within a specified period. Insurance is a unique product in that the ultimate cost is often unknown until long after the coverage period, while the revenue premium payments by policyholders are received before or during the coverage period. Suhiliy Reshid (2015)

[2]*http://www.business_dictionary.com/definition/insurance.html*

Insurance business is usually divided into two main classes namely General Insurance & Life Insurance

a) General insurance business, also called Non-life Insurance - used to insure properties and legal responsibilities. Some of the class of businesses under non-life insurance includes motor, marine, engineering, fire, burglary, pecuniary & liabilities.

b) Life assurance business: Life insurance gives cover to the insured or their nominated beneficiaries upon a certain event such as death.

Insurance compensation is normally proportionate to the loss incurred and the basic purpose is to put the insured in same financial position as he/she was before the loss. While discharging this function, all insurance companies follow the following basic or guiding principles shown below:

1. Insurable Interest

Not all risks are insurable. Insurable risks have certain characteristics:
- they must be capable of financial measurement
- there must be a large enough number of similar risks
- they must not be against public policy
- the premium needs to be reasonable
- There must be an 'insurable interest' for the person insuring.

Insurable interest is where you have a valid reason to insure and stand to suffer a direct financial loss if the event insured against occurs. Insurable interest exists when an insured derives a financial or other benefit from the continuous existence of an insured object. For example, a person has an insurable interest in their own car but not in their neighbor's car.

To demonstrate insurable interest, there must be something tangible that can be insured such as property, life or rights imposed by law. Belmont (2013).

2.   Utmost good faith

Principle of *Uberrimae fidei* (a Latin phrase), or in simple English words, the Principle of Utmost Good Faith, is a very basic and first primary principle of insurance. According to this principle, the insurance contract must be signed by both parties (i.e. insurer and insured) in an absolute good faith or belief or trust.

The person getting insured must willingly disclose and surrender to the insurer his complete true information regarding the subject matter of insurance. The insurer's liability gets void (i.e. legally revoked or cancelled) if any facts, about the subject matter of insurance are either omitted, hidden, falsified or presented in a wrong manner by the insured. The principle of utmost good faith applies to all types of insurance contracts. Jennifer Allsop (2011)

The principle of utmost good faith requires anyone seeking insurance to disclose all relevant facts. These are facts that would influence the judgment of a prudent underwriter in fixing the premium or determining whether they will take on the risk. Where material non-disclosure can be proved, a contract can be voided. Belmont International Insurance Brokers (2013).

3. Proximate cause

An insurance policy will define the perils or insured events that cover is provided for. All contracts are subject to terms and conditions that will exclude certain causes of loss.

Therefore, in the event of a claim, it is important to ascertain the cause of the loss in order to determine if that cause is insured or excluded. There may be multiple elements involved in a claim, so it is the 'proximate cause' that is taken into account. The proximate cause is the dominant cause that sets in play a chain of events. For example, if lightning damaged a building and weakened a wall, following which the weakened wall was blown down by high winds, lightning would be considered the proximate cause. Belmont (2013)

4. Indemnity

Indemnity means security, protection and compensation given against damage, loss or injury. According to the principle of indemnity; an insurance contract is signed only for getting protection against unpredicted financial losses arising due to future uncertainties. Insurance contract is not made for making profit else its sole purpose is to give compensation in case of any damage or loss. In an insurance contract, the amount of compensations paid is in proportion to the incurred losses. The amount of compensations is limited to the amount assured or the actual losses, whichever is less. The compensation must not be less or more than the actual damage. Compensation is not paid if the specified loss does not happen due to a particular reason during a specific time period. Thus, insurance is only for giving protection against losses and not for making profit. However, in case of life insurance, the principle of indemnity does not apply because the value of human life cannot be measured in terms of money. Jennifer Allsop (2011)

5. Subrogation

If a policy holder has a claim paid by their insurer, they may also have a right to pursue funds from another source, such as a third-party who caused the incident. The principle of subrogation allows the insurer to pursue any rights or remedies which the policy holder may possess, always in the name of the insured. This also ensures that the policyholder only receives the indemnity settlement entitled to and therefore they will not profit from the incident. Belmont (2013)

6.   Contribution

Principle of Contribution is a corollary of the principle of indemnity. It applies to all contracts of indemnity, if the insured has taken out more than one policy on the same subject matter. According to this principle, the insured can claim the compensation only to the extent of actual loss either from all insurers or from any one insurer. If one insurer pays full compensation then that insurer can claim proportionate claim from the other insurers. Jennifer Allsop (2011).

2.1.2. FUNCTION OF INSURANCE

Without insurance, business, trade and commerce will difficult to face the impact of major perils like fire, earthquake, and floods etc. Financiers like banks would collapse if the factory financed by it is reduced to ashes by a terrible fire. Insurers cover also the loss to financiers, if their debtor's default.

According to Ndenka (2014), as cited by Ndedi Bod (2016) the functions of insurance is grouped into three categories namely: Primary, secondary and indirect functions.

1) Primary Functions

- To Provide Protection -The most important function of the insurer is to provide protection against the probable risk of loss. It is a kind of guarantee that insurance will make good the loss suffered by an individual. Insurance cannot check the happening of the event but it certainly provides indemnity in such events.

- To Provide Certainty: Future is Uncertain - Any misfortune can happen at any time and the amount of loss is also uncertain in such misfortunes. It is true that better planning and administration can reduce uncertainty of loss but it requires special

attention, knowledge and determination. Insurance release man from such difficult task and provides certainty of payment and certainty of each loss.

- Distribution of Risk -This is another important function of insurance. The distribution of risk among several insured person is a method to spread over their losses.

2) Secondary Functions

- Help in the economic progress– Insurance play an important role in the development of industries and commerce and thus help in the economic development of a country. It develops a sense of security among the industrialists. They are aware that in case of any misfortune or event, their losses will be compensated.

- Prevents losses -Insurance play an important role in the reduction of losses. Insurers give incentives for reducing loss by lowering premium. Reduction of losses causes lesser payment to the insured and more savings to insurers which ultimately results in the reduction in premium and increase in insurance business.

3) Indirect Functions

- Forced Saving - Life insurance is a method of saving. The premium paid is accumulated and is returned to the assured if he survives at the date of maturity. Payment of life insurance premium becomes a habit and in effect brings about compulsory savings.

- Promotes Foreign Trade -Foreign trade depends entirely on insurance. The banker will not discount the marine trade bill unless the cargo is fully insured. Ndedi Bod (2016)

2.1.3. THE CONCEPT OF INSURANCE PROFITABILITY

Profit is what is left over from income earned after you have deducted all costs and expenses related to earning the income and it is one of the main reasons for the continued existence of every business organization and also it is expected so as to meet the required return by owners and other outsiders. Profitability means ability to make profit from all the business activities of an organization, company, firm, or an enterprise. Meaza (2014)

Profitability is the primary goal of all business ventures. Without profitability the business will not survive in the long run. So measuring current and past profitability and projecting future profitability is very important. It is a measure of evaluating the overall efficiency of the business. The best possible course for evaluation of business efficiency may be input-output analysis. Profitability can be measured by relating output as a proportion of input or matching it with the results of other firms of the same industry or results attained in the different periods of operations. Profitability of a firm can be evaluated by comparing the amount of capital employed i.e. the input with income earned i.e. the output. This is popularly known as return on investment or return on capital employed. Profitable means that insurance companies are earning more revenues than being disbursed as expenses. Suhiliy Reshid (2015)

Financial performance is a measure of an organization's earnings, profits, appreciations in value as evidenced by the rise in the entity's share price. In insurance, performance is normally expressed in net premiums earned, profitability from underwriting activities, annual turnover, returns on investment and return on equity. These measures can be classified as profit performance measures and investment performance measures. Profit performance includes the profits measured in monetary terms. Simply, it is the difference between the revenues and expenses. These two factors, revenue and expenditure are in turn influenced by firm-specific characteristics, industry features and macroeconomic variables. Investment

performance can take two different forms. One the return on assets employed in the business other than cash, and two, the return on the investment operations of the surplus of cash at various levels earned on operations. Chen and Wong (2004) and Asimako Poulos (2009) as cited by Mirie Mwangie (2015).

2.1.4. DETERMINANATS OF INSURANCE PROFITABILITY

Profitability of insurance companies could be affected by a number of determining factors. These factors could be classified as internal and external factors. The internal factors focus on an insurer's specific characteristics, whereas the external factors concern both industry features and macroeconomic variables.

2.1.4.1. INTERNAL DETERMINANTS OF INSURANCE PROFITABILITY

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

1. Age of the company

Age of the company is the number of years of a company counted from date of establishment. Elif Akben (2016) in his study mentioned a firm's performance is affected by its age can be grouped into three broad categories. One stream of research suggests that older firms have better financial performance because they are more experienced and enjoy the benefits of "learning by doing" Coad A (2013), Vassilakis (2008). Moreover, younger firms are prone

to "liabilities of newness" which refer to a number of poorly understood factors leading to higher failure rates. Stinch Combe (1965)

A second strand of literature supports the view that older firms enjoy better performance and suggests that there might be "selection effects" which arise when less productive firms are forced to exit the business leading to higher average productivity in the cohort even if the productivity levels of the individual firms do not change over time. Jovanovic (1982).

A third stream of research, however, suggests that aging can have a negative impact on firms' financial performance due to "inertia effects" leading firms to become inflexible and have difficulties in fitting the rapidly changing business environment in which they operate. Barron Dn (1994). Given the equivocality of these existing theories, the relationship between a firms' financial performance and its age is a question that remains to be answered empirically. Elif Akben (2016).

2. Volume of Capital

It is the amount capital collected from each shareholder. As volume of paid up capital increase, companies will be able to engage in a more profitable business areas and will have stronger bargaining power. This leads to a positive relation between capital and performance of general insurance companies. Abate (2012) in his study stated the volume of capital is widely used as one of the determinants of insurance companies' profitability since it indicates the financial strength of the firm and he has demonstrated a positive relationship with profitability.

The capital of a company is expressed by the basic accounting equation as the difference between total assets with total liabilities. In studies related to factors affecting the profitability of insurance companies, the size of capital as a factor is represented by the ratio of shareholder equity to total assets, but this factor can be expressed by the carrying amount of capital insurance companies. These studies have shown that there is a statistically

significant positive relation between the Volume of capital insurance companies with their profitability, expressed by ROA. Al-Shami (2008); Malik (2011) as cited by. Dorina Kripa (2016).

3. Leverage Ratio

Leverage refers to the extent to which firms make use of their money borrowings (debts financing) to increase profitability and is measured by total liabilities to equity. Firms that borrow large sums of money during a business recession are more likely to default to pay off their debts as they mature; they will end up with high leverage and are more likely end up with a potential risk of bankruptcy. On the contrary, the lower the firm's borrowings, the lower the leverage, and the risk of bankruptcy will eventually be lower which signifies that business will continue operating. Leverage ratio is measured as a ratio of total liabilities/total asset. Khalid Alkhatib (2012)

4. Tangibility of Asset

Tangibility is the physical assets that have relatively long period of use in the operation of the business such as land, buildings, machinery, and construction in progress that can offered as collateral to creditors in case of bankruptcy, high level of fixed total assets provide creditors with level of security. Tangibility is computed by dividing fixed assets by total assets. Khalid Alkhatib (2012).

Meaza (2014) on her study mentioned that Tangibility has two conflicting effects on profitability. On the one hand, according to Himmelberg (1999) tangibility of asset has positive effect on profitability and they show that tangible assets are easily monitored and provide good collateral and thus they tend to mitigate agency conflicts between shareholders and creditors. On the other hand, tangibility of asset may have a negative correlation, because firms with high levels of tangible assets tend to be less profitable. Firms with high levels of

intangible assets (in form of liquidity) have more investment opportunities in the long term, innovation and research and development. Deloof (2003) and Nucci (2005).

5. Liquidity

Liquidity represents the capital amount that is available for use as an investment and or expenditure. It also shows the ability of a firm to meet their current liabilities as and when they mature. Ross (1977) as cited by Khalid Alkhatib (2012).

Dorina Kripa (2016) in their study mentioned that liquidity for insurance companies shows the ability of insurers to pay current liabilities, which have the nature of operating expenses or payment of compensation in case of damage. For the insurer primary sources of liquidity are cash flow from net premiums, investment returns and liquidation of assets Chen & Wong (2004). Most studies in this field treat liquidity as a factor affecting profitability, representing it by the current ratio (current assets / current liabilities).

6. Loss Ratio

Loss ratio is percentage of claims incurred by an insurer from the total premium collected in the specific period (Loss ratio=Claims incurred/Earned premiums). Bigger loss ratio indicates higher operational costs i.e., loss is negatively related with the performance of a given insurance company.

Organizations that engage in risky activities are likely to have more volatile cash flows than entities whose management is more averse to risk-taking. As a consequence, insurers that underwrite risky business will need to ensure that good standards of management are applied to mitigate their exposure to underwriting losses ex-ante and maximize returns on invested assets ex-post. This could improve annual operational performance by encouraging managers to increase cash flows through risk taking. On the other hand, excessive risk-taking could adversely affect the annual performance of insurers and reinsurance companies.

Furthermore, higher annual insurance losses will tend to increase the level of corporate management expenses ex-post (e.g., claims investigation and loss adjustment costs) that could further exacerbate a decline in reported operational performance. In contrast, insurers and reinsurance companies with lower than expected annual losses are likely to have better operational performance because, for example, they do not incur such high monitoring and claims handling costs. Daniel and Tilahun (2013).

2.1.4.2. EXTERNAL DETERMINANTS OF INSURANCE PROFITABILITY

The external factors concern both industry features and macroeconomic variables. Inflation Rate and Economic growth of a country are some of the external determinants which are not controllable by the management of the insurance companies.

1. Inflation Rate

Inflation is a general increase in the overall price level of the goods and services in the economy. It occurs when the overall prices of goods and services increase over time and cannot be measured by an increase in the cost of one product or service, or even several products or services.

The association between inflation rate and insurance companies' profitability relies up on the nature of inflation. I.e. whether the inflation is anticipated or unanticipated. Therefore, the expected impact of inflation up on insurers' profitability is subject to further empirical study. Teklit (2017).

2. Economic Growth

Economic Growth (GDP) reflects the economic activities and level of development of a particular country over a specified time period, usually a year. It is one of the most primary macroeconomic indicators which are used to measure the economic health of a country. Poor economic conditions can worsen the quality of the finance portfolio, thereby reducing profitability. If the economy of the country in terms of GDP grows, the likelihood of selling insurance policies also grows and insurers are likely to benefit from that in form of higher profits. Teklit (2017).

2.2. EMPERICAL LITERATURE REVIEW

According to a paper done by Abate (2012), there are many internal factors that affect the profitability of Insurance Companies and he identifies their relation with the profitability of the company with their impacts of significance .Based on his study Liquidity and Leverage Ratio have a negative relationship on Profitability. In other hand Size of the company, Tangibility, Age, Volume of capital & Growth rate has a positive Relationship with profitability. Except Tangibility & Age all variables have a significant effect on the profitability.

Suhiliy Reshid (2015) on his paper showed that underwriting risk, technical provision and solvency ratio have statistically significant and negative relationship with insurers' profitability. However, reinsurance dependence has negative but insignificant relationship with profitability. On the other hand, variables like liquidity, company size and premium growth have a positive and statistically significant relationship with insurers' profitability. In addition, economic growth rate has significant influence on profitability whereas inflation has insignificant influence on insurers' profitability.

A study on the performance of insurance companies in Ethiopia by Dr. Yuvaraj (2013), profitability which is proxy by Return on Asset (ROA) is affected by the firm specific factors (age of company, size of company, volume of capital, leverage ratio, liquidity ratio, growth and tangibility of assets). As stated in the study, most researchers in the field of insurance and their profitability agreed that the key indicator of an insurance firm's profitability is ROA which is defined as profits after tax divided by total assets. The study revealed that for non-life insurance companies, size of capital is one of the important factors that positively affect ROA.

The study also investigated that the impact of firm level characteristics on performance of the life insurance sector. Accordingly, size, age, risk, growth and tangibility are selected as explanatory variables keeping ROA as a proxy for profitability.

Another study made on the effect of Financial Risk On Performance of Insurance Companies in Ethiopia by Daniel (2017), revealed that credit risk, liquidity risk, solvency risk, underwriting risk and technical provisions risk show negative and significant association with performance of Ethiopian insurance companies, whereas reinsurance risk has insignificant effect on performance of insurance companies.

According to a study made on Factors affecting profitability of insurance companies in Kosovo by Albulena (2014), the ratio of the volume of liquidity and capital are significantly and positively related to acquisition. In contrast, the size of the company and the ratio of fixed assets showed a significant, but negative relationship with corporate profitability.

A study conducted on Kenya by Mirie Mwangi (2015) on the determinant of financial performance in general Insurance companies in Kenya argued that Profitability was positively related to leverage, equity capital, management competence index and negatively

related to size and ownership structure. The study did not find a relationship between performance and retention ratio, liquidity, underwriting risk and age.

Another study made on the determinants of insurance companies' profitability in Pakistan by Hifza Malik (2011) shows that ROA and five variables that represent age of company, size of company, volume of capital, leverage and loss ratio were developed to test which factor best explains profitability of Pakistani insurance companies. Result shows that there is no relationship between profitability and age of the company and there is significantly positive relationship between profitability and size. The Result also shows that volume of capital was significantly and positively related to profitability. On the other hand the analysis suggests that a reverse and significant relationship between leverage ratio and loss ratio as independent variables and profitability so this result supports last two hypotheses.

Dorina Kripa (2016) on their studies concerning factors affecting the profitability of insurance companies in Albania mentioned six determinants of insurance Profitability. Accordingly liabilities and fixed assets have negative correlation with profitability of insurance companies. But the impact of liability is significant whereas the impact of fixed asset is weak. On other hand, company size, the volume of capital and the growth rate of the insurance companies had a positive statistically significant impact.

Furthermore Meaza (2014), on her study on the determinant of insurance company's profitability in Ethiopia mentioned that profitability of insurance companies influenced internal and external factors. The internal factors are firm size, leverage, liquidity, tangibility of assets, loss ratio (risk), growth rate, managerial efficiency and the external factors are economic growth and inflation. Based on the study, there is a positive correlation between ROA and size, tangibility of asset, firm growth, managerial efficiency and economic growth. While, there is a negative correlation with leverage, liquidity, loss ratio/ risk and inflation rate.

2.3. CONCEPTUAL FRAME WORK

Different empirical evidences suggested that profitability of financial institutions affected by internal and external factors. This study used both internal and external determinants of insurance's profitability includes. Some of the internal factors are age of the company, Volume of capital, leverage ratio, tangibility of Asset, level of liquidity, loss Ratio whereas, the external factors are inflation rate and economic growth. The study was identified how these variables determine the profitability of insurance company in Ethiopia.
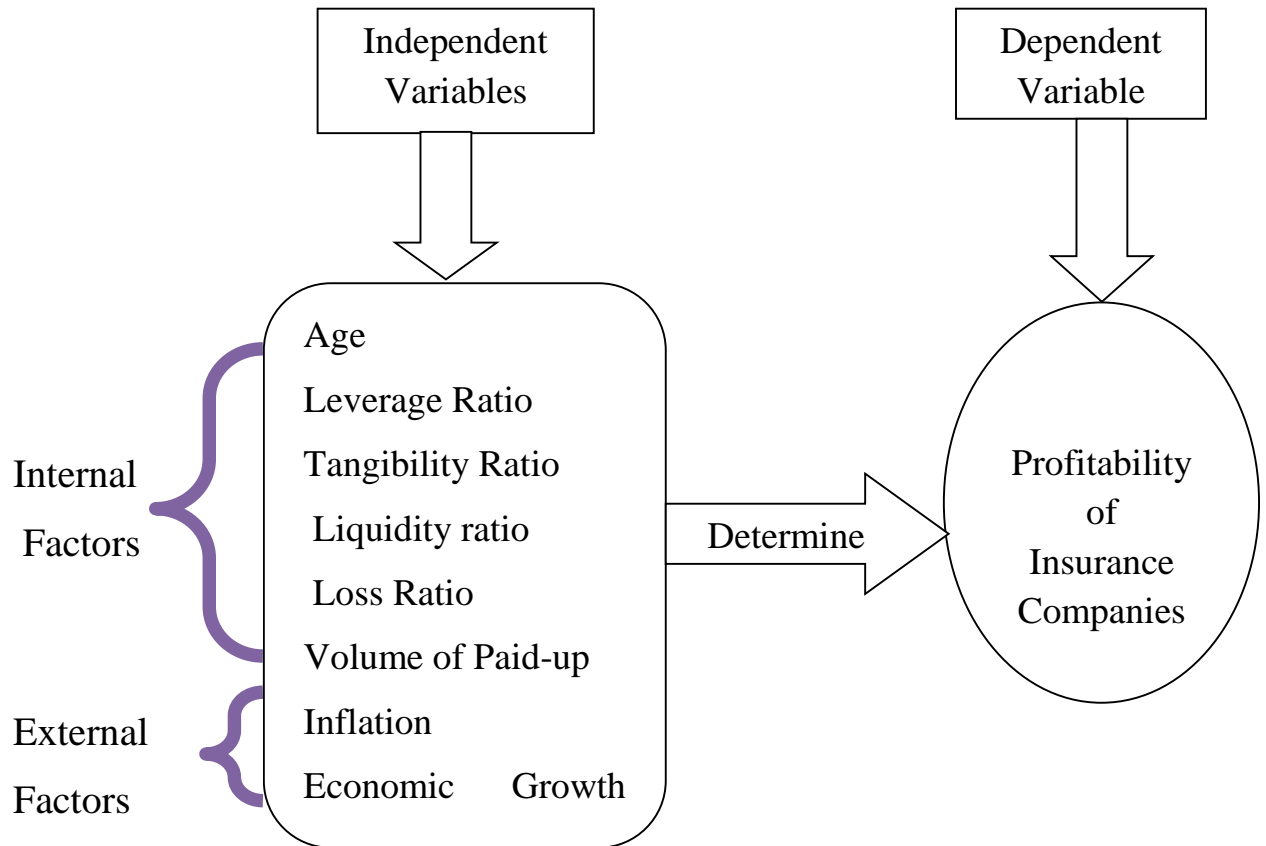
Diagram 1: Conceptual Framework

Source: Own Computation

CHAPTER THREE: RESEARCH DESIGN AND METHODOLGY

This chapter deals the approach adopted to examine the effect of main determinants on profitability, the type of data used and the techniques employed to collect the data, the sampling mechanism including sample size, the methods utilized to manage and analyze the data, and the process of constructing empirical model with identification and measurement of its components, measurement and selection of variables, expected relations between the dependent and independent variables.

3.1. RESEARCH APPROACH

According to Creswell (2003) there are three approaches of research; quantitative, qualitative and mixed. A quantitative approach is one in which the investigatory primarily uses postpositive claims for developing knowledge (i.e., cause and effect thinking, reduction to specific variables and hypotheses and questions, use of measurement and observation, and the test of theories), employs strategies of inquiry such as experiments and surveys, and collect data on predetermined instruments that yield statistics data.

Alternatively, a qualitative approach is one in which the inquirer often makes knowledge claims based primarily on constructivist perspectives (i.e., the multiple meanings of individual experiences meanings socially and historically constructed, with an intent of developing a theory or pattern) or advocacy/participatory perspectives (i.e., political, issue-oriented, collaborative, or change oriented) or both. It also sues strategies of inquiry such as narratives, phenomenologist, ethnographies, grounded theory studies, or case studies. The researcher collects open-ended, emerging data with the primary intent of developing themes from the data.

Finally, a mixed methods approach is one in which the researcher tends to base knowledge claims on pragmatic grounds (e.g., consequence -oriented, problem-centered, and pluralistic). It employs strategies of inquiry that involve collecting data either simultaneously or sequentially to best understand research problem. The data collection also involves gathering both numeric information (e.g., on instruments) as well as text information (e.g., on interviews) so that the final database represents both quantitative and qualitative information.

By considering the research problem and objective the paper, in this study, the quantitative approach was predominantly used. It is based on the measurement and the analysis of causal relationships between variables which constructed an econometric model to identify and measure the determinants of profitability.

3.2. RESEARCH DESIGN

Research design is the blueprint for fulfilling research objectives and answering research questions. In other words, it is a master plan specifying the methods and procedures for collecting and analyzing the needed information. In addition, it must ensure that the information collected is appropriate for solving a problem. John Admas (2007). In this study explanatory survey design and descriptive survey design method was employed.

3.3. POPULATION OF THE STUDY

The population of the study was all insurance company in Ethiopia registered by the NBE. There are seventeen insurance companies in Ethiopian that are one government owned and sixteen privately owned insurance companies.

3.4.   SAMPLE AND SAMPLING TECHNIQUES

The sample size of the research was decided based on the availability of the required data from insurance companies operating in Ethiopia. The researcher used purposive sampling method to draw the sample from the population. A purposive sampling method is a non-probability sample that conforms to certain criteria. John Adams (2007)

From seventeen insurance companies registered by the NBE, only nine of the seventeen general insurance companies are addressed by this paper. This is because the researcher needs 10 years' data so that this specification excluded eight insurance companies and left with nine companies. Therefore, the study considered only nine of seventeen general insurance companies operating in Ethiopia which have full data for the study period.

Regarding length of data, 10 years' data (from 2007 to 2016) was taken for all variables in the study in order to assure significance of correlation & realistic estimation result.

Table 1: List of insurance companies currently operating in Ethiopia which have 10 Years Data.

S.N.	Name of the company	Year of Establishment
1	Ethiopian Insurance Corporation	1975
2	Africa Insurance Company S.C	1994
3	Awash Insurance Company S.C	1994
4	National Insurance Company of Ethiopia S.C	1994
5	Nile Insurance Company S.C	1995
6	Nyala Insurance Company S.C	1995
7	Global Insurance Company S.C.	1997
8	The United Insurance S.C	1997
9	NIB Insurance Company	2002

Source: NBE , 2015/16 Report

3.5.   DATA SOURCES AND INSTRUMENTS

This research mainly used secondary sources of data. This secondary data were obtained from the nine sampled insurance companies audited financial statements and annual reports filed with NBE through document review.

The data collected and analyzed was a balanced panel of nine insurance companies in Ethiopia operating over the last 10 years. Panel, Longitudinal, or Micro panel Data is a special type of pooled data in which the same cross-sectional unit (say, a family or a firm) is surveyed over time. Gujarati (2004)

Panel data was selected by the researcher in order to meet the research objectives. According to Gujarati (2004), panel data is preferred for its advantage for capturing the potential heterogeneity nature of variables comparing with pure time series or cross sectional data analysis.

3.6.   DATA ANALYSIS

Data analysis section of this study was based on descriptive analysis, Correlation analysis and regression analysis. The paper was primarily based on panel data and this data was analyzed using descriptive statistics, correlations and multiple linear regression analysis.

The descriptive study produced mean, minimum, maximum and standard deviation for each variable for Ethiopian insurance companies during 2007-2016. In Correlation analysis, the study shows how variables are related with each other. The results of this analysis represent the nature, direction and significant of the correlation of the variables considered under this study. The Multiple regression analysis was used to examine the relationship between the profitability of Ethiopian insurance companies which is independent variables with varies determinants which is considered as independent variables.

The use of multiple regression consider the simultaneous relationships amongst the multiple numbers of independent and dependent variable found across the regression model. For this study, Random Effect regression was used to estimate the relationship between profitability and its determinants. The regression was conducted to test the casual relationship between the firm's profitability and their potential determinants and to determine the most significant and influential explanatory variables affecting the profitability of Ethiopian Insurance.

3.7. MODEL SPECIFICATION AND VARIABLE DEFINATIONS

3.7.1. MODEL SPECIFICATION

The Multiple regression analysis was used to identify the relationship between the profitability of Ethiopian insurance companies and independent variables such as age of the firm, leverage, liquidity, and tangibility of assets, loss ratio, and volume of capital, inflation and economic growth in terms of GDP growth rate. The result of a regression analysis is an equation that represents the best prediction of a dependent variable from several other independent variables.

The following regression equation is estimated as follow:

$$\mathbf{ROA_{it}} = \alpha + \beta 1 Age_{it} + \beta 2 VOC, t + \beta 3 Lev_{it} + \beta 4 TOA_{it} + \beta 5 LQ_{it} + \beta 6 LOR_{it} + \beta 7 Infr_{it} + \beta 8\ EG_{it} + \varepsilon_{it}$$

Where:

- ➢ ROAi, t : Return on Asset
- ➢ Age: Number of years of a company counted from date of establishment
- ➢ VOC: Volume of capital
- ➢ Lev : Leverage;
- ➢ TOA: Tangibility of assets;

- LQ : Liquidity;
- LOR : Loss ratio
- Infr : Inflation rate
- EG: GDP Growth Rate
- β1… β8: coefficient of independent variables
- ε is error term
- i is insurance companies 1 to 9
- t = time periods (t = 1, 2, 3 ...10)

3.7.2. VAIABLE DEFINATIONS

- **ROAi, t :**(Return on Asset):- is defined as the insurance companies before tax profit over total assets. It represents one of the most used methods of quantifying financial performance. ROA reflects the ability of insurance's management to generate profits from the insurances' assets, although it may be biased due to off-balance-sheet activities. In most of the previous studies on insurance sector, return on asset (ROA) is being used as a proxy of profitability. Al-Shami (2008); Hafiz Malik (2011); Lee (2012) ; Meaza (2014)

  In addition, ROA measures a company's success in using assets to earn income. It measures how a company is performing based on Total Asset employed. Charles (2012) It is given by ROA= Net profit before tax / Total Assets.

- **Age** (Age of the company) : Is Number of years of a company counted from date of establishment
- **Voc (**Volume of Capital): It is the amount capital collected from each shareholder.
- **Lev** (Leverage Ratio)**:** It is the amount of debt used to finance a company's assets. Leverage ratio is measured as a ratio of total liabilities/total asset.

➢ **TOA** (Tangibility of Asset): Tangibility is defined in respect to this study as the ratio of fixed assets to total assets.

➢ **LQ** (Liquidity): Liquidity of the insurance companies in this study was measured by the ratio of current assets to current liabilities.

➢ **LOR** (Loss Ratio): It is percentage of claims incurred by an insurer from the total premium collected in the specific period. Loss ratio=Claims incurred/Earned premiums.

➢ **Infr** (Inflation): The annual inflation rate was used.

➢ **EG** (GDP Growth rate)**:** It is the yearly Real GDP growth rate of the country was used.

In this model, all independent variables enter the regression equation at once to determine the Positive or negative relationship between the dependent and independent variables and identify which independent variables have highly significant to determine the company's profitability.

CHAPTER FOUR: RESULTS AND DISCUSSIONS

This chapter presents and discusses the findings of the research and examines how the pre-defined objectives are met. Thus, the chapter presents detailed information on the findings of the study and discussion regarding relationship between dependent and independent variables.

It investigate the relationship between profitability as dependent variable and age of insurance companies, volume of capital, leverage ratio, tangibility of company assets , liquidity ratio, GDP Growth rate and inflation as independent variables. Therefore, this chapter provides the results from the analysis of data and its interpretation for nine insurance companies operating in Ethiopia with in the period of 2007 to 2016.

The chapter is divided into four sections. The first section provides the current status of insurance companies in Ethiopia; the second section presents descriptive analysis of the data and variables for the study; the third section discusses the test of regression Assumption and finally the fourth section presents the results of regression analysis between dependent and independent variables followed by testing the hypothesis.

4.1. CURRENT STATUS OF INSURANCE COMPANIES IN ETHIOPIA

As per the NBE report (2015/16), the number of insurance companies currently operating in Ethiopia stood at 17 (1 public and 16 private) with their total branches rising to 426. About 53.5 % of insurance branches were in Addis Ababa and 83.6 % of the total branches were

private and also the total capital of insurance companies grew to total Birr 3.6 Billion of which the share of private insurance companies was 76.7%.

As describe in the table 2 below, Ethiopian Insurance companies has the largest capital share (23.3%) from the total capital followed by Nile Insurance S.c and United Insurance S.c with share of 8.95 & 8.8% respectively. Among the seventeen insurance, Bunna Insurance S.c which is established in year 2013 has the lowest capital share (1.7%) in year 2015/16.

Regarding number of opening branches in different places of Ethiopia, still Ethiopian Insurance Corporation stood first which is 70 branches followed by Africa Insurance S.c and Global Insurance S.c with 38 and 36 Branches respectively. Tsehay Insurance S.c and Berhan Insurance S.c have the lowest Branches which is 8 in year 2015/16.

Table 2: List of insurance companies currently operating in Ethiopia

S.N.	Name of the company	Year of Establishment	No Of Branches (2015/16)	Capital (in Millions) (2015/16)
1	Ethiopian Insurance Corporation	1975	70	836.50
2	Africa Insurance Company S.C	1994	38	292.30
3	Awash Insurance Company S.C	1994	22	240.90
4	National Insurance Company of Ethiopia S.C	1994	29	100.00
5	Nile Insurance Company S.C	1995	28	322.50
6	Nyala Insurance Company S.C	1995	13	109.70
7	Global Insurance Company S.C.	1997	36	232.30
8	The United Insurance S.C	1997	23	327.80
9	NIB Insurance Company	2002	30	316.30
10	Lion Insurance Company S.C	2007	28	91.20
11	Ethio-Life and General Insurance S.C.	2008	16	81.30
12	Oromia Insurance Company S.C.	2009	33	165.60
13	Abay Insurance Company	2010	19	160.60
14	Berhan Insurance S.C.	2011	8	71.30
15	Lucy Insurance S.C.	2012	12	80.30
16	Tsehay Insurance S.C.	2012	8	96.40
17	Bunna Insurance S.C.	2013	13	64.60
	Total		426	3,590.00

Source: NBE, 2015/16 Annual Report

4.2. DESCRIPTIVE STATISTICS ANALYSIS

Descriptive statistics is a process of summarizing data which may be in tabular, graphical, or Numerical form. Accordingly, the descriptive statistics is presented and discussed as follow. The Mean, maximum, minimum and standard deviation values are stated in the table 3 below.

Table 3: Descriptive Statistics

Variable	Observation	Mean	Standard deviation	Minimum	Maximum
ROA	90	0.081354	0.0369011	0.0065702	0.1731677
Age	90	17.94444	7.53824	6	41
Lev	90	0.6833532	0.900334	0.4587834	0.9083095
TOA	90	0.1883331	0.1377087	0.0034375	0.8531903
LQ	90	0.9966112	0.2037755	0.3645973	1.631958
VOC	90	18.51389	1.278066	16.35057	22.82185
LOR	90	0.6259522	0.1562459	0.065	0.8952
EG	90	10.232	1.120205	8	11.8
Infr	90	17.15	10.89103	2.8	36.4

Source: Financial statements of sampled insurance companies.

As shown on table above, the total number of observations is 90, which is a product of nine (9) insurance companies and 10 year data for each. Return on Assets (ROA) was used as proxy to measure performance of insurance companies working in Ethiopia. The study took

eight variables which are supposed to determine ROA. These variables were age, leverage, tangibility, liquidity, loss ratio, volume of capital, GDP growth and Inflation rate.

Considering the overall statistics, values of ROA ranges from minimum of 0.0065 per year to the maximum of 0.17 with annual mean value of 0.08. The minimum value indicates that there was a 0.006 cents loss from each Birr of asset whereas the maximum value 0.17 implies that 0.17 cents gain/profit from each Birr in the total asset. The mean value, on the other hand, implies, on average, each insurance company in Ethiopia generated 8 cents from each Birr of their total asset. The highest and the lowest performer around the mean and also in terms of ROA was United Insurance S.c & Nile Insurance S.c. respectively. The result also showed that the standard deviation from the sample mean is 0.36. This is to mean that, there exists 3.6% deviation/variation in values of ROA across insurance companies included in the study.

The descriptive statistics also revealed that Age of companies in the study ranges from minimum of 6 which was Nib insurance company and maximum of 41 years which was Ethiopian Insurance corporation with a mean and standard deviation values of 17 and 7.5 years respectively. The standard deviation implies that there was 7.5 years of age difference between the nine insurance companies considered in the study. It shows there were significant differences in age among insurance companies.

The minimum and maximum value of leverage value was 0.45 and 0.9 respectively with mean value of 0.68 which measure a company's degree of its debt. Insurance companies with higher debt are relatively more risky because they tend to need more of their assets to meet their obligations. Additionally, the Ethiopian insurance companies require to have a reserve of 10% from their net profit according to NBE proclamation (746/2012). The standard deviation from the mean value was 0.90, indicating the leverage ratio varied by 90% across insurance companies included in this study which shows a high variation among insurance companies.

The mean value of Tangibility of asset ratio for Ethiopian insurance companies during the study period was about 0.18 and the value of the standard deviation was 0.13, which implies 18.83 percent of total asset of insurance companies was fixed asset and the presence of good variations among the tangibility of asset across the insurance companies included for this study. The maximum and minimum values were 0.85 and 0.034 respectively. This companies were Awash Insurance S.c and Global Insurance S.c respectively.

The mean and standard deviation of Liquidity ratio was 0.99 and 0.2 respectively with minimum of 0.36 and maximum of 1.63. This companies were Africa Insurance S.c and Global Insurance S.c respectively. The mean value shows, on average, for each one birr current liability, there was 0.99 birr current asset to meet obligation which was less than the standard rate of national bank of Ethiopia NBE which is 105%.

Concerning volume of capital (expressed in LnVolume of Capital) of insurance companies included in the study, ranges from the minimum value of 16.35 to maximum value of 22.82 in the period from 2007 to 2016. Nice insurance S.c register minimum capital value in 2007 and Ethiopian Insurance Corporation register the maximum capital value in year 2016. The minimum paid up capital required to obtain a general Insurance license from NBE is Birr 60 million therefore, all insurance companies meet this requirements. The mean value is 18.51 with a standard deviation of 1.27. The Value of standard deviation revealed that there was a wide difference in capital across insurance companies.

The maximum value of loss ratio was 0.89 while the minimum was 0.065. The mean value which was 0.62 shows each insurance company experienced on average 62% loss ratio. Compare to the NBE requirement which is 70% loss ratio, the average 62% loss ratio among insurance companies was appreciated. The standard deviation was 0.15 and shows there was a moderate variation in claim experience among insurance companies.

Concerning the inflation rate, the mean value is 17.15 which show the average inflation that occurred during the past ten years was 17.15. The standard deviation which was 10.89 shows there was a high variation in inflation rate during the study period. The maximum and minimum inflation rate over the past ten years was 36.4 and 2.8 respectively. This inflation was experienced on year 2009 & 2010 respectively.

The minimum and maximum value of growth rate in terms of GDP over the past ten years was around 8 and 11.8 experienced on year 2012 & 2007 respectively. The average/mean GDP growth rate over the periods from 2006 - 2016 was 10.23. There was also around 1.12 deviations from the mean value across the past ten years included in the study.

4.3. TEST OF REGRESSION ASSUMPTIONS

This section presents the test for the assumptions of classical linear regression model before running the regression analysis. These tests are Normality test, Multicollinearity test and Hetroskedasticity test.

4.3.1. NORMALITY TEST

Normality test can be tested graphically. As can be seen on Diagram 2 below, the shape of the histogram was exactly bell-like confirming that residuals were normally distributed about its mean, which is zero. Therefore, the graphical tests assured that normality assumption was fulfilled, which in turn led to conclude that the inference to be made based on the sample data was also valid and consistent for the population too.

Diagram 2: Histogram – Normality Test
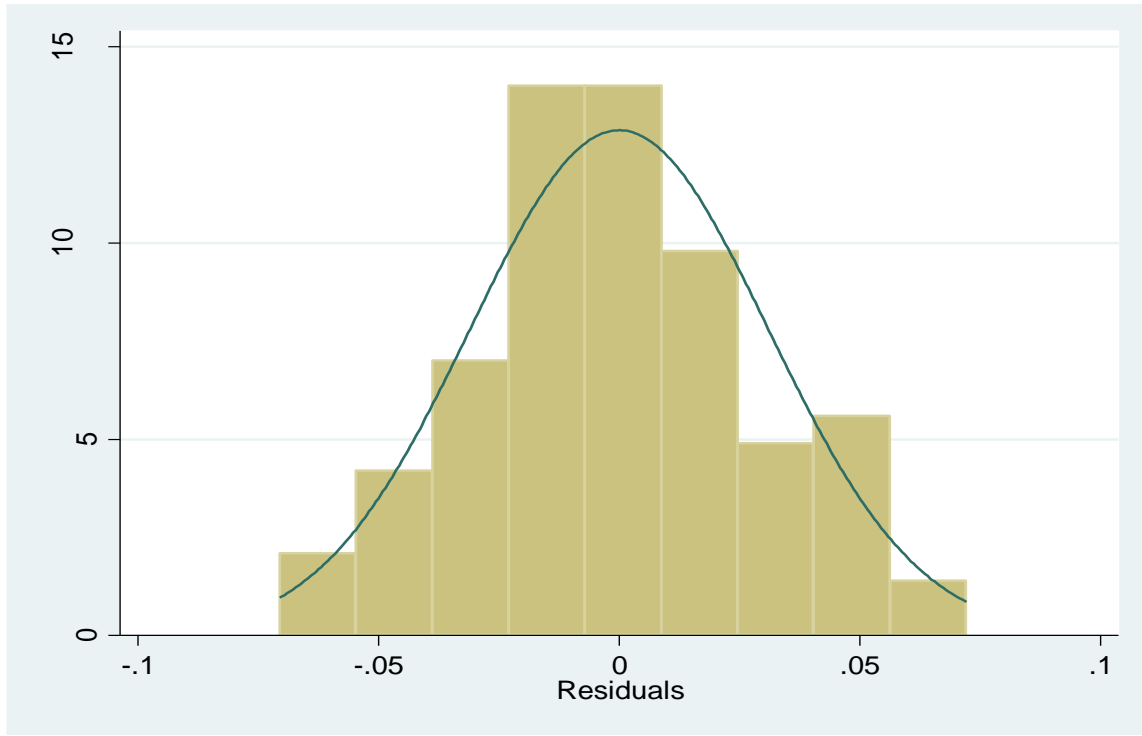
Source: SPSS Output from Financial statements of sampled insurance companies

4.3.2. MULTICOLLINERITY TEST

Multicollinearity refers to the existence of more than one exact linear relationship, and collinearity refers to the existence of a single linear relationship among some or all explanatory variables of a regression model.Gujarit (2004). In addition, Gujarati mentioned that, one of the assumptions of linear regression model is that there is no multicollinearity among the explanatory variables. Multicollinearity happens when a predictor is a perfect linear combination of one or more of the remaining predictors.

Multicollinearity can be controlled by values of variance inflation factor (VIF) and high value of multicollinearity can result in both regression coefficients being inaccurately

estimated, and difficulties in separating the influence of the individual variables on the dependent variables.

Accordingly, as can be seen from Appendix 2, 3 and 4, result of multi co-linearity tests indicated that correlation coefficient and VIF were less than 0.75 and 10 respectively for each variable, which proves that the data used by this study was free from multicollinearity problem.

4.3.3. HETROSKEDASTICITY TEST

The other basic assumption under classical linear regression model is about constant variance of the error terms, which is called homoscedasticity. Gujarati (2004) explain that Homoscedasticity or equal variance of ui is given the value of X, the variance of ui is the same for all observations. That is, the conditional variances of ui are identical. But, if the error terms do not have constant variance; then, it implies that there is a hetroscedasticity problem on the data. Gujarati (2004).

There is a statistical method used to detect whether there is hetroscedasticity problem. The Breusch-Pagan test is the statistical techniques applied to test hetroscedasticity. The decision rule is to accept the null hypothesis if "p" value is greater than the level of significance, which is 5% in this case. The null hypothesis assumes homoscedasticity. Therefore, accepting the null hypothesis proves absence of hetroscedasticity problem in the model.

Accordingly, the result obtained from Breusch-Pagan test method confirms that the data was free form hetroscedasticty problem. As can be seen from Appendix 5, the result of the Breush-Pagan test, p value is 0.3048 which is by far greater than 0.05. As a result, the null hypothesis was accepted implying that variance of error terms is constant.

4.4. CORRELATION ANALYSIS

The correlation coefficient represents the linear relationship between two variables. Appendix 3 shows us correlations between ROA and independent variables. Return on assets was negatively correlated with leverage, Tangibility of Asset, Loss Ratio, Economic Growth and Inflation Rate. While there was a positive correlation between ROA and Liquidity and Volume of Capital.

The Age of insurance company (Age) was negative related with all independent variables except Leverage, Volume of Capital and Loss Ratio. Leverage (Lev) has a positive correlation with Loss Ratio, Economic Growth and Inflation. While, Tangibility of Asset, Liquidity & Volume of Capital has a negative relation with Leverage.

Liquidity (LQ) was positive correlation with Volume of Capital & Economic Growth and negatively correlated with the rest of independent variables. Volume of Capital (VOC) was positively correlated with Age and Liquidity and negatively correlated with remaining. Loss Ratio (LOR) was positively correlated with Age of the company, Leverage, Economic Growth & Inflation rate but it was negatively related with Tangibility of Asset, liquidity & Volume of Capital.

Economic Growth (EG) was negatively correlated with Age of the company, Tangibility of Asset and Volume of capital and positively correlated with the rest of independent variables. Except Leverage and Loss ratio, Inflation (Infr) was negatively related with other independent variables.

4.5. REGRESSION ANALYSIS

Regression analysis is concerned with the study of the dependence of one variable, the dependent variable, on one or more other variables, the explanatory variables, with a view to estimating and/or predicting the (population) mean or average value of the former in terms

of the known or fixed (in repeated sampling) values of the latter. Gujarati (2004). Before conducting the regression analysis, it is necessary to choose one of the approaches. These approaches are fixed effects models and random effects models.

Fixed effect model explore the relationship between predictor and outcome variables within an entity. Each entity has its own individual characteristics that may or may not influence the predictor variables. The model is useful in analyzing the impact of variables that vary over time. On other hand random effects model is that, unlike the fixed effects model, the variation across entities is assumed to be random and uncorrelated with the predictor or independent variables included in the model. Oscar (2007)

To decide between fixed or random effects a Hausman test was applied where the null hypothesis is that the preferred model is random affects vs the alternative the fixed effects Green (2008). It basically tests whether the unique errors (*ui*) are correlated with the repressors; the null hypothesis is they are not. Oscar (2007)

According to the test result, p value was 0.7456, which is by far higher than 0.05. As a result random effect was selected. (The Hausman test and the regression result obtained from the fixed effect model and random effect model are indicated on appendix 6, 7 and 8.

The result obtained from the Random Effect model is presented on table 4 below and discussed accordingly.

Table 4: Random Effect Regression Result

ROA	Coef.	Std. Err.	Z	P>|z|	[95%	Conf. Interval]
Age	0.0018318	0.0013897	1.32	0.187	-0.000892	0.0045557
Lev	0.0305945	0.038353	0.80	0.425	-0.0445759	0.1057649
TOA	-0.0189222	0.0357521	-0.53	0.597	-0.088995	0.0511506
LQ	0.0533908	0.0241787	2.21	0.027*	0.0060015	0.1007801
VOC	-0.0036476	0.0057666	-0.63	0.527	-0.0149501	0.0076548
LOR	-0.0416029	0.0231011	-1.80	0.072*	-0.0868802	0.0036743
EG	-0.0080196	0.004465	-1.80	0.072*	-0.0167708	0.0007316
Infr	-0.0004925	0.0003596	-1.37	0.171	-0.0011972	0.0002123
_cons	0.1623552	0.1424839	1.14	0.255	-0.1169082	0.4416187
No.of observation	90					
No. Of Groups	9					
Wald chi2(8)	37.62					
Prob> chi2	0.0000					
R-sq: within	0.3360					
Between	0.0187					
Overall	0.1782					

*Significant at 10% level of significance

Source: SPPSS Regression output from financial statements of sampled insurance companies

As indicated on the regression result above, of the eight independent variables, Liquidity Ratio (LQ), Loss Ratio (LOR) and GDP growth have statistically significant relation with performance of Insurance in Ethiopia, which is measured by Return on Asset (ROA) at 10% level of significance. Accordingly, liquidity ratio has a positive relation while loss ratio and GDP growth have a negative relation with ROA.

On the other hand, the remaining five variables; namely, Age, Leverage Ratio (Lev), Tangibility Ratio (TOA),Volume of Capital(VOC) and inflation rate (Infr) proved to have statistically insignificant influence on the dependent variable at 5% level of significance. Though it is insignificant, Age and leverage have a positive relation and TOA, VOC and inflation have a negative relation with ROA.

The analytical model which was:

$ROA_{it} = \alpha + \beta1Age_{it} + \beta2VOCit + \beta3Lev_{it} + \beta4TOA_{it} + \beta5LQ_{it} + \beta6LOR_{it} + \beta7\ Infr_{it} + \beta8EG_{it} + \varepsilon_{it}$ is therefore specified as:

$Y = 0.162 + 0.0018Age - 000364Voc + 0.030Lev - 0.189TOA + 0.5335LQ - 0.0416LOR - 0.0004Infr - 0.0080EG + \varepsilon$

Since the regression coefficients of age, leverage, tangibility of Asset, volume of capital and inflation were not statistically significant and therefore their beta regression coefficients were not different from zero, the regression model can then be simplified to:

$Y = 0.162 + 0.5335LQ - 0.0416LOR - 0.008EG + \varepsilon$

Even though it was statistically insignificant, age of the company found to have positive but statistically insignificant relation with insurer's profitability. The result is consistent with previous studies, which includes Abate (2012) and Hifza Malik (2011). The result found by this paper implies that performance of Ethiopian insurance companies is not significantly affected by the number of years they stayed in the market. Even though Age has a positive relation with ROA, its impact was statistically insignificant. Therefore, Hypothesis 1 was rejected.

Volume of capital, which is taken as the amount of capital collected from each shareholder which gives insurers power to diversify their business and help them to be strong in terms of

technology and customer base. As shown on the regression result, there was negative and statistically insignificant correlation between VOC and profitability of insurance service providers. The result was inconsistent with the hypothesis of the study and Hypothesis 2 was rejected.

The Leverage Ratio (Lev) which is the ratio of total liability to total asset, also has a positive statistically insignificant correlation with ROA. Most previous studies constructed negative relation between Leverage and ROA even though there some other studies that found exactly the same result as this study. For instance, Mirei Mwangi, (2015), presented a positive and statistically significant relation between Leverage and ROA in Kenyan insurance companies. The regression coefficient for this study was 0.030, t-statistics 0.80 and p-value of 0.425. This paper hypothesize that Leverage has a negative and statistically significant correlation with ROA, but the result shows a positive and statically insignificant correlation so that Hypothesis 3 was rejected.

The other explanatory variable with negative statistically insignificant correlation with profitability of insurance companies in Ethiopian was Tangibility Ratio (TOA). This implies that performance of insurance companies operating in Ethiopia is likely to be affected by other factors than tangibility ratio. The inverse relation may give hint regarding types of the fixed asset being owned by the Ethiopian insurance companies. The regression coefficient was (-0.018), t-statistics (-0.53) and p-value of 0.597. And the result was inconsistent with the hypothesis of the study and hypothesis 4 was rejected. The result of this study regarding the effect of tangibility of assets of insurance companies on their profitability has difference with other similar study like Daniel (2013) in Ethiopia. On other hand, Abate (2012), in his study find that even though it has a positive relation, tangibility of Asset has no statistically significant relationship.

Liquidity, as the regression result, was one of the statistically significant determinants of profitability of insurance companies operating in Ethiopia and it refers to ratio of current assets to current liabilities. This ratio represents the ability of the company to use its near

cash to fulfill immediate commitments to the policy holders/customers without having to increase profits margin on underwriting and investment activities or liquidate financial assets. Hence, the current/liquid assets need to be kept sufficient to meet the immediate liabilities which may arise from unexpired risks at any time.

As it is see in the table, liquidity has a positive and statistically significant relation with ROA implying that more liquid companies have a better tendency to perform well as insurance business is associated with unexpected but catastrophic losses which may requires more cash to settle the claim. The coefficient of Liquidity Ratio (LQ) was 0.053, which is interpreted as on average a percentage change in LQ will lead to 5.3 percent change on profitability of Ethiopian insurance companies. Or, the regression coefficient 0.053 indicates that when the average LQ rate increases by 1% then, ROA will increase by 5.3% and vice versa.

Previous studies like Meaza (2014), finds that liquidity has a negative relation with ROA and explained that high liquidity of assets could increase agency costs and reinvestment risk and this would put injure on the profitability of a company. In this case, it is, therefore, likely that insurance companies with less liquid assets outperform those with more liquid assets Adams and Buckle (2000). However, according to Dr. K. Aparna (2015) & Albulena Shala (2014) and Daniel (2013) which finds a positive relation justifies that, companies with more liquid assets are less likely to fail because they can realize cash even in very difficult situations. Therefore it is expected that insurance companies with more liquid assets will outperform those with less liquid assets. In this study, liquidity ratio was hypothesized to have negative and statistically significant correlation with ROA. But the result shows liquidity has positive and statistically significant correlation with ROA. Therefore, Hypothesis 5 was rejected.

Loss Ratio (LR), which represents the ratio of claims incurred to volume of collected premium, has a negative significant impact on profitability of insurance companies operating in Ethiopia. It simply reflects the amount of compensation or claims paid to policy holders comparing with the volume of premiums produced in a given fiscal year. As it is obvious,

the relation between Loss ratio and profitability is negative/indirect and statistically significance. This means that, more claims payment will decrease profitability (ROA) of insurance companies. As shown on table 7, coefficient of LOR is (-0.041) which implies that on average a percent increase in loss ratio will decrease ROA by 4.1 percent and vice versa. Therefore Hypothesis 6 was accepted as it agrees with the regression result.

Inflation of the country is one of the external factors which determine profitability of insurance companies operating in Ethiopia. As the regression result confirm, there was a negative and statically insignificant relation between Inflation and profitability of insurers. The Coefficient of inflation, which was (-0.0004), interpreted as when there is a percent increase in inflation, then the profitability of insurance companies (ROA) will decrease by 0.04 percent and vice versa. In this study, inflation rate was hypothesized to have negative and statistically significant correlation with ROA. The result shows a negative correlation as the same as the hypothesis, but its impact to ROA was statistically insignificant. Therefore, Hypothesis 7 was rejected.

Regarding GDP growth of the country which is one of the external factors which determine profitability of insurance companies operating in Ethiopia, the regression result confirm, there was a negative and statically significant relation between economic growth and profitability of insurers .The Coefficient of GDP growth, which was (-0.0080), interpreted as when there is a percent increase in GDP growth, then profitability of insurers (ROA) will decrease by 0.8 percent and vice versa. This result was inconsistent with the hypothesis and therefore, Hypothesis 8 was rejected

The overall of coefficient of determination (R^2) is 17.8%. This means that the 17.8% variation in ROA is captured or explained by the eight independent variables while the remaining change is due to other factors.

To summarize, this chapter presents the results of the hypotheses of the independent variables tested on the dependent variable (ROA). Empirical results provide detailed

discussions on sample descriptive statistics and mean comparison between ROA and independent variables (age, leverage, tangibility of assets, liquidity ratio, and volume of capital, loss ratio, inflation and GDP growth) followed by regression analysis which used to describe the effect of independent variables on profitability of insurance companies.

ROA and eight other variables that represent age, leverage, tangibility of Asset, liquidity, volume of capital , loss ratio, inflation and GDP growth were developed to test which factors best describes profitability of Ethiopian insurance companies. The results show that liquidity, loss ratio and GDP growth are the most important factors affecting profitability of insurance companies in Ethiopia. The findings of this study contribute towards a better understanding of profitability of Ethiopian insurance companies.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

This chapter presents a conclusion of the study by summarizing the result of the study and discussing their implications, and providing recommendation for future research.

5.1.   CONCLUSIONS

The study analyzes the internal and external factors that determine the profitability of insurance companies in Ethiopia over the period of ten years from 2007 to 2016. For this purpose, nine   insurance companies which have Ten years data have been selected and eight explanatory variables namely age, leverage, tangibility of asset, liquidity, and volume of capital, loss ratio, and inflation and GDP growth are selected as independent variables while ROA is taken as dependent variable. Descriptive statistics and regression analysis were performed to describe the profitability of insurance companies among insurance companies.

The study, based on literatures, assumed that performance of insurance companies in Ethiopia was determined by age of the company, leverage ratio, tangibility of asset, liquidity, volume of capital, loss ratio, inflation and GDP growth. From these variables, liquidity ratio (LR), loss ratio (LOR) and GDP growth rate (EG) have significant influence while the rest Age of the company, leverage ratio (Lev), tangibility of Asset ratio (TOA), Volume of capital (Voc) and Inflation rate (Inf) effect was insignificantly on the profitability of insurance companies in Ethiopia.

Direction wise, of the stated determinants, the study proved that Age, leverage and liquidity are positively related with profitability of insurance companies in Ethiopia whereas all the rest have negative correlation with ROA.

Moreover, the coefficient of determination (R^2) is 17% and interpreted as, of the total change in ROA; about 17% is due to the independent variables included in the study. These variables jointly explained 17% of the variation in the profitability of insurance companies in Ethiopia, which is measured in terms of ROA.

5.2. RECOMMENDATIONS

Insurance provides economic protection from identified risks occurring or discovered within a specified period. It used to transfer risks from the insured to the insurer so that the insured get peace of mind and focus on the main business. Insurance industry's development level and contribution to the overall economy varied across regions and countries attributed to their growth in economy and societies' civilization.

This paper attempted to analyze the internal and external factors that determine profitability insurance companies in Ethiopia. Based on the result of the study, insurance companies in Ethiopia are recommended to give attention on factors which have a great impact on the profitability of their companies. These factors are liquidity, loss ratio and GDP growth.

Having sufficient liquid asset will enable insurers to settle large claims easily and this in turn will result in customer satisfaction. Customer satisfaction is one of the most important factor that determine success in the insurance industry as it used to increasing number of customers and retention rate. So insurers need to have sufficient and sustainable liquid asset.

Insurers need to stress on risk management and business selection in order to keep their loss ratio at acceptable level. To do so, they should strive to equip themselves with modern technologies and professional manpower to combat adverse selection and moral hazard, which contributes much for the higher loss ratio. This modernization could facilitate customer service and can also minimize leakage of different costs specially in providing claim services.

Even though GDP growth is an external factor and could not be controlled, insurance companies should consider and take into account there will be change in GDP when formulating their business strategies and has to react quickly for the changes so as to minimize its impact on their performances.

The Ethiopian Insurance Association has to enhance its capacity to coordinate all insurance companies to work together on their common things and also has to work on creating public awareness by preparing different workshops and researches concerning insurance.

The National Bank of Ethiopia which is the supervisory body has a responsibility to ensure the healthy competition of insurance companies by setting regulation that control unfair competition and price cutting. Furthermore the supervisory body has to work more on areas which could help to increase public's awareness regarding importance & types of insurance service in the country.

Finally, the study would like to recommend that considering the importance of the insurance industry for the overall growth of economy of the country, future studies need to examine the insurance industry more deeply in such a way that treat internal (company specific) and external profitability determinants separately.

REFERENCES

Abate Gashaw Ayele (2012), Factors Affecting Profitability of Insurance Companies in Ethiopia.

Adams, M., & Buckle, M. (2000), The Determinants of Operational Performance in Bermuda Insurance Market.

Albulena Shala, Yllka Ahmeti,Vlora Berisha & Skender Ahmeti (2014), Factors Affecting Profitability Of Insurance Companies in Kosovo.

Al-shami H.A.A. (2008) ,Determinants of insurance company's profitability in UAE.

Asima kopoulos, I., Samitas, A., & Papa Dogonas, T. (2009), Firm- Specific and Economy Wide Determinants of Firm Profitability: Greek Evidence.

Assoc. Prof. Dr. Dorina Kripa & Msc. Dorina Ajasllari (2016), Factors Affecting the Profitability of Insurance Companies in Albania.

Barron DN, West E & Hannan MT (1994), A time to growth and a time to die: Growth and mortality of credit unions in New York, 1914-1990.

Belmont Vertual Academy Issue 1 (April 2013), Belmont International Insurance Brokers

Charles T. Horngren, Walter T. Harrison Jr, M. Suzanne Oliver (2012), Financial & Managerial Accounting.

Coad A, Segarra- BlascoandA&Teruel M (2013), Like milk or wine: does firm performance improve with age? Structural Change and Economic Dynamics.

Creswell, W. (2003), Research design, qualitative, quantitative and mixed methods approaches.

Chen and Wong (2004), Determinants of financial health of Asian insurance companies: Journal of Risk and Insurance.

Daniel Sisay (2017), The effect of financial Risk On Performance of Insurance Companies in Ethiopia.

Daniel and Tilahun (2013), Firm specific factors that determine insurance companies Performance in Ethiopia.

Deloitte (2016), Ethiopia Economic Outlook report.

Deloof M. (2003), Does working capital management affect profitability of Belgian firms.

Dr Yuvaraj Samba Sivam & Mr Abate Gashaw Ayele (2013) A Study On the Performance of Insurance Companies

Dr. K. Aparna (2015), Determinants of Profitability-A Firm Level Study of Steel Authority of India Limited (SAIL).

Dr Sreepada Hegde (2015), All Africa. Com. Madawalabu University, Ethiopia.

Elif Akben Selcuk (2016), Does firm age affect profitability? Evidence from Turkey.

Gujarati. (2004). Basic Econometrics .

Hailu Zeleke (2007), Insurance in Ethiopia: Historical Development, Present Status and Future Challenges.

Himmelberg C., Hubbard G. and Palia D. (1999), Understanding the determinants of managerial ownership and the link between ownership and performance.

Hamisu Ibrahim (2016), Assessment of Determinants of Insurance Companies: Performance in Nigeria.

http://www.businessdictionary.com/definition/insurance.html

Hifza Malik. (2011), Determinants of Insurance Companies Profitability: An Analysis of Insurance Sector Of Pakistan.

Jennifer Allsop (2011), Understanding Principles of Insurance.

Jovanovic B (1982), Selection and the evolution of industry, Econometrica.

John Adams, Hafiz T.A, Khan , Robert Raeside & David White (2007), Research methods for graduate business & Social Science Students.

Khalid Alkhatib (2012), The Determinants of Leverage of Listed Companies.

Lee .H. (2012), An analysis of reinsurance and firm performance, Evidence from the Taiwan property-liability insurance industry, The Geneva Papers on Risk and Insurance-Issues and Practice.

Meaza Melese (2014), Determinants of insurance companies' profitability in Ethiopia.

Mirei Mwangi (2015),The Determinants of Financial Performance in General Insurance Companies in Kenya.

Mistre Sisay (2015), The Determinants of Profitability on Insurance Sector: Evidence from Insurance Companies in Ethiopia.

NBE. (2015/16). Annual Report.

Ndedi Bod Jonde Ryan Boris (2016), Assessing the role of Insurance companies in the economy of Cameroon : The case study of Cameroon Insurance Industry.

Ndenka, A (2014), Fundamentals of Insurance.

Nucci Nucci F., Pozzolo A. and Schivardi F. (2005), Is firm's productivity related to its financial structure? Evidence from microeconomic data.

Oscar Torres-Reyna (2007), Panel Data Analysis Fixed and Random Effects using Stata (v. 4.2).

Private Sector & development Proparco's, (Sept , October Nove 2016) Vol 25.

Ross, S. (1977),The determination of financial structure: The incentive signaling approach.

Suhiliy Reshid (2015),Determinants of Insurance Companies Profitability in Ethiopia.

Swiss Re (2008), Profitability of non-life insurance industry in Egypt', Available at Www.Insureegypt.Com

Singh, K. Y. (2006), Fundamentals of research methodology and statistics.

Stinch Combe AL (1965), Social Structure and Organizations.

Teklit & Prof Jasmin Deep (2017), Determinants of insurance companies' profitability Analysis of insurance sector in Ethiopia.

Vassilakis S (2008), Learning by-doing', In SN Durla & LE Blume, (eds), The New Palgrave Dictionary of Economics.

APPENDICES

APPENDIX 1: DATA COLLECTION FORMAT

Company's Name: ------------------------------------

Year of Establishment: -------------------------------

Variables	Fiscal Year									
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Profit Before Tax										
Age										
Total Asset										
Current Asset										
Total Liability										
Current Liability										
Fixed Asset										
Volume of Capital										
Incurred Claim										
Earned Premium										

APPENDIX 2: RESULT OF THE CORRELATION BETWEEN DEPENDENT VARIABLES

. corr Age Lev TOA LQ VOC LOR EG Infr

(obs=90)

	Age	Lev	TOA	LQ	VOC	LOR	EG	Infr
Age	1.0000							
Lev	0.2387	1.0000						
TOA	-0.2130	-0.0217	1.0000					
LQ	-0.0035	-0.4532	-0.4320	1.0000				
VOC	0.5962	-0.1993	-0.1367	0.1522	1.0000			
LOR	0.0527	0.2595	-0.1468	-0.1732	-0.2188	1.0000		
EG	-0.2569	0.1590	-0.0129	0.0082	-0.6002	0.2765	1.0000	
Infr	-0.1678	0.1731	-0.0642	-0.1483	-0.3284	0.2124	-0.1096	1.0000

APPENDIX 3: RESULT OF THE CORRELATION WITH DEPENDEBT AND INDEPENDENT VARIABLES

. corr ROA Age Lev TOA LQ VOC LOR EG Infr

(obs=90)

	ROA	Age	Lev	TOA	LQ	VOC	LOR	EG	Infr
ROA	1.0000								
Age	0.0871	1.0000							
Lev	-0.1702	0.2387	1.0000						
TOA	-0.1189	-0.2130	-0.0217	1.0000					
LQ	0.3617	-0.0035	-0.4532	-0.4320	1.0000				
VOC	0.3113	0.5962	-0.1993	-0.1367	0.1522	1.0000			
LOR	-0.3611	0.0527	0.2595	-0.1468	-0.1732	-0.2188	1.0000		
EG	-0.2764	-0.2569	0.1590	-0.0129	0.0082	-0.6002	0.2765	1.0000	
Infr	-0.1984	-0.1678	0.1731	-0.0642	-0.1483	-0.3284	0.2124	-0.1096	1.0000

APPENDIX 4: VARIANCE INFLATION FACTORS (VIF)

```
. vif

    Variable |       VIF      1/VIF
-------------+----------------------
         VOC |      3.33     0.300324
          EG |      2.12     0.471272
         Age |      2.07     0.483257
          LQ |      1.76     0.567415
         Lev |      1.70     0.589225
        Infr |      1.48     0.673409
         TOA |      1.47     0.679138
         LOR |      1.28     0.782485
-------------+----------------------
    Mean VIF |      1.90
```

APPENDIX 5: BREUSCH-PAGAN TEST

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
        Ho: Constant variance
        Variables: fitted values of ROA


        chi2(1)      =     1.05
        Prob > chi2  =    0.3048
```

APPENDIX 6: REGRESSION RESULT FIXED EFFECT MODEL

```
. xtreg ROA Age Lev TOA LQ VOC LOR EG Infr,fe

Fixed-effects (within) regression          Number of obs     =        90
Group variable: Companies                  Number of groups  =         9

R-sq:                                      Obs per group:
    within  = 0.3596                                    min =        10
    between = 0.0022                                    avg =      10.0
    overall = 0.0448                                    max =        10

                                           F(8,73)           =      5.12
corr(u_i, Xb)  = -0.7572                   Prob > F          =    0.0000
```

ROA	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
Age	.0051823	.0021119	2.45	0.017	.0009732	.0093913
Lev	.0212281	.0411858	0.52	0.608	-.060855	.1033112
TOA	-.0227864	.0384749	-0.59	0.556	-.0994667	.0538939
LQ	.052215	.0258521	2.02	0.047	.0006919	.1037382
VOC	-.0068351	.0062737	-1.09	0.280	-.0193385	.0056683
LOR	-.0359914	.0235928	-1.53	0.131	-.0830118	.0110291
EG	-.0041606	.005005	-0.83	0.409	-.0141355	.0058144
Infr	-.0001889	.0003965	-0.48	0.635	-.000979	.0006012
_cons	.1212347	.1514541	0.80	0.426	-.1806129	.4230824

sigma_u	.04286591	
sigma_e	.02695666	
rho	.71660708	(fraction of variance due to u_i)

```
F test that all u_i=0: F(8, 73) = 5.57              Prob > F = 0.0000
```

APPENDIX 7: REGRESSION RESULT OF RANDOM EFFECT MODEL

```
. xtreg ROA Age Lev TOA LQ VOC LOR EG Infr,re

Random-effects GLS regression              Number of obs     =         90
Group variable: Companies                  Number of groups  =          9

R-sq:                                      Obs per group:
    within  = 0.3360                                       min =         10
    between = 0.0187                                       avg =       10.0
    overall = 0.1782                                       max =         10

                                           Wald chi2(8)      =      37.62
corr(u_i, X)   = 0 (assumed)               Prob > chi2       =     0.0000
```

ROA	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
Age	.0018318	.0013897	1.32	0.187	-.000892	.0045557
Lev	.0305945	.038353	0.80	0.425	-.0445759	.1057649
TOA	-.0189222	.0357521	-0.53	0.597	-.088995	.0511506
LQ	.0533908	.0241787	2.21	0.027	.0060015	.1007801
VOC	-.0036476	.0057666	-0.63	0.527	-.0149501	.0076548
LOR	-.0416029	.0231011	-1.80	0.072	-.0868802	.0036743
EG	-.0080196	.004465	-1.80	0.072	-.0167708	.0007316
Infr	-.0004925	.0003596	-1.37	0.171	-.0011972	.0002123
_cons	.1623552	.1424839	1.14	0.255	-.1169082	.4416187

sigma_u	.03107721	
sigma_e	.02695666	
rho	.57064645	(fraction of variance due to u_i)

APPENDIX 8: RESULT OF THE HAUSMAN TEST

```
. hausman fixed random
```

	── Coefficients ──			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
Age	.0051823	.0018318	.0033505	.0015902
Lev	.0212281	.0305945	-.0093664	.0150106
TOA	-.0227864	-.0189222	-.0038642	.0142163
LQ	.052215	.0533908	-.0011758	.00915
VOC	-.0068351	-.0036476	-.0031875	.0024708
LOR	-.0359914	-.0416029	.0056116	.0047919
EG	-.0041606	-.0080196	.003859	.0022614
Infr	-.0001889	-.0004925	.0003035	.000167

```
                 b = consistent under Ho and Ha; obtained from xtreg
          B = inconsistent under Ha, efficient under Ho; obtained from xtreg

   Test:  Ho:  difference in coefficients not systematic

          chi2(8) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                  =        5.11
         Prob>chi2 =      0.7456
```