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College of Business and Economics

Determinants of Profitability of Insurance Companies in Ethiopia: An empirical study

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Declaration

I undersigned declare that this thesis is my original work. Furthermore, all sources of materials used for the thesis had been duly acknowledged.

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Statement of Certification

This is to certify that the thesis was prepared by **HADUSH GEBRU,** entitled: *determinants of profitability of insurance companies in Ethiopia: an empirical study***,** and submitted in partial fulfillment of the requirements for the degree of Master of Since in Accounting and Finance complies with the regulations of the university and meets the accepted standard with respect to originality and quality.

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Abstract

A company's profitability has always attracted the attention of academics, policy makers and practitioners, and researchers interested in revealing the main factors that determine business success or profitability. Although profitability has been widely investigated in industries like manufacturing industries far less attention has been paid to financial sector especially to insurance sector. This study examined the determinants of profitability (liquidity, tangibility, volume of capital, premium growth, claim ratio, real GDP and inflation) on general insurance companies of Ethiopia proxied by ROA. Profitability is dependent variable while liquidity, tangibility, volume of capital, premium growth, claim ratio, real GDP and inflation) are independent variables. In this paper, econometric analyses have performed for a panel of nine Ethiopian general insurance companies for the study period of 2005-2014. The study has used secondary data or quantitative nature of data obtained from the annual audited financial statements (balance sheet and profit/loss account, and revenue account) of insurance companies, financial publications of NBE by applying a statistical package data called EVies 7 only. Since, the study data was panel data or the combination of cross-sectional and time-series data and concurrently random-effect panel data regression was applied to study the effect of those selected independent variables on profitability (ROA). The random effect regression result shows that tangibility, volume of capital, premium growth, claim ratio, and real GDP are identified as most important determinants of profitability hence tangibility, volume of capital, premium growth are significant and positively related. In contrast, claim ratio and real GDP are negatively but significantly related with profitability. However, liquidity and inflation are not significantly related with profitability. The result implies that, company with high asset, capital, volume of premium, and with low claim incurred has more profit than the company with low asset (fixed asset), capital, premium growth, and high claim incurred. Hence, insurers should have to raise their asset (fixed asset), capital, and volume of gross premium; while, insurers must decrease their claim incurred in line with the rules and limits of the National Bank of Ethiopia in order to earn more profit.

Key Words**: **Insurance Companies, Determinants, Profitability

List of Acronyms and Abbreviations

AIC	Awash Insurance Company
BJ	Bera Jarque
CA	Current Asset
CCPI	Change in Consumer Price Index
CGDP	Change in Gross Domestic Product
CGWP	Change in Gross Writing Premium
CL	Current Liability
CPI	Consumer Price Index
CR	Claim Ratio
DW	Durbin Watson
EIC	Ethiopia Insurance Corporation
EQ	Equity
G.C	Gregorian calendar
GDP	Gross Domestic Product
GIC	Global Insurance Company
GPM	Gross Profit Margin
GWP	Gross Writing Premium
ISD	Insurance Supervision Directorate
LQ	Liquidity
NBE	National Bank of Ethiopia
NC	Net Claim Incurred
NI	Net Income
NIC	Nib Insurance Company
NICE	National Insurance Company of Ethiopia
NIM	Net Interest Margin
NPE	Net Premium Earned
NPM	Net Profit Margin
NPW	Net Premium Written
PG	Premium Growth
PRO	Probability

ROA	Return on Asset
ROI	Return on Investment
ROE	Return on Equity
SIB	Supervision of Insurance Business
SS	Sum of Square
T	Current year
T_{-1}	Previous year
TA	Total Asset
TL	Total Liability

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CHAPTER ONE

1.0. Introduction:

This chapter is structured into 10 sections; section 1.0.Introduction, section 1.1.Back ground of the study, section 1.2.Back ground of insurance in Ethiopia, section 1.3.Statement of the problem, section 1.4.Research hypothesis, 15.Objective of the study, section 1.6.Significance of the study, section 1.7.Scope of the study, section 1.8.Limitation of the study, section 1.9.Structure of the study.

1.1. Background of the study

This section deals with the role of financial institutions in the economy of a country in general, role of insurance companies in particular, importance of profitability, gaps of previous empirical study and the main objective of the study in a summarized manner.

Financial institutions are institutions like bank, insurance and microfinance in which they channels funds, intermediates buyers and sellers, and transfers risks from one economic unit to other economic units so as to facilitate trade and resources arrangement (Gashaw, 2012).

In particular, Insurance is a risk transfer mechanism when an insured transfers a risk exposure to an insurer in consideration for payment of premium. It is also a tool of prime importance in modern economies. Insurance serves a number of valuable economic functions that are largely distinct from other types of financial intermediaries. In order to highlight specifically the unique attributes of insurance, it is worth focusing on those services providers, excluding for instance the contractual savings features of whole or universal products (NBE, Birritu, 2012, P: 21).

Insurance companies have importance for both businesses and individuals as they channel funds and indemnify the losses of other sectors in the economy and put them in the same positions as they were before the occurrence of the loss respectively. In addition, insurance companies provide economic and social benefits in the society by prevention of losses, reduction in anxiousness, fear and increasing employment (Gashaw, 2012).

Profitability is one of the most important objectives of financial management because one goal of financial management is to maximize the owner`s wealth, and profitability, and is very important determinants of performance. Thus, profitability is very important in determining the success or failure of a business (Nugyen, 2001, p: 119)

A company's profitability has always attracted the attention of academics, policy makers and practitioners, and researchers interested in revealing the main factors that determine business success or profitability. Although profitability has been widely investigated in manufacturing industries, far less attention has been paid to it in the financial sector. This is specially truth for the insurance companies in developing countries (M. Pervan et al., 2012, p: 158). Similarly profitability of insurance companies can be influenced by internal and external determinants (factors).

Therefore, in this study the author have been examined the impact of both internal and external determinants of profitability of general insurance in Ethiopia. In this alignment, it asks for to investigate the main determinants of profitability of general insurance companies in Ethiopia.

1.2. Background of Insurance in Ethiopia:

This sub section has two sections those are history of insurance in Ethiopia, and current status of insurance in Ethiopia.

1.2.1. History of insurance in Ethiopia:

Before knowing the history of insurance, it is vital to know first what insurance is. Insurance is a risk transfer mechanism whereby an insured transfers a risk exposure to an insurer in consideration for payment of premium.

It is also a tool of prime importance in modern economies. Insurance serves a number of valuable economic functions that are largely distinct from other types of financial intermediaries (NBE Birritu report, 2012, P: 21).

Usually, insurance contracts involve small periodic payments in return for protection against uncertain, but potentially severe losses.

According to this web (http://www.nbe.gov.et/aboutus/index.html), the historical development of Ethiopian insurance industry may classify in to four periods of demarcations and this classification is also supported by Anja Smith and Doubell Chamberlain (2009, P: 33) and birritu (2012, p: 18):

A. The first is the Period of Agents that started in the early 1900 and run up to the early 1950's.
B. The second, the Imperial Period, run from the early 1951' to 1974.
C. The third was the Period of Monopoly that covered the years between 1974 and 1991.
D. The fourth is, the Current Liberalization Period that defines the time from 1991 onwards.

A. The Period of Agents (early1900 to early 1950's);

This is the period which the insurance was born in Ethiopia and it is the base for the current development of Ethiopian insurance industry. Dates back to the beginning of the 20th century, Modern insurance service left its birth-mark in 1905 during the reign of MenelikII, Habesha Bank (Bank of Abyssinia) or Bank of Egypt which, acting as an agent for a foreign insurance company, Operational profile: - Fire and Marine, which is characterized by the following;

- Agents of foreign insurance companies (Agency Agreement)
- No laws governing the transaction of insurance: - Laissez-faire environment
- Scant documentary evidence to substantiate historical facts

B. The Middle Period (Mid 1950s to 1974);

It is identified by the extinction of the period of agents, the emergence of indigenous insurance companies; it is the period of the introduction of life assurance business, the coming into force of the first codes on Commercial, Civil and Maritime affairs and the

issuance of more specific insurance laws or Proclamation. According to a survey made in 1954, there were 9 insurance companies that were providing insurance service in the country.

Except Imperial Insurance Company that was established in 1951, the rest of the insurance companies were branches or agents of foreign companies. The number of insurance companies increased significantly and reached 33 in 1960.

At that time insurance business like any business undertaking was classified as trade and was administered by the provisions of the commercial code. This was the only legislation in force in respect of insurance except the maritime code of Ethiopia that was issued to govern the operations of maritime business and the related marine insurance. The minimum paid-up capital required to establish an insurance company was as little as 12,500 Ethiopian dollars as stipulated in the commercial code. There was no restriction on foreign insurers.

C. The period of Monopoly (1975 to 1994);

The political change took place in 1974 -Literally every sector of the economy was falling under the government control, owning to the socialist ideology; so does the Insurance & banking sector. The military government that came to power in 1974 put an end to all private entrepreneurship. Then all insurance companies operating were nationalized by Proclamation No. 261/1974. From January 1, 1975 onwards the government took over the ownership and control of these companies & merged them into a single unit called Ethiopian Insurance Corporation was formed by Proclamation No. 68/1975, repealing proclamation No.281/70. In the years following nationalization, Ethiopian Insurance Corporation became the sole operator.

D. The Current Period (1994onwards);

Following the change of government in 1991, a new economic order has been adopted which principally aimed at orienting the economy along the free market path and economic recovery by doing away with the centralized economic system.

In the effort to assist such reforms, the transitional government issued the Licensing and Supervision of Insurance Business Proclamation No. 86/1994 that was enacted on 1st February 1994. This law opened the insurance market to domestic private investors. So, this Supervision of Insurance Business Proclamation No. 86/1994 was a land mark (turning point) in the history of the Ethiopian industry. The National Bank of Ethiopia remained the sole regulator of insurance supervision in Ethiopia.

In the current time there are 18 insurance directives issued by national bank of Ethiopia (NBE) to govern or administer the sector in pursuant to the authority vested in it by article 42 of the licensing and supervision of insurance business proclamation No. 86/1994.After the immediate enactment of the SIB proclamation 86/1994 and SIB directives, private insurance companies began to flourish.

According to the directive of SIB/34/2013, any insurance company required to be a domestic company whose share capital (fully subscribed) to be not less than Ethiopian dollars 60 million for a general insurance business and Ethiopian dollars 15 million in the case of long term (life) insurance business and Ethiopian dollars 75 million to do both long-term & general insurance business.

Non-Ethiopian nationals were not barred from participating in insurance business. However, the proclamation defined 'domestic company' as a share company having its head office in Ethiopia and in the case of a company transacting a general insurance business at least 51% and in the case of a company transacting life insurance business, at least 30% of the paid-up capital must be held by Ethiopian nationals or national companies.

Currently, one state owned Insurance Corporation (EIC) and sixteen private insurance companies are operating in the market. Among them, eight carry on general insurance and nine have been running composite (both general and long-term) insurance. In other way it means all the 17 insurance companies are carry general insurance business, however 9 of the 17 insurance companies are carry life insurance business. As of December 31, 2014, the total number of insurance branch offices reached 359 that resulted in 22.5% growth over what

they were 293 during the same period of the preceding year. Consequently, branch to population ratio has improved to 244,986 from what it was 295,597 a year ago.

Table 1: List of Ethiopian Insurance and there type of insurance business contract;

No	Name of insurer	Date of establishment	Type of insurance contract	
			General	Composite
1.	Africa Insurance Company S.C	1/12/1994		✓
2.	Awash Insurance Company S.C	1/10/1994		✓
3.	Global Insurance Company S.C.	11/1/1997	✓	
4.	Lion Insurance Company S.c	1/7/2007	✓	
5.	NIB Insurance Company	1/5/2002		✓
6.	Nile Insurance Company S.C	11/4/1995		✓
7.	Nyala Insurance Company S.C	6/1/1995		✓
8.	United Insurance S.C	1/4/1997		✓
9.	Ethiopian Insurance Corporation	1/1/1976		✓
10.	Abay Insurance Company	26/07/2010	✓	
11.	Berhan Insurance S.C.	24/05/2011	✓	
12.	National Insurance Company of Ethiopia S.C.	23/09/1994	✓	
13.	Oromia Insurance Company S.C.	26/01/2009		✓
14.	Ethio-Life and General Insurance S.C	23/10/2008		✓
15.	Tsehay Insurance S.C.	28/03/2012	✓	
16.	Lucy insurance S.C.	15/11/2012	✓	
17.	Buna insurance S.C.	23/8/2011	✓	

Source: from NBE staff and www.nbe.gov.et

In addition to the above insurance companies and branches, there are also many market players which have been operated in the sector in the currently, such as 49 insurance brokers, 1700 sales agents, 85 loss assessors and 2 Insurance surveyor and 1 actuary as of December 31, 2014(NBE annual report, 2014, p: 1).

1.2.2. Current market status of the insurance sector in Ethiopia:

Insurance sector in Ethiopia is a young industry at early stages of development with limited skills, capacity and incentive to push market extension. With estimated 0.3m individual formal insurance clients, the insurance sector is small and underdeveloped with many small insurers displaying high levels of inefficiency. Most insurers still operate using paper-based systems.

The sector has Small market, with very small life insurance market. Similar to the banking industry, the majority of insurance business in Ethiopia is targeted at the corporate market and focused on general insurance business.

The life insurance industry is still very small and a recent addition to their core business of general insurance for most private insurers. The corporate focus implies that, to date, insurers have little experience in intermediating products to individuals and cost margins have not yet been tested against the more cost-sensitive retail business(Anja Smith, Doubell Chamberlain (January, 2009, P: 8 & 9).

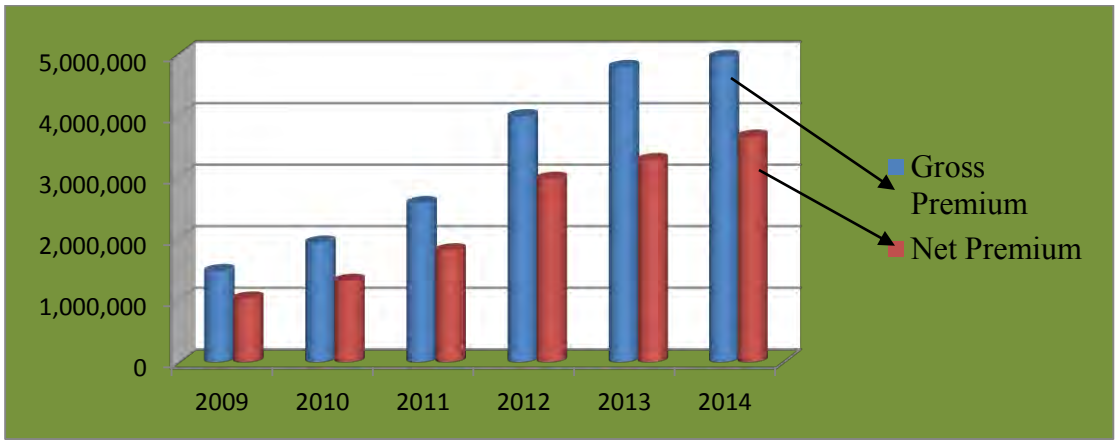
From the last decade onwards the Ethiopian financial institutions in general have shown the impressive progress in terms of number and service; they are not only creates the employment opportunities but also enhances the business activities in the Ethiopian economy(Abate, 2012,p:2).

In particular, considering the rule and regulations of the SIB proclamation the insurance sector have been broadly stable and growing in terms of number, service, premium, total asset, total investment, total profit as well as capital in relative to previous years. However the sector still contributed less than 1% to country's GDP. The total premium of the sector is 5billion in 2014, which was increased by 8% from previous year total premium of the sector (i.e. 4.6billion).

Almost, 50% of the total premiums of insurance sector were derived from motor vehicle insurance. In addition to the above, see the graphical detail bellow to understand how the

sector premium is going on and the proportion of general and life insurance to the total premium of the sector.

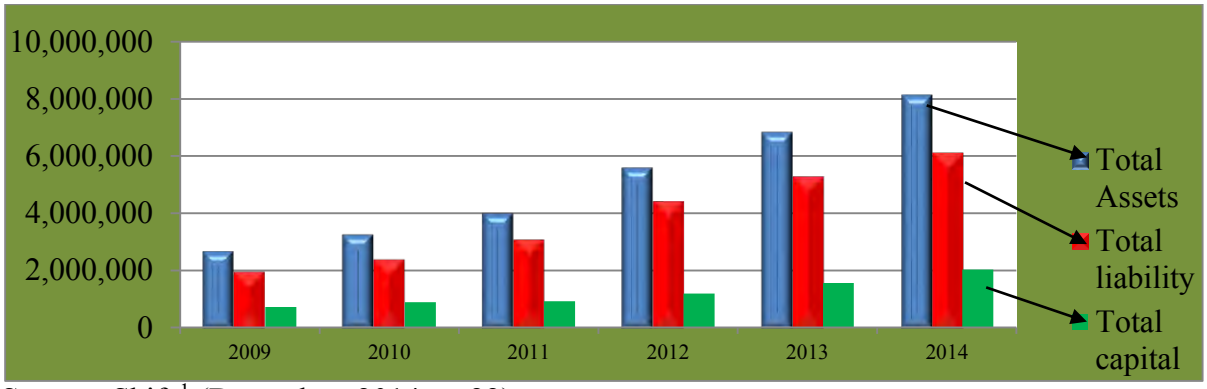
Graph-1: Development of insurance sector premium in (000);



Source: Shifa (December, 2014, pp: 20)

Generally, out of the current total premium >90% is a premium written from general insurance whereas the remaining <10% is a premium written from life insurance. Similarly, the total assets, total liability and total capital of the sector as of June 30, 2014 were Birr 8.1 billion, birr 6.1 billon and Birr 2 billion, respectively, showing an average growth rate of 13.6, 9.8, and 25 percent growth rate compared with Birr 6.8 billion, birr 5.3 billion and Birr 1.5 billion in same period of the preceding year. See the detail bellow on garoph-2;

Graph-2: position of total assets, total liability and total capital of insurance sector in (000 birr);



Source: Shifa[1] (December, 2014, p: 22)

In extra to the above growths, the sector Profitability growth was fluctuated from time to time. For instance, the general insurance sector total profit of seventeen insurance companies have been earned in thousands birr of 245,704 in 2010,252,071 in 2011,402,609 in 2012, 586,782 in 2013, 751,175 in 2014 and registered 85%, 3%, 60%, 46%, 28% net growth respectively[2].

So in general, one can understand that the sector has been registered a positive profit with incremental direction. Even though, the sector current year total profit net growth from preceding year is fluctuated from year to year.

The penetration ratios of the sector also grow from time to time. The sector penetration ratio[3] as of June 30, 2013 and 2014 was both <1 %(i.e. 0.64% and 0.68% respectively). However, such growths of premium, total asset, capital, profit, investment, distribution ratio, and penetration ratio in each year, the national bank of Ethiopia (NBE) insurance supervision directorate have great contribution. Insurance supervision directorate supervises those companies based on prudential regulations that help to insure the stability and soundness of the sector.

The regulation of those companies primarily involves issuance of prudential regulation, directive and guidelines augmented by regular follow up made through off-sight surveillance and on-sight inspection Using both risk based supervision approach and

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[1] He is an employee of national bank of Ethiopia insurance supervision directorate and is an expert in insurance. He had known by birritu and in the current time he has been prepared historical foundation and financial soundness of insurance sector but not published yet in websites.

[2] The net income after tax net growths are self computed based on the general insurance sector income statement of 2009-2014, obtained from NBE, Insurance supervision directorate.

[3]Is the gross value of insurance premiums as a percentage of GDP, is often used as a measure of how deep a country's insurance market is (Swiss Re's global insurance report, 2012, P: 1).

CARAMEL[4]parameters ratios by comparing with internationally well-known standards accepted and used by NBE.

Overall, the life insurance and general insurance sector registered positive growth in total assets, total capital, total investment, total profit, and gross and net premium as compared with the preceding year positions. According to the soundness indicator (CARAMEL) the sector is found safe and sound (NBE, ISD, annual report, 2014, p: 5).

1.3. Statement of the problem:

Every firm is most concerned on its profitability because, one of the most frequently used tools of financial ratio analysis is profitability ratios which are used to determine the company's bottom line (Boadi et al., 2013, p: 44). Thus, profitability is very important in determining the success or failure of a business. Any company should earn more profit in order to maximize the owners' wealth.

Similarly, general insurance sector in Ethiopia earn a profit of 187.8 million as of December 31, 2014, registered 15.1% growth in profit from the presiding the same year (NBE (ISD), quarter report, 2014). However, in firm level there is a fluctuation in profit with in every firm of general insurance in the sector. Since, profitability of any firm is affected by internal and external factors; this fluctuation is then due to internal and external factors. Therefore, it is vital to identify what are these factors and how they help insurance companies to take actions that will increase their profitability and investors to forecast the profitability of general insurance companies in Ethiopia.

Review of literature suggests that most of the study on firm's profitability has been done in the banking sector globally than can be said about the insurance industry (Yuvaraj and Gashaw, 2013, p: 141). Extra to the above, the determinants of profitability have been

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[4] *C=Capital adequacy, A=Asset quality, R=Reinsurance, A=Adequacy of technical provision, M=Management efficiency, E=Earning and profitability, and L=liquidity (NBE, ISD Annual quality assurance report, 2014, and Podpiera,2003,P:26)*

significantly under researched in insurance sector specifically in developing countries (Hifza Malik, 2011, p; 318).

Similar to the above generalized idea, according to the author knowledge there are few studies conducted in Ethiopia and mostly focus on firm-specific determinants of profitability of insurance firms such as Abate Gashaw (2012), Daniel and Tilahun (2013), and Yuvaraj and Gashaw (2013) and completely ignored the impact of macroeconomic determinants.

So, the study fills up this void in literature and includes macroeconomic factors in addition to firm-specific determinants of profitability of general insurance companies in Ethiopia for 10 consecutive years starting from 2005 up to 2014. Therefore, by taking in to consideration the absence of empirical inquiry in both internal and external factors affecting insurance companies' profitability, the researcher was investigated on such insufficient empirical evidence in the country.

Hence, these are important issues to be investigated for the insurance sector in general and for insurance firm's managers' in particular in achieving their primary mission of "creating stable and sound insurance sector" and "shareholders profit maximization".

1.4. Objective of the study:

The objectives of this study deal with one broad general objective and some more specific objectives just derived from the general objective and these are presented below.

1.4.1. General objective:

The main objective of the study is to identify the main determinants of general insurance firms' profitability in Ethiopia for the period 2005 up to 2014.

1.4.2. Specific objective:

Based on the above general objective, I raise the following specific objectives;

- ✓ To identify the main internal determinants of profitability of general insurance companies in Ethiopia.

- ✓ To explore the main external determinants of profitability of general insurance companies in Ethiopia
- ✓ To isolate the impact/relationship/ of those internal and external determinants on/with/ profitability of general insurance companies in Ethiopia.
- ✓ Recommendation to insurance companies' managers and other policy makers about the factors that influence profitability.

1.5. Research Hypotheses:

For this study the researcher has been constructed seven alternative hypotheses. Those hypotheses were constructed based on previous empirical studies in order to solve the problems which were intended to study in this thesis and to accomplish the objectives of the study.

HA1: Liquidity has a significant positive impact on performance of insurance companies in Ethiopia.

HA2: Tangibility has a significant positive impact on profitability of general insurance companies in Ethiopia.

HA3: Volume of capital has a significant positive impact on profitability of general insurance companies.

HA5: Premium growth has a significant positive relationship with profitability of general insurance companies In Ethiopia.

HA5: There is a significant negative relationship between claim ratio and profitability of general insurance companies in Ethiopia.

HA6: Real GDP has a significant positive impact on profitability of general insurance companies in Ethiopia.

HA7: There is a significant negative impact of Inflation on profitability of general insurance companies in Ethiopia.

1.6. Significance of the study:

The study findings will provide pertinent information on how these firm specific and macroeconomic factors affect profitability of general insurance companies in Ethiopia. Moreover, the study results were expected to have the following significances:

- The study findings will be very important to the General Insurance sector of Ethiopia, insurance firm managers, shareholders, investors as well as academicians, since this study was anticipated to identify the main determinants by isolating their impact as well as their implication on profitability.

- The study will benefit researchers and academicians who wish to undertake further studies and increase the body of knowledge on the effect firm specific and macroeconomic variables on profitability of general insurance sector in Ethiopia, since the study was insufficiently conducted in Ethiopia.

- It will increase knowledge on the relationship between firm specific and macroeconomic variables with profitability of general insurance sector in Ethiopia.

- Insurance companies will be more informed on the firm specific and macroeconomic variables that affect their profitability thus allowing them to develop measures and ways to mitigate the risks that may come as a result.

- The government of Ethiopia will understand the forces of economic growth mainly in the insurance industry and try to develop a mixture of policies that will be suitable for curing such variables like Real GDP and Inflation rate fluctuations.

1.7. Scope of the study:

The study was mainly focused on identifying the main determinants of profitability of nine general insurance companies in Ethiopia.

The study report was conducted based on secondary data's collected from the audited financial statement of those general insurance companies in Ethiopia specifically from balance sheet, revenue account and income statement for the period of 2005 up to 2014. The financial statements of these companies were obtained from NBE and the data's of those companies are only fully available starting from 2005, that's why the author investigation was started from 2005.

Similarly, the study was the mix of 5 firm specific determinants (i.e. Liquidity, Tangibility, and Volume of capital, Premium growth, and Claim ratio) and 2 macroeconomic determinants (i.e. Real GDP and Inflation), which were selected based on previous empirical literatures, since these variables were mostly used in the previous empirical studies as study variables on determinants of profitability of insurance companies.

1.8. Limitations of the Study:

This study has clear and expected limitations, such as;

- The study used ROA as a measure of profitability whereas there are other measures that can be used to measure profitability such as Return on equity, net profit margin profit, gross profit margin and operating profit margin ratios, return on investment;
- The study employed five firm specific factors such as firms liquidity, tangibility, volume of capital , premium growth, and claim ratio, whereas there are others that had been used in literatures as determinant of insurance profitability like earning volatility, leverage, age, size, retention ratio, expense ratio, asset quality etc.;
- This study was also based on a test of two independent macroeconomic variables namely inflation and real GDP, whereas there are other macroeconomic variables that affect ROA such as interest rate, money supply, exchange rate, un employment rate etc.
- This study was derived from secondary data, which may a challenge in proving the accuracy of the data unlike in primary data where the researcher collects the data and therefore being guaranteed of its accuracy.

1.9. Research structure:

This thesis will have five major chapters: those are;

The first chapter is structured into 10 sections; Introduction, Back ground of the study, Statement of the problem, Objective of the study, Significance of the study, Scope of the study, section Limitation of the study and Structure of the study.

The second chapter is a review of empirical literature encompasses four sections.

Section 2.1.deal with theoretical literature which includes definition and roles of insurance and theories of profitability, Section 2.2.deals with empirical literature which include concept

and measures of profitability, determinants of profitability, definition, measure and their future impact predicted for the study of those chosen determinants, Section 2.3.deals on conceptual frame work and Section 2.4.deals on Conclusion and knowledge of gap.

The third chapter represents the data and methodology used in the study. This chapter encompasses research method, the data type and source, research sampling technique, study population, study sample size, data collection instrument, research design the approaches to the research, data analysis and empirical model which encompasses choice of dependent variable, choice of independent variable, research hypothesis and model specification.

The fourth chapter represents discussions of results and it encompasses descriptive statistics analysis, diagnostic assumption tests, selection of panel data model, multiple regressions result, and hypothesis testing. While, the fifth last chapter of this study represents summery, conclusion and recommendations.

CHAPTER TWO

2.0. Literature Review:

This chapter discusses the literature concerning on the determinants of profitability of insurance companies. This review of literature encompasses four sections.

- Section 2.1.theoretical literature,
- Section 2.2.empirical literature,
- Section 2.3.conceptual framework of the study, and
- Section 2.4.Conclusion and knowledge of gap

2.1. Theoretical reviews:

This sub section comprises about theories of profitability.

2.1.1. Theories of Profitability:

Profit is an income distributed to the owner in a profitable market production process (business). It also is a measure of profitability which is the owner's major interest in income formation process of market production. However theories of profit define profit differently.

Theory of profit is generally recognized to be one of the most unsatisfactory parts of economic doctrine. Theories of profit in fact bring out the source of profit or determinants of profit (D.N. Dwvedi, 2002, p: 498).

There are various theories of profit which have been advanced from time to time regarding the nature of profit in a competitive economy. Almost all of them differ basically from one another and are inadequate to explain the actual role of profit in the operation of free economy. The most important theories are:

2.1.2.1. Dynamic theory of profit:

The dynamic theory of profit was formulated by J.B. Clark. According to him profit accrues because the society is dynamic by nature. Since the dynamic nature of society makes future uncertain and any act, the result of which has to come in future, involves risk. Thus profit is the price of risk taking and risk bearing. It arises only in a dynamic society which means in a

society where changes does not occur i.e. it is static by nature the risk element disappears and hence the profit element does not exist there.

Actually, a society is said to be dynamic when there is a change in its population, change in trends of the people, change in stock of the capital, change in the supply of entrepreneurs etc. when all these factors becomes constant, the future also becomes certain and the risk element disappears from the society.

According to Clark, profit is the result of an adjustment, which is brought about by the entrepreneurs themselves. They may find new techniques of production by inventing new machines. Their use reduces the cost of production and reduces the course of time as well and gives the entrepreneur higher profits. But when the use of machinery and production becomes common and used by the other entrepreneur operating in the economy, the supply of goods then increase and the prices fall. Hence the profit margin also goes down. Under this situation the profit is determined by the demand and supply of enterprise at a point where they are equal.

In a dynamic economy, if an entrepreneur produces a new thing and creates demand for his products, then he is likely to obtain big profits. But the profits of the entrepreneur cannot continue to exist for long period. The other entrepreneurs also adopt the innovation and produce similar products. As total output increases, the profits, gradually come down. Thus, we find that perpetual profits are the result of perpetual new successful innovation. Though, this theory is criticized, since Clark completely ignores the future or uncertainty. Prof, Knight has criticized the Clark Theory of profit on the ground that it is wrong to attribute all profits to dynamic changes.

According to Knight, there are certain changes which are of a recurring and calculable nature. They can be anticipated and the output can be adjusted according to that. The profits do not arise on those regular changes but on those which are unforeseen or unpredictable. Thus, he observes that: "It is not dynamic changes or any changes as such which cause

profits but he divergence the actual conditions from those which have been expected and on the basis of which business arrangements have been made"[5].

2.1.2.2. Uncertainty bearing theory of profit:

The theory of uncertainty bearing theory of profit was developed by Prof. F.H. Knight in 1921.

According to him, profits are the reward for uncertainty bearing rather than risk taking. He has divided the risk into insurable risks and non-insurable risks. Non-insurable risk is also known as uncertainty.

A. Insurable risks:

The risk whose statistical probability can always be computed like the risk of fire, theft and accident are known as insurable risks. These risks can be insured and the entrepreneur can reduce such risks. No entrepreneurs feel fear on this type of risk because such risk can be transferred to insurance agency by paying suitable premium.

B. Non-insurable risk:

The risk which is neither definite nor foreseen is called non-insurable or uncertainties risk. It cannot be guarded against because no insurance companies afford an insurance against such uncertainties. Its statistical probability also cannot be computed. Non-insurable risk arises due to business cycle, technological changes, unhealthy competition among business firms, change in government policy etc.

According to Prof. Knight the main function of the organization is to bear such non-insurable risks or uncertainties and profit is the reward for bearing such risks.

To this theory the uncertainty is caused by the following factors: competitors' behavior, innovations, consumers' behavior (like fashions, tastes…etc), government policy interventions, wage and labor policies, income of people, movement of prices, technological changes, natural disturbances, etc. Even though, this theory of profit is criticized, since it

[5]*Source: http://economicsconcepts.com/theories_of_profit.htm)*

does not show a direct relationship between profit and uncertainty, Ignores other determinants of profits, and it is a one sided theory (Nabraj Lama, 2013).

2.1.2.3. Risk bearing theory of profits:

The risk bearing theory of profit was developed by F.B Hawley in 1907 A.D. According to him, profit is a reward of risk bearing. The main function of entrepreneur is to bear risk. Production involves various kinds of risks and other emergency expenses. Nobody will bear risk unless there is expectation of profit.

Profit is the main motive for taking risk. Thus, profit is reward for taking risk. Risk differs from industry to industry. Some productive activities are more risky while others are less. The rate of profit is also different from industry to industry. Profit is the reward for taking risk. Higher the risk, higher will be the profit and vice versa (Nabraj Lama, 2013).

This theory is also a windfall theory of profits since windfall profits result as a result of increase in the price while the costs of production remain unchanged.

The price increases are caused, as per this theory, by expected movements in price and income of consumers, inventory management, reimbursement for risks, differences in efficiency, differences in the nature of production, monopoly profits, windfall profits in a branch of industry, and general windfall profits. However, this theory is criticized, since this theory does not show the relationship between profit and risks, it is a narrow theory, and it excludes the dynamic function of entrepreneurs/organization.

2.1.2.4. Monopoly theory of Profit:

This theory is established by Kalocki and he said that there is no doubt that profits arise from dynamic changes, innovations and from making a correct estimate of future economic conditions. However in his point of view, monopoly and monopolistic competitions in the market also give rise to profits. The firms under monopoly or monopolistic competition have greater control over the price of the product. They are the price makers rather than the price

takers. As such they raise prices by restricting the level of output and thus keep profit at higher level. Monopoly power, thus, is the basic sources of business profits.
Nevertheless, this theory is also criticized because, monopoly is no doubt an important cause and source of monopoly profits but it does not replace other theories. Monopoly power only supplements other theories (www.economicsconcepts.com).

2.1.2.5. Marginal Productivity theory of profits:

This theory of profit was established by Chapman, Stigler, Stonier and Hague, and holds that profit always equals to the marginal productivity of the entrepreneur.

The marginal productivity of the entrepreneur cannot be evaluated in the case of the firm because there is only one entrepreneur in a firm. It is however can be easily done in an industry where the number of the firms can be calculated and hence the marginal productivity of various entrepreneurs can be measured.

According to this theory the profit depends upon the marginal production. Greater the marginal production greater will be the profit (www.guesspapers.net).

Even so, Chapman et al.'s theory of profit was criticized by the unit of factor, i.e., the enterprise is very large, if for finding out the marginal net productivity of the entrepreneur, we withdraw it from the business, and then it will disorganize the entire productive organization. Thus, it becomes very difficult to ascertain the marginal net productivity of the labor[6].

2.1.2.6. Innovation theory of profits:

This theory was pioneered by Joseph Schumpeter, holds that profit is a residue and it is the cost of entrepreneurial ability used. The residual difference between price and costs is increased (hence profit increases) due to the reductions in costs due to innovations such as

[6]*Source: (http://economicsconcepts.com/theories_of_profit.htm).*

introduction of new goods, differentiated goods, discovery of new source of raw materials, development of new markets, use of new organizational forms.

According to this theory innovations result in a reduction in the prices of the factors of production, thus the costs of production decreases resulting in an increase in the difference between the price and the costs of production, i.e. the residual profits.

But in a competitive economy and without patent laws, the existing competitors or the new firms will soon adopt any successful innovation and profits would be eliminated. However, in a competitive and progressive economy the entrepreneurs always continue to introduce new innovations and thus profits continue emerging out of them; unless one can construct a permanent monopoly (www.tutorsland.com/).

Moreover, modern economists said that "after they discuss various theories of determination of profits, they come to this conclusion that all these theories are defective in one way or the other". Similarly, they said that "The basic defect (criticism) with these theories is that they particularize certain aspects of the function of an entrepreneur to the neglect of others. While, the fact is that profit functions are many and various. For instance, profit can arise due to dynamic nature of society, monopolistic position of the entrepreneur or adoption of innovation or sheer chance or some of the factors stated above"[7].

Thus, they conclude that "there is not a single theory of profit which gives a correct and comprehensive explanation of the nature and determination of the profits. Such a theory is yet to be propounded".

2.2. Review of empirical study:

This section is structured into four subsections. Subsection 2.2.1.Definition and role of insurance, 2.2.2.Reviewsconceptand measures of profitability, Subsection 2.2.3.Analyses

[7]*Source:http://advanced-macro-economics.blogspot.com/2013/03/monopoly-theory-of-profits.html*

determinants of profitability, and subsection 2.2.4.Analyses chosen determinants definition, measure and their predicted impact on profitability.

2.2.1. Definition and Roles of Insurance

According to supervision of insurance business proclamation 746(2012, P: 6464), Insurance is an undertaking by insurer (i.e. non-life and life insurer[8]) to indemnify another person in exchange for consideration called premium against damage, distraction, loss or liability in respect of certain risk or peril to which the object of the insurance may be exposed or to pay sum of money or other thing of value depending upon the happening of certain event.

According to NBE Birritu report (2012, P: 21) Insurance is, one sub sector of the financial sector; a risk transfer mechanism whereby an insured transfers a risk exposure to an insurer in consideration for payment of premium. It is also a tool of prime importance in modern economies.

Insurance serves a number of valuable economic functions that are largely distinct from other types of financial intermediaries. In order to highlight specifically the unique attributes of insurance, it is worth focusing on those services providers, excluding for instance the contractual savings features of whole or universal products.

The indemnification and risk pooling properties of insurance facilitate commercial transactions and the provision of credit by mitigating losses as well as the measurement and management of non-diversifiable risk more generally.

Typically, Taiwo Akinlo and Olumuyiwa (2014) said, insurance contracts involve small periodic payments in return for protection against uncertain, but potentially severe losses.

[8]*According to directive of ISB/25/2004, non-life Insurance shall mean all kinds of insurance business other than long-term insurance business or an insurance contract other than long term insurance business contract, while life insurance is a contract where by the insurer undertake against the payment of premium to pay to the insured or any beneficiary a specified sum on certain conditions dependent up on the life of death of the insured(SIB proclamation 746,2012.P:6465).*

Among other things, this effect of income smoothing helps to avoid excessive and costly bankruptcies and facilitate lending to businesses. Most fundamentally, the availability of insurance enables risk-averse individual and entrepreneur to undertake higher risk, higher returns activities than what they would do in the absence of insurance, promoting higher productivity and growth.

Ward and Zurbruegg (2000) supposed, the significance of insurance was acknowledged in the first conference of United Nations Conference on Trade and Development (UNCTAD) in 1964 by stating that "a sound national insurance and reinsurance market is an essential characteristic of economic growth." It seems insurance not only facilitates economic transactions through risk transfer and indemnification but it also promotes financial intermediation.

More specifically, insurance can have effects such as promote financial stability, mobilize savings, facilitate trade and commerce, enable risk to be managed more efficiently, encourage loss mitigation, foster efficient capital allocation and also can be a substitute for and complement government security programs (Skipper, 2001).

Additionally, insurance companies have importance for both businesses and individuals as they channel funds and indemnify the losses of other sectors in the economy and put them in the same positions as they were before the occurrence of the loss respectively. In addition, insurance companies provide economic and social benefits in the society by prevention of losses, reduction in anxiousness, fear and increasing employment (Gashaw, 2012, P: 1).
A strong insurance industry promotes a developed contractual saving sector which contributes to a more resilient economy that would be less vulnerable to interest rate and demand shocks while creating a more stable business environment, including macroeconomic stability(Doreen, 2013, p: 7).

So in general, the insurance sector plays an important role in economic development through providing insurance coverage against risks, the provision of alternatives means for saving

and mobilization of financial resources from within and outside the country (SIB 746,2012.P:6462).

2.2.2. Concept and Measures of profitability:

One of the most difficult attributes of a firm to conceptualize and measure is its profitability. According to Schall and Halley (1991, p.409), in their book they wrote that Profitability measures the success of the firm in the earning at net return on sales or investment.
Similarly, Profitability is the overriding goal for the success and growth of any business, and is generally defined as a ratio between revenue and cost (i.e. profit/assets). However, profitability as a performance measure mainly addresses shareholders as the interest group and many researchers therefore claim that excessive use of monetary ratios can result in several shortcomings (Stefan Tangen, 2003,p; 41).

Don Hofstrand (2009, p: 3), also defined Profitability as either in accounting profit or economic profit. In a general sense; accounting profits are the difference between revenues and costs. However, the problem with accounting-based measures of profitability is that they ignore opportunity cost, whereas in the economic sense, a firm is profitable only if its profitability is greater than investors can achieve independently in the capital market. In this case opportunity costs are also deducted from revenue in addition to operating expenses.
In addition to this, Schwambach (2010, p: 7) also defined profitability as the final measure of economic success achieved by a company in relation to the capital invested in it.

Moreover, there has been a growing number of studies recently they test measures and determinants of firm's profitability. Financial industry's profitability has attracted scholarly attention in recent studies due to its importance in performance measurement (Boadi et al., 2013, P: 43).

However, there are many ways of measuring profitability of business that have been employed by academicians, practitioners', business managers and authors. For instance according this website (http://www.netmba.com/finance/financial/ratios/), there are 3 best

measures of business profitability. Those are gross profit margin (GPM), return on equity (ROE) and return on asset or investment (ROA or ROI).

As well, Hrechaniuk et al. (2007) investigated on "Do determinants of insurers' performance differ in the old EU, the new EU, and outside" and in their study they used two profitability ratios, revenue to total asset and return on asset (ROA) as performance proxy or measure. Habtamu (2012) also investigated determinants of private commercial banks profitability in Ethiopia by using three bank profitability measures; Return on Asset (ROA), Return on Equity (ROE), and Net Interest Margin (NIM).

In addition, Oscar et al (2013) explored the determinants of profitability in the life insurance industry of Ghana form 2000-2010 using three measures of insurers' profitability; those were investment income, underwriting profit and the overall (total) net profit.

Farther more, most researchers in the field of insurance and their study stated that the key indicator of a firm's profitability is ROA. For instance Hifza Malik (2011) investigated determinants of insurance companies' profitability of insurance sector of Pakistan, Abate Gashaw (2012) investigated Factors Affecting Profitability of Insurance Companies in Ethiopia, Daniel Mehari and Tilahun (2013) explored Firm specific factors that determine insurance companies' performance in Ethiopia, Shami and Ahmed (2008) explore on Determinants Of Insurance Companies' Profitability in UAE, Liargovas and Skandalis(2008) also investigated on Factors Affecting Firm Competitiveness: The Case of Greek Industry, Kaurand Chattha (2013) investigated Financial Performance of Life Insurers in Indian Insurance Industry, Doumpos et al. (2012) investigated on Estimating and Explaining the Financial Performance of Property and Casualty Insurers, Chen-Ying Lee (2014)estimated the effects of macroeconomics factors on profitability of property-liability insurance industry in Taiwan, Boadi et al. (2013) explored determinants of Profitability of Insurance Firms in Ghana, Sambasivam and Abate Gashaw (2013) investigated on the performance of insurance companies in Ethiopia, Abdelkader Derbali (2014) investigated determinants of performance of insurance companies in Tunisia: the case of life insurance; all the above authors used return on asset (ROA) as proxy measure of profitability.

Therefore, for this study the author used this common measure of profitability (i.e. ROA) to investigate the determinants of profitability in Ethiopia general insurance sector for teen successive years starting form 2005 up to 2014G.C. Return on asset (ROA) is, a measure developed by DuPont in 1919; one of the most widely used financial models for performance measurements and determines the company's ability to utilize its assets.

It shows how efficiently the resources of the company are used to generate the income. It further indicates the efficiency of the management of a company in generating net income from all the resources of the institution. A higher ROA shows that the company is more efficient in using its resources.ROA is calculated as: ROA=NI/ATA; where, NI is net income, TA is total asset (Tangen, 2003, p: 68).

2.2.3. Importance of profitability:

According to Schall and Halley (1991, p.409), Don Hofstrand **(**2009, p: 1**),** and Hifza Malik (2011, p: 1), Profitability is one of the most important objectives of financial management because one goal of financial management is to maximize the owner`s wealth, and profitability is very important determinants of performance. Thus, profitability is very important in determining the success or failure of a business.

In other way, Profit is especially important because it is necessary for the survival of a business. Low profitability contributes to under-capitalization problems because it leads to fewer dollars as retained earnings and therefore to a reliance on external capital (Nguyen**,** 2001, P: 120). In line with the above ideas, to achieve an appropriate return over the amount of risk accepted by the shareholders is the main objective of companies operating in capitalist economies (Renato Schwambach Vieira, 2010, p: 7).

Moreover, a company's profitability has always attracted the attention of academics, policy makers and practitioners and researchers interested in revealing the main factors that determine business success or profitability. Although profitability has been widely investigated in manufacturing industries, far less attention has been paid to it in the financial sector. This is specially truth for the insurance companies (M. Pervan, et al., 2012).In

addition to the above, Boadi et al. (2013, P: 43), they said "every firm is most concerned with its profitability. One of the most frequently used tools of financial ratio analysis is profitability ratios which are used to determine the company's bottom line. Profitability measures are important to company managers and owners alike. If a small business has outside investors who have put their own money into the company, the primary owner certainly has to show profitability to those equity investors. After all, profit is the propulsive element of any investments in different projects.

2.2.4. Determinants of insurance profitability:

This subsection reviews the determinants of profitability in insurance industry and effect of those determinants towards profitability of insurance sector on previous empirical findings.

For instance, Javaria and Sidra (2013, p: 14377) said that, Main concern of any firm is to earn more and more profit and enhancing the wealth of its stakeholders. But due to challenges in internal and external environment most of the firms are unable to meet their goals.

According to Lawrence Kutsienyo (2011, p: 45), Sufian, F. (2011), Abate Gashaw **(**2012, p: 15), and Chen Ying Lee (2014, p: 683) also wrote "Insurers' profitability is influenced by both internal and external factors. Internal factors focus on an insurer's specific characteristic (i.e. they are variables under the control of firm's managers), whereas the external factors concern both industry features and macroeconomic variables (i.e. they are variables that are not controlled by firm's managers)".

The relevant empirical literature for this study may categorize as: effects of firm specific factors on profitability and the effects of macroeconomics variables on profitability.

2.2.4.1. Effects of firm specific factors on profitability:

Several firm specific variables have been found to share significant relationships with insurance companies' profitability.

For instance, Shami and Ahmed (2008, P: 1) explore on Determinants Of Insurance Companies' Profitability in UAE using 5 firm specific variables and they found that there was no relationship between profitability and age of company, and, there was significantly positive association between size and profitability. The result also shows that the volume of capital was positively related to the profitability, this relationship was also significant. Consistent with what they have been hypothesized the study suggests an opposite and significant relationship between leverage ratio and loss ratio as independent variables and profitability.

Liargovas and Skandalis (2008, p: 16) also investigated on Factors Affecting Firm Competitiveness: The Case of Greek Industry. In their study they found that leverage, firm size, firm age, firm location, liquidation, fixed to total assets, firm export activity, net investment ratio and management competence index are all significant. Firm age, tangibility and liquidity are negatively correlated to ROA, where as leverage, firm size, firm location, firm export activity, net investment ratio and management competence index are positively related to ROA.

A study by Kaven Gatzlaff (2009,P: 44) as well tested the predictive insolvency indicators and relationship of performance, the results indicated operational performance was negatively related to loss ratios, underwriting expense ratios, premium growth and premium to surplus ratios, whereas positively correlated with return on investment and realized capital gains.

Hifza Malik (2011, p: 320) also investigated on firm specific determinants of insurance companies' profitability of Pakistan and he found that, there is no relationship between profitability and age of the company and there is significantly positive relationship between profitability and size. Result also shows that volume of capital was significantly and positively related to profitability.

In addition to the above, a study by Naveed Ahmed et al (2011, p: 123) investigated the impact of firm level characteristics on performance of the life insurance sector of Pakistan over the period of seven years. For this purpose, they used 6 firm specific factors (i.e. size,

profitability, age, risk, growth and tangibility) as explanatory variables while ROA is taken as dependent variable. The results of Ordinary Least Square (OLS) regression analysis revealed that leverage, size, growth and risk are most important determinant of performance of life insurance sector whereas ROA has statistically more of insignificant relationship with, tangibility of assets.

Yassin and Ahmed (2012, p: 280) too investigated on "Factors Affecting the Financial Performance of Jordanian Insurance Companies Listed at Amman Stock Exchange" and he found that the following firm specific variables (Leverage, liquidity, Size, Management competence index) have a positive Statistical effect on the financial performance of Jordanian Insurance Companies. However age does not have significant impact on performance of Jordanian insurance.

A study conduct by Doumpos et al. (2012, p: 159) on Estimating and Explaining the Financial Performance (measured by ROA) of Property and Casualty Insurers: A Two-Stage Analysis and Their investigation involves 8 firm specific factors (size, equity to asset ratio, retention ratio, technical reserve (claim) ratio, liquidity, expense ratio, loss ratio and solvency ratio). According their regression most firm specific ratios have a strong monotone relationship with the overall evaluation scores except claim ratio and operating expense ratio, size which carries a negative and statistically significant coefficient whereas, retention ratio is insignificant indicating that the underwriting strategy with regard to reinsurance does not exercise an influence on overall performance.

Another study conducted in Ethiopia by Abate Gashaw(2012, p: 31), and Yuvaraj and Abate Gashaw (2013, p: 149) examined on factors affecting profitability of insurance companies for nine years (2003-2011) in Ethiopia using 7 firm specific factor (i.e. age of company, size of company, volume of capital, leverage ratio, liquidity ratio, growth and tangibility of assets) on profitability proxied by ROA. According to their regression results they found that; growth, leverage, volume of capital, size, and liquidity are identified as most important determinant factors of profitability hence growth, size, and volume of capita are positively related. In contrast, liquidity ratio and leverage ratio are negatively but significantly related

with profitability. Lastly, age of company and tangibility of assets are not significantly related with profitability.

A study conducted in India in case of life insurance by B.Charumathi (2012, p: 5) on firm specific determinants of Profitability of Indian Life Insurers using 6 firm specific characteristics such as leverage, size of company, premium growth, liquidity, underwriting risk and equity capital are regressed against Return on Assets (ROA) and This study led to the conclusion that profitability of life insurers is positively and significantly influenced by the size (as explained by logarithm of net premium) and liquidity. The leverage, premium growth and logarithm of equity capital have negatively and significantly influenced the profitability of Indian life insurers. Nevertheless, this study does not find any evidence for the relationship between underwriting risk and profitability.

Likewise, Daniel and Tilahun (2013, p: 253) also studied on Firm specific factors that determine insurance companies' performance in Ethiopia using 7 firm specific factors (i.e. size, leverage, tangibility, Loss ratio (risk), growth in writing premium, liquidity and age) on 9 insurance companies for 6 consecutive year staring from 2005-2010 and he found that insurers' size, tangibility and leverage are statistically significant and positively related with return on total asset; however, loss ratio (risk) is statistically significant and negatively related with ROA. Thus, insurers' size, Loss ratio (risk), tangibility and leverage are important determinants of performance of insurance companies in Ethiopia. But, growth in writing premium, insurers' age and liquidity have statistically insignificant relationship with ROA.

A study conducted in Kenya by Doreen Umotho Murungim (2013, p: 49) on relationship of firm specific and macroeconomic variables with financial performance of insurance companies. In his study he investigated the relationship of interest rate, inflation rate (CPI), currency exchange rate fluctuations, money supply, GDP, as macro-economic factor, and Claim ratio (CR), Expense ratio(ER), and size of the insurer as insurance specific variables of financial performance (ROA) of insurance companies in Kenya and he found that all firms specific variables (i.e. Claim ratio, Expense ratio, and size) have positive effect on ROA.

Bilal Javaria et al. (2013, p: 14378) similarly, investigated on the determinants of profitability in insurance sector of Pakistan with a panel data set of 31 insurance firms (life insurance sector and no-life Insurance) of Pakistan from 2006-2011 using 6 firm specific factors which are leverage, growth opportunities, size, liquidity, age, and earnings volatility and they found that leverage, size, earnings volatility and age of the firm are significant determinants of profitability while growth opportunities and liquidity are not significant determinants of profitability.

Chen-Ying Lee(2014,P:687**)** also estimated the effects of firm specific factors and macroeconomic factors on profitability (measured by operating ratio and ROA) of property-liability insurance industry in Taiwan and he found that underwriting risk, reinsurance, input cost, economic growth rate and financial holdings group are significantly and positively correlated with operating ratio whereas other variables such as firm size, firm growth, and diversification and inflation rates are found to be positively correlated with operating ratio, and financial leverage exhibits negative correlation with operating ratio, but they are not significantly different from zero. However, in case of profitability measured by ROA, he found that underwriting risk, reinsurance, input cost, financial holdings group and return on investment are positively correlated with ROA but financial leverage is significantly and negatively correlated. Other variables such as firm size, market share are positively correlated with ROA, whereas firm growth, diversification, economic growth ratio and inflation rates exhibit negative correlation with ROA, but are not significantly different from zero.

Pervan et al. (2014,p:1) besides, investigated on how insurance companies in Macedonia performed and according to the finding of panel analysis regarding the determinants of profitability, they abstracted that expense ratio (ER) and claim ratio (CR) have negative and statistically significant influence on insures profitability while size has a positive influence on the insurer's profitability.

Moreover, a study conducted by Abdelkader Derbali (2014, p: 95) examined the impact of firm-specific determinants (size, leverage, tangibility, risk, growth, liquidity and age) on the

performance of eight insurance companies in Tunisia for a period of 8 years (2005-2012). The results from a regression on panel data indicates that size, age and premium growth are the most important determinants of the performance of insurance companies in Tunisia measured by return on asset ratio (ROA). But, the performance of insurance companies was not statistically significant with leverage, tangibility, liquidity and risk.

However, the results found by the researchers mentioned above in the empirical reviews revealed inconsistencies regarding those firm specific variables which are conducted in different countries at diverse study time.

In general, to select firm specific factors that was employed in my study, I focus only on the above empirical study findings and availability of data and nature of insurance sector in Ethiopia.
So, the author of this study select five main firm specific factors that has mostly used by earlier different (various) researchers in the field of insurance such as company liquidity, tangibility, volume of capital, growth in premium, and claim ratio. However, as it has generalized in the above paragraph, firm specific determinants effects (impacts) towards profitability (ROA) were different form study to study.

2.2.4.2. Effects of macroeconomic variables on profitability:

The external factors are sector-wide or country-wide factors which are beyond the control of the company and affect the profitability of banks (Godfrey, 2012, p: 18).

According to Oliver (2000) sited on Godfrey, 2012, p: 8), macroeconomic variables are such factors that are pertinent to a broad economy at the regional or national level and affect a large population rather than a few selected individuals. It is often argued that financial performance is determined by some fundamental macroeconomic variables such as the interest rate, gross domestic product (GDP), exchange rate, inflation and money supply which are closely monitored by the government, businesses and consumers. Likewise, anecdotal evidence from the financial press indicates that investors generally believe that

monetary policy and macroeconomic events have a large influence on the volatility of financial performance.

According to specialties of the www.bayt.com, Macroeconomic factors are those factors that relate specifically to the broader or wider economy at a regional level or a national level. There are various macroeconomic factors that influence a business such as interest rate, inflations and GDP (economic growth) are the most among them. Empirically such factors are also studied in deferent country, in different field of study and have different effects on firm's performance.

For instance, Doumpos et al. (2012, p: 166) studied on the performance of non-life insurers and they found that macroeconomic indicators such as real GDP growth, inflation, and income inequality influence the overall performance of firms. Stock market development also has a positive effect on performance. In contrast, other indicators of the banking and capital market development such as the insurance premium to GDP, bank credit to GDP, and insurance and financial services as percentage of import services are not significant. Similarly, the institutional development and the overall freedom in the financial services industry do not exercise a statistically significant effect on overall performance (ROA).
Godfrey(2012, p: 32) also investigated on effect of selected macroeconomic variable on financial performance(ROA) of non-bank institutions in Kenya and he found Return on Assets of NBFIs has a strong positive relationship with currency exchange growth rate and a weak positive relationship with quarterly GDP, inflation rate and average quarterly interest rate.

Likewise, Doreen Umotho Murungim (2013, p: 45) as well investigated the relationship between macroeconomic variables and financial performance of insurance companies in Kenya. In his study he found that macro-economic factor such as interest rate, (CPI), currency exchange rate fluctuations, GDP have positive impact on ROA. Whereas Inflation rate and money supply have negative effect on insurance performance in Kenya proxied as ROA.

Additionally, Chen-Ying Lee (2014,P:687),estimated the effects of macroeconomics factors on profitability (measured by operating ratio and ROA) of property-liability insurance industry in Taiwan and he found that firm growth, diversification, economic growth ratio and inflation rates exhibited negative correlation with ROA, but are not significantly different from zero.

A study by Cecila Nicoleta (2014, P: 6) on Competitiveness and firms performance on emerging countries; the Romanian case also found that there is a strong positive correlation between national competitiveness measured by GCI and GDP per capital and firms performance measured by ROA.

Besides to the studies conducted in the field of insurance, a study in Philippines banks conducted by Fadzlan and Royfaizal (2008, p: 106) on the determinants of Philippines banks profitability during the period 1990–2005 also shows inflation has a negative impact on bank profitability, while the impact of economic growth, money supply, and stock market capitalization have not significantly explained the variations in the profitability of the Philippines banks.

Finally, for this study the author selects 2 macro-economic factors which are commonly used by the above researchers and by considering the ease of data availability. Those are real GDP and inflation rate.

2.2.5. Operational Definition, Formulas and Expected sign of the selected variables:

In this investigation of the factors that influences the profitability of insurers, the researcher considers 5 firm specific determinants and 2 macroeconomic determinants, in total 7 determinates. Those are Liquidity, tangibility, Volume of capital, Premium growth, Claim ratio, Real GDP, and Inflation. The brief descriptions of all these selected variables and their relationship with profitability (ROA) were presented below as follow;

2.2.5.1. Liquidity ratio (LQ):

Liquidity ratios measure the firm's ability to fulfill short-term commitments out of its liquid assets. Companies with more liquid assets are less likely to fail because they can realize cash even in very difficult situations.

It is therefore expected that insurance companies with more liquid assets will outperform those with less liquid assets. Most empirical findings have confirmed that there is a positive relationship between liquidity and financial performance of insurers (Daniel and Tilahun, 2013, p: 247).

Similarly, B.Charumathi (2012), Brown et al. (2001), Yassin and Ahmed (2012), and Doumpos et al. (2012), also investigated the same finding with Daniel and Tilahun(2013). However Yuvaraj and Abate (2013), Abate (2012), Liargovas and Skandalis (2008), Bilal Javaria et al. (2013), Liargovas and Skandalis (20080, and Abdelkader Derbali (2014), investigated the reverse of the above findings. For this study the author expected liquidity has positive and significant effect on insurance companies' profitability.

Usually, liquidity of insurance firm is measured by the current assets to current liabilities (current ratio). It shows the ability to convert an asset to cash quickly and reflects the ability of the firm to manage working capital when kept at normal levels (Amal Yassin, 2012, p: 272).

2.2.5.2. Tangibility(TNG):

It measures the extent to which fixed assets are financed with owners' equity capital. Tangibility of assets in insurance companies in most studies is measured by fixed assets over total assets.

A high ratio indicates an inefficient use of working capital which reduces the firm's ability to carry accounts receivable and maintain inventory and usually means a low cash reserve. This may often limit the ability of the firm to respond to increased demand for products or services (Liargovas and Skandalis (2008, P: 9). This concept was also supported by findings

of Naveed Ahmed et al. (2011), Abdelkader Derbali (2014), Yuvaraj and Gashaw (2013) Abate Gashaw(2012), which was there is no significant relationship with insurance profitability proxied as ROA. However Daniel and Tilahun (2013), found that tangibility has positive impact with insurance profitability (ROA).

So, the researcher predicted tangibility has positive and significant impact on general insurance firm's profitability in Ethiopia.

2.2.5.3. Volume of capital(VC):

Volume of capital is also known as capital adequacy, is a measure of insurance's financial strength or financial soundness, in terms of its ability to withstand operational and abnormal losses. Capital is seen as a cushion to protect insured and promote the stability and efficiency of financial system, it also indicates whether the insurance company has enough capital to absorb losses arising from claims. Capital adequacy (volume of capital) also indicates the ability of insurers to undertake additional business (Tanveer Ahmad Darzi, 2004, p: 59).

Similarly, finding by Gashaw(2012), Shami and Ahmed (2008), Yuvaraj and Gashaw (2013), Indranarain (2009), Imad et al. (2011), Kim et al(1995), Hifza Malik (2011), Berger (1995) stated that capital volume has positive relationship with insurers profitability. However, B. Charumathi (2012) found the opposite finding of the above authors.

According to World Bank (WB) and international monetary fund (IMF) hand book (2003, p: 27), volume of capital is measured using two types of ratios. Those are Ratio of Capital to Total Assets and ratio of premium to total asset. However empirically most authors was used natural log of equity. Therefore, to investigate the relationship of VC and ROA the author will use this measure. This measure shows the volume of capital in the firm. The healthy growth in net premium is considered to be risky unless supported by optimal balanced capital, to act as cushion to bear shocks.

Moreover, considering the above findings the researcher proposed volume (adequacy) of capital has a positive and statistically significant relation with general insurers' profitability in Ethiopia.

2.2.5.4. Growth in premium(GP):

Growth in premium is defined as the percentage increase in Gross Written Premiums (GWP). The equation is expressed as follows: PG = 100*(GWP (t) – GWP (t-1)) / GWP (t-1).
Premium growth measures the rate of market penetration.

Empirical results showed that the rapid growth of premium volume is one of the causal factors of insurers' insolvency (Kim et al. 1995). Being too obsessed with growth can lead to self-destruction as other important objectives may be neglected.

However empirically there are many findings. For instance Abate (2012), Naveed Ahmed et al. (2011), and Yuvaraj and Gashaw (2013) had been found a positive correlation between growth in premium and insurance profitability. Another finding by Bilal Javaria et al. (2013, and Daniel and Tilahun (2013), also had been found insignificant effect between growth in premium and insurance profitability. In contrast of the above findings Chen-Ying Lee (2014) and B. Charumathi (2012) explored a significant negative relationship between growth in premium and insurance profitability which was measured by ROA.

Likewise, the study author expected a positive and significant relationship between growth in premium and profitability of general insurance in Ethiopia.

2.2.5.5. Claim ratio/Loss ratio/(CR/LS):

The claims ratio also termed as loss ratio in insurance business is defined as the claims incurred to net premiums earned.

If this ratio is high, it indicates that lesser amount is available for expenses recovery and thereby has negative impact on profitability of the companies and vice versa. Since there may be the argument that the amount of claims incurred cannot be minimized as the portion

include perils insured, however, insurers differ to a good extent in terms of this ratio, highlighting the scope for efficient underwriting (Tanveer Ahmad Darzi, 2004, p: 118).

Insurance firms with higher claim ratios should be at greater risk of insolvency. Conversely, one might expect that firms with lower loss ratios should be better performers, all else equal (Kevin Gatzlaff, 2009, p: 6).

In contrary, Doreen (2013, P: 46) said that if insurance products which are sold lead to moral hazard, adverse selection and high outstanding premiums, then high claims will have to be financed through other sources of revenue such as investment income so insurance firms tend to invest more if claims are high leading to more income from investment. He found that claim ratio has a positive correlation with return on asset (ROA) and he commented that his finding is also similar with finding of Akotey (2012).

Additionally, a finding by Daniel Mehari and Tilahun (2013), Adam & Buckle (2003), Hrechaniuk et al. (2007), Doumpos et al. (2012), and Pervan et al. (2014) indicated a negative relationship between claim (loss) ratio and insurance profitability. However an opposite finding had been revealed a study by Shami and Ahmed (2008), and Doreen (2013).

So, for this study the author anticipated a negative relationship between claim ratio and profitability of general insurance in Ethiopia.

2.2.5.6. Real GDP:

GDP is one the primary indicators used to gauge the health of a country's economy. It represents the total dollar value of all goods and services produced over a specific time period. Usually, GDP is expressed as a comparison to the previous quarter or year.

Fadzlan and Royfaizal (2008, p: 97) states that GDP is the most commonly used macroeconomic indicator to measure total economic activity within an economy, its growth rate reflects the state of the economic cycle. Measuring GDP is complicated but empirically

at most, it is measured as the ratio of change of the current GDP and previous GDP over the previous GDP.

GDP represents economic production and growth, has a large impact significant change in GDP, whether up or down, usually has a large impact on nearly everyone within that economy. For example, when the economy is healthy, there is typically high profit margin, low unemployment and wage increases as businesses demand labor to meet the growing economy.

A significant change in GDP, whether up or down, usually has a significant effect on the stock market. It's not hard to understand why a bad economy usually means lower profits for companies, which in turn means lower stock prices. Investors really worry about negative GDP growth, which is one of the factors economists use to determine whether an economy is in a recession[9] (www.investopedia.com). There are also empirical evidences that found, real GDP has a positive effect on ROA of insurance firms, such as Doumpos et al. (2012), Cecila Nicoleta (2014), and Doreen Umotho Murungim (2013).

Similarly, a study conducted by Belayneh (2011), Habtamu Negussie (2012), and Habtamu Berhanu (2004) on profitability of private commercial banks and they concluded that real GDP has significantly positive and strong influence on profitability of private commercial banks in Ethiopia. However, Chen-Ying Lee (2014) found a negative correlation between real GDP and ROA. Godfrey (2012 also found a week positive relationship between ROA and quarterly GDP. Similarly, in bank sector Fadzlan and Royfaizal, (2008) found insignificant relationship between profitability and real GDP in Philippines banks.

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[9]*Is significant decline in activity across the economy, lasting longer than a few months. It is visible in industrial production, employment, real income and wholesale-retail trade. The technical indicator of a recession is two consecutive quarters of negative economic growth as measured by a country's gross domestic product (GDP).*
sited @ http://www.investopedia.com/terms/r/recession.asp

Moreover, the study author predicted real GDP has positive and significant impact on profitability of general insurance companies in Ethiopia.

2.2.5.7. Inflation:

Economists and financial analysts recognize several key distinctions in discussing inflation. The most important is that the term refers to the sustained rate of depreciation of the purchasing power of a unit of local currency over time or simply, it is the rate at which the general level of prices for goods and services is rising, and, subsequently, purchasing power is falling.

It is measured on a continuously compounded rate basis (differences in the natural logarithms) or as an annual percentage increase as reported in the Consumer Price Index (CPI).Inflation, to one degree or another, is a fact of life. Consumers, businesses and investors are impacted by any upward trend in prices.

As inflation rises, purchasing power decreases, fixed-asset values are affected, companies adjust their pricing of goods and services, financial markets react and there is an impact on the composition of investment portfolios. Whenever prices start to rise, people often worry about inflation, and with good reason. The real return on an investment is not how many more dollars are in your account, but how much more you can buy with the money you have. So in general it has negative effect on return on investment of any business (www.investopedia.com).

Since inflation is measured by CPI, A high or increasing CPI indicates existence of inflation. Higher prices tend to reduce overall consumer spending which in turn leads to a decrease in GDP while inflation itself is not negative, rapidly increasing rates of inflation signal the possibility of poor macroeconomic health. High rate of inflation negatively effects the real economic growth and thus causes adverse consequences for economic performance at the aggregate level. However, the nature of relationship between inflation and economic growth and the channels through which inflation affects real economic activities is still a debatable issue (Li, 2006, p:1).

Godfrey (2012, p: 26) in his study he said that "there was drop in performance (ROA) of the non-financial institutions decrease in profits of about 5% between 2010 and 2012 but still positive ROA. And perhaps a decrease in profitability was not due to poor management but it was due to inflation".

According to John .A.Tatom (2011, p: 16) Inflation tends to raise investors' required real rate of return on equity and to lower real capital income for tax-related reasons. As a result, there is a strong negative correlation between inflation, real income, and real and nominal stock prices.

In Ethiopia, Belayneh (2011) also found that inflation rate played insignificant role in Ethiopian commercial banks profitability.

There are also empirical evidences that found; inflation has a negative effect on ROA of insurance firms, such as Doreen Umotho Murungim (2013), Brown at al. (2001), Chen-Ying Lee (2014), and Doumpos et al. (2012). However, Godfrey (2012) found a weak positive relationship between ROA and inflation.

So, for my study inflation is expected to have negative and significant impact on profitability of non-life insurance companies, since inflation is likely to raise consumption expenditure of households and consequently reduced savings, and can reduce demand for non-life insurance companies.

2.3. Conceptual framework of the study:

The main objective of this thesis is to investigate the main determinates of profitability of general insurance companies in Ethiopia.

The author explores empirically about the determinants and understands they are mostly classified in to two. Those are internal and external determinants. Similarly, the author explores both firm specific and macroeconomic determinants, since most empirical studies were included both types of determinants on their study.

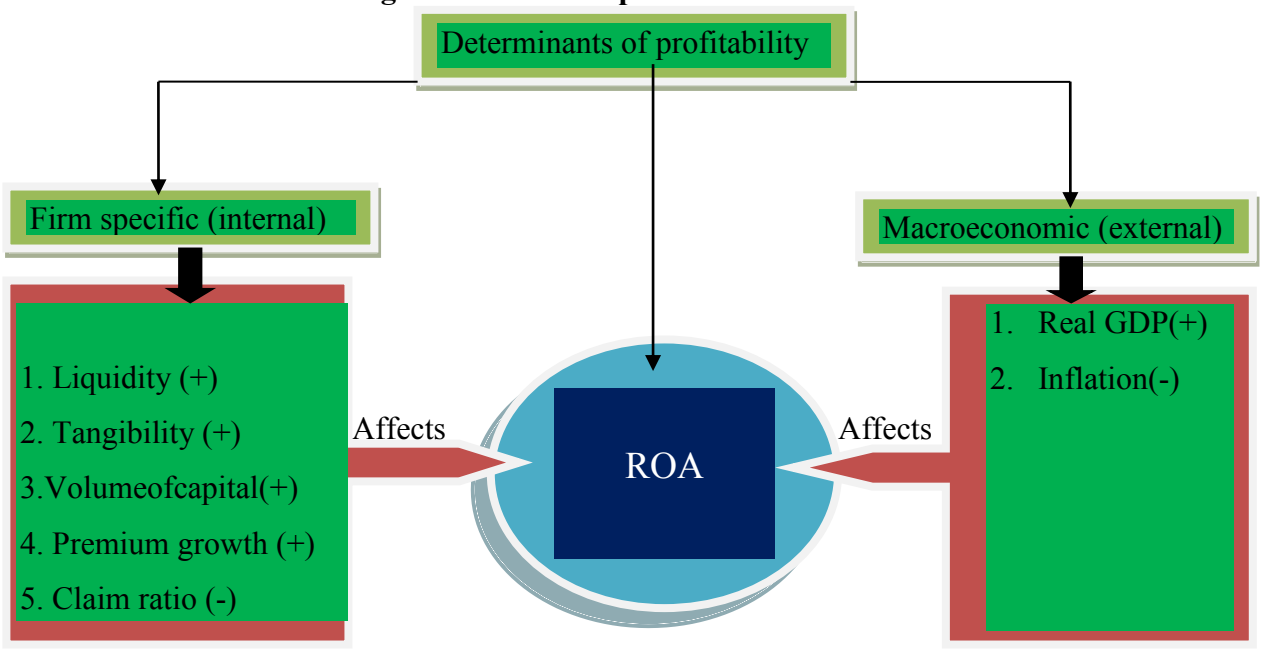
To achieve the proposed objective the researcher chooses five main firm specific variables and two main macroeconomic variables from the extant empirical review by considering the nature of the general insurance companies, and availability of data.

The variables that have been employed in this study as determinants of profitability of general insurance companies were liquidity, tangibility, volume of capital, premium growth, claim/loss/ ratio as firm specific determinants, and real GDP and inflation as macroeconomics or external determinants.

This study was conducted to identify the main determinants of profitability of general insurance companies in Ethiopia by analyzing the secondary data starting from 2005 up to 2014.

In this study both firm specific and macroeconomic determinants are regarded as independent variables, while profitability is the dependent variable which is substituted by return on asset (ROA).This framework shows that the summery of both determinants with their expected effect on profitability (ROA) which was taken from sub section 2.2.4.

Figure 2.3.1: Conceptual framework



Source: Authors' own design

2.4. Conclusion and knowledge gap of literature reviews:

Economists argued that "there have been developed many modern theories of profit, and they generally focus upon the determinants of profit of firms".

However, these theories are defective in one way or the other. The basic defect (criticism) with these theories is that they particularize certain aspects of the function of an entrepreneur or firm to the neglect of others.

Thus, economists end up with the conclusion of "there is no a single theory of profit which gives a correct and comprehensive explanation of the nature and determinant of profit". However, empirically different researchers have been acknowledged to readers as well as to researchers their main or important determinants of profitability in their own study.

Review of literature suggests that most of the studies on firms profitability has been done in the banking sector globally than can been said about the insurance industry (Yuvaraj and Gashaw, 2013). In addition to the above, the determinants of profitability have been

significantly under researched in the insurance sector globally specifically in developing countries (Boadi et al., 2013, p: 45).

Generally in the field of insurance sector, there were studies conducted on firm specific and some on both firm specific and macroeconomic determinants of profitability using almost common variables. However their findings were inconclusive among each study. Meaning some of them found significant impact, others found insignificant between profitability and the variables that was used as firm specific or macroeconomic variable. So there is no consistent finding on the overall determinants of profitability of insurance companies.

In addition to the above generalized idea, according to the knowledge of the author, all these studies conducted in Ethiopia were all most focus on firm-specific determinants such as Gashaw (2012), Daniel and Tilahun (2013), and Yuvaraj and Gashaw (2013) and completely ignored the impact of macroeconomic factors. So, this paper was studied based on empirical ground by filling up the above void in literature and includes macroeconomic factors in addition to firm-specific determinants of profitability of general insurance companies in Ethiopia.

The focus of this research is to address this gap by determining the main determinants of profitability of insurance firms in Ethiopia to help insurance firms increase profitability and investors to predict Ethiopia's insurance firms profitability. This study therefore analyzes the determinants of profitability of non-life insurance companies in Ethiopia.

CHAPTER THREE

3.0. Research Methodology:

This chapter discusses the methodology that was used in gathering data, processing the data and translating the collected data into meaningful information. Similarly, it provides the steps and procedures of the study that were be primarily used to find out the determinant of profitability of general insurance companies in Ethiopia. It encompasses the research method, data type and source, research sampling technique, study population study, sample size, data collection instrument, research design the approaches to the research, data analysis and empirical model which encompasses choice of dependent variable, choice of independent variable, research hypothesis and model specification.

3.1. Research method:

To accomplish the intended main objective as well as to answer the problems that has been discussed in the study's statement of problem, this study used an explanatory research method. This method is quite sure important for this study, since to investigate the determinants of profitability of insurance companies of Ethiopia, it begs to identify the determinants by explaining their impact theoretical as well as empirical literatures. Therefore, by relaying on those literatures, and by considering the nature and the availability of data, the author has chosen five firm specific determinants (i.e. company liquidity, tangibility, volume of capital, premium growth, and claim ratio), and two macroeconomic factors (i.e. real GDP and inflation) to identify and explain their casual relationship with profitability of insurance companies in Ethiopia proxied by ROA.

3.2. Data type and source:

Types and sources of data in research are mainly divided in to two which are primary type and source, and secondary type and source. However, this study employ only secondary data type and source because the research study is more depend on company financial data's and macroeconomic data's.

In this study secondary data type was used mainly from annual audited report of insurance companies (i.e. balance sheet, revenue account and income statement) which were obtained

from national bank of Ethiopia (i.e. Insurance supervision directorate) or from each general insurance companies and macroeconomic data's were obtained from central statistics authority of Ethiopia or National bank of Ethiopia (i.e. Economic Research department) across the period 2005up to 2014. Generally, the financial statements of these companies were obtained from NBE and the data's of those companies are only fully available starting from 2005, that's why the author investigation was started from 2005. Besides, related books, journals articles and various manuals were also used as sources of the data.

3.3. Sampling technique:

There are two main alternative procedures which could be used in the selection of an appropriate sample and these include probability or random sampling and non-random sampling. The probability sampling is a sample procedure which gives each one in the population non-zero probability of selection or it's about giving every element in the population the same opportunity to be selected. On the other hand non-probability sample involves the selection of a sample on the basis of personal judgment of convenience.

With regard of the above explanation, this study was applied Judgmental or Purposive /Non-probability/ sampling technique, because the study do not included all insurance companies to have an equal chance to be selected as a sample, since the study was conducted only on general insurance companies whose establishment year were before 2005. So, that's why author have been used purposive sampling technique by constricting the above personal sampling restriction.

3.4. Population and Sample size:

3.4.1. Population:

The populations employed in this study were all insurance companies who got a license from National Bank of Ethiopia to underwrite general insurance business. In Ethiopia there are seventeen insurance companies (i.e.1 government insurance company and 16 private insurance companies). All insurance companies have been given a general insurance business contract. So the population for this study was all (17) general insurance companies of Ethiopia.

3.4.2. Sample size:

Sample size is a scientifically drawn group that actually possesses the same characteristics as the population. The researcher draw a sample size from those populations of insurance companies whose establishment year were before 2005, and those who have been carried a general insurance business. Therefore, nine insurance firms (general insurance) were drawn as sample size from total seventeen insurance firms. The study excluded the remaining eight insurance firms because they were established after 2005.

3.5. Research approach:

In research, there are three types of research approaches; those are qualitative, quantitative and mixed approaches. The first type involves describing in details specific situation using research tools like interviews, surveys, and Observations. The second focuses on gathering numerical data and generalizing it across groups of people or to explain a particular phenomenon. The third approach is the combination of the first two approaches.

Since the study was conducted only based on audited annual data's of the general insurance companies constituted from 2005-2014 G.C who were drawn as a sample, then this study adapt a quantitative research approach. Because, in my study to comply and achieve the research objective this approach was appropriate.

3.6. Data collection instrument:

Conducting appropriate data gathering instruments helped the researcher to combine the strengths and amend some of the inadequacies of any source of data to minimize risk of irrelevant conclusion. Consistent and reliable research indicates that research conducted by using appropriate data collection instruments and it increases the credibility and value of the research findings (Koul 2006). Accordingly, document review was used for this research to collect the required information, which was relevant for addressing the objectives of the study from manuals and audited financial statements of each insurance company included in the sample size.

3.7. Data analysis:

To collect the quantitative and secondary data in nature that was helped in achieving the proposed objectives and hypothesis, statistical analysis was carried out using the following methods.

First, descriptive statistics of the variables and the different percentiles of the dependent variable (profitability) were prepared by Microsoft Excel and calculate over the sample period. Since, a descriptive statistics method helps the researcher in picturing the existing situation and allows relevant information (Malhotra, 1997).

Second, diagnostic test was tested to identify the model adequacy, statistical good fit and representation of data. The test includes all assumptions. The random effect model was used to test separately using different methods. The first assumption is assumption of constant that is never violated if the regression model has constant term or mean value of errors is zero. The second assumption is hetrocsedacksity and white test was used to test this assumption. The third assumption is multicolinarity and bi-variant correlation was used to test this assumption. The fourth assumption is autocorrelation and it was tested using Durbin Watson (DW). Finally, the fifth assumption is normality and it was tested using Bera-Jarque normality method of test.

Third and fourth, selection of panel model and multiple regression result was carried out, and those OLS was conducted using the statistical package 'EViews7', to select the appropriate panel data model the author was used hausman test at significance level of 1%. Multiple regression was constructed after the selection of appropriate model to test the causal relation between the independent variables and dependent variable and to determine the most significant and influential explanatory variables affecting the profitability of the general insurance companies in Ethiopia.

Finally, hypothesis test was conducted by comparing and contrasting the formulated hypothesis with the random effect regression result and concluding whither those hypothesizes are accepted or rejected.

3.8. Empirical model:

Several important issues need to be dealt with in specifying an empirical model. These include choice of suitable dependent and explanatory variables, measurement of these variables, and model specifications. The remainder of this section discusses these concerns.

3.8.1. Choice of Dependent Variable and its Measurement:

In line with earlier empirical studies that have been investigated the determinants of Insurances' and Banks' profitability, this study was rely on one commonly used measure of performance as well as profitability, which was returned on total assets (ROA). Return on total assets (ROA) is calculated as net profit after tax by total assets. This is probably the most important single ratio in comparing the efficiency and financial performance of insurance companies as it indicates the returns generated from the assets that Insurers owns. The formula for the profitability measure is given as follows:

Profitability (ROA) =Net income/total asset.

3.8.2. Choice of independent variables:

The choice of explanatory variables is based on their empirical relationship with the dependent variable by considering the nature and data availability in the general insurance sector. Generally speaking, the chosen explanatory variables were expected to partly explain the variation of the dependent variable. In this paper, five firm specific variables and two macroeconomic variables affecting the profitability of Ethiopian general insurance companies were accounted. Since I have mentioned their detail definition, their measurement and their expected relationship in chapter two (i.e. section 2.2.4), similar to that their measurements were described as follows;

I. **Liquidity (LQ)**: The Liquidity Ratio measures the firm's ability to use its near cash or "quick" assets to retire its liabilities. Liquidity Ratio = Current Assets / Current Liabilities.

II. **Tangibility (TNG):** It measures the extent to which fixed assets are financed with owners' equity capital. Tangibility of assets in insurance companies in most studies is measured by fixed assets over total assets.

III. **Volume of Capital (VC):** It indicates the ability of insurers to undertake additional business. For this study it is measured as the log of capital/equity/. In this study it is expected that the highest in volume of capital will be the most continued, expanded, profitable and preferable insurance firm.

IV. **Premium Growth (PG**): Proxy for Premium Growth is the percentage increase in Gross Written Premiums (GWP). The equation is expressed as follows: PG = (GWP (t) – GWP (t-1)) / GWP (t-1).

V. **Loss/Claim/ratio (CR):** This variable is measured as the ratio of incurred claims to earned premiums. It is measured as: LS = Net claims incurred / Net earned premiums.

VI. **Real GDP (GDP):** is one the primary indicators used to gauge the health of a country's economy. It represents the total dollar value of all goods and services produced over a specific time period. Usually, GDP measured as change in total economic activity within an economy i.e. Measure of the final output of goods and services.GDP=100%(GDP–GDP(-1))/GDP(-1)

VII. **Inflation(INF):** refers to the sustained rate of depreciation of the purchasing power of a unit of local currency over time or simply, it is the rate at which the general level of prices for goods and services is rising, and, subsequently, purchasing power is falling. Will be measured by the annual percentage changes in the consumer price index (CPI).

INF= 100*(CPI-CPI (-1))/CPI (-1).

3.8.3. Research Hypothesis:

Research hypothesis is the synonymy of research question, in the form of a clear statement of what is intended to be investigated. Whereas, research questions are inquires about the relationship among variables that the investigator seeks to know. It allows to:

- ✓ Identify the research objectives
- ✓ Identify the key abstract concepts involved in the research
- ✓ Identify its relationship to both the problem statement and the literature review (Prasad et al., 2001, p; 8).

Hypothesis is a formal statement that presents the expected relationship between an independent and dependent variable. To eliminate redundancy, any researcher should have to; construct only a hypothesis or research question, not both, if, the research approach of the

study is quantitative approach; unless, it is possible to use both in a study with a mixed approach (Creswell, 1994, p: 12).

Generally, this study construct only hypothesis, in view of the fact that, the study is relaying only on the secondary data's or quantitative data's. There are two types of hypothesis. Those are; Null hypothesis that represents a theory that has been put forward, either because it is believed to be true or because it is to be used as a basis for argument, but has not been proved. It is symbolized by HO or HN. However, Alternative hypothesis is a statement of what a hypothesis test is set up to establish; the opposite of null hypothesis; only reached if HO is rejected. It is denoted by H1 or HA.

There are also two ways of constructing a hypothesis. Those are directional and non-directional hypothesis. Directional hypothesis gives a direction or specific relation between the dependent and independent variables, while, non-directional hypothesis gives no direction about the variables relationship at all.

Therefore, this study employed directional, alternative hypotheses which was formulated based on prior empirical literature, since, those empirical literatures leads the researcher to expect a certain relationship.

For this study the researcher has been constructed seven alternative hypotheses. Those hypotheses were constructed in accordance of the statement of the problems and the objective of the study.

HA1: Liquidity has a significant positive impact on performance of insurance companies in Ethiopia.

HA2: Tangibility has a significant positive impact on profitability of general insurance companies in Ethiopia.

HA3: Volume of capital has a significant positive impact on profitability of general insurance companies.

HA5: Premium growth has a significant positive relationship with profitability of general insurance companies In Ethiopia.

HA5: There is a significant negative relationship between claim ratio and profitability of general insurance companies in Ethiopia.

HA6: Real GDP has a significant positive impact on profitability of general insurance companies in Ethiopia.

HA7: there is a significant negative impact of Inflation on profitability of general insurance companies in Ethiopia.

3.8.4. Model specification:

The nature of data that was proposed in this study enables the researcher to use panel/longitudinal/ data model which is deemed to have advantages over cross section and time series data methodology.

Panel data involves the pooling of observations on a cross-section of units over several time periods. According to Brook (2008) panel data has various advantages and better than using cross sectional and time series data by the following points;

First, it can address a broader range of issues and tackle more complex problems with data than would be possible with pure time-series or pure cross-sectional data alone. Second, it is often of interest to examine how variables, or the relationships between them, change dynamically (over time). Third, by structuring the model in an appropriate way (fixed or random effect), we can remove the impact of certain forms of omitted variables bias in regression results and it can allow controlling for individual unobserved heterogeneity among the cross sections.

Similarly, to decide the appropriate panel data model, which was between fixed effect and random effects regression model, the author employed hausman test at 1% significance level. Moreover, the regression model for this study, as it mostly found in the extant literature was represented by:

$$Y_{it} = \beta_0+\beta_1X_{1it} + \beta_2X_{2it} +\beta_3X_{3it} +---+\beta_kX_{kit}+u_{it}$$

Where:

- The subscript **i** denoting the cross-sectional dimension and **t** representing the time series dimension.

- The left-hand variable $\mathbf{Y_{it}}$ represents the dependent variable in the model, which is the firm's profitability proxied by ROA;
- $\mathbf{X_{it}}$ contains the set of explanatory variables in the estimation model,
- $\boldsymbol{\beta_0}$ is the constant,
- $\boldsymbol{\beta}$ represents the coefficients and
- $\mathbf{u_{it}}$ is the error term.

According to William G. et al (2010) model building involves specifying relationships between two or more variable; perhaps extending to the development of descriptive or predictive equations. In order to achieve the objectives of this research study, the researcher developed a model using Return on Asset (ROA) against a set of explanatory variables that the researcher believe can explain the profit levels of general insurance firms in Ethiopia.

Therefore, the model for the empirical investigation was built in line with the hypotheses of the study as shown below.

$$\mathbf{ROA}=\beta_0+\beta_1(LQ_{it})+\beta_2(TNG_{it})+\beta_3(VC_{it})+\beta_4(PG_{it})-\beta_5(CR_{it})+\beta_6(GDP_{it})-\beta_7(IF_{it})+u_{it}$$

Where:

- ROA = Return on total assets;
- LQ = Liquidity;
- TNG=Tangibility
- VC= volume of capital
- PG = Premium Growth;
- CR = Claim ratio;
- GDP=Real GDP;
- IF=Inflation;
- u_{it}=is the error component for company i at time t;
- β o= Constant; β1…7 are parameters to be estimated;
- i= Insurance company **i** = 1…9; and t = the index of time periods and **t** = 1…....10.

With the above single multiple regression equation, the impact of each of the explanatory variables on ROA estimate were assessed in terms of the statistical significance level using 1%, and 5% test size.

CHAPTER FOUR

4. Data Analysis and Interpretation:

This chapter presents the data analysis, findings, interpretations and presentation of the study based on the research objective which was to determine the effect of main firm specific and macroeconomic variables on profitability of general insurance companies in Ethiopia. The analysis is based on data collected from 2005 to 2014 on an annual basis. The results are presented in the form of summary tables. The data for this study was obtained from Central Bank of Ethiopia insurance supervision directorate and economic research directorate.

To empirically investigate on the determinants of profitability and achieve the objectives stated in the first chapter, all insurance companies their year of establishments was before 2005G.Cwere included in this study. Based on the stated year of establishment, nine Ethiopian general insurance companies' financial data over the period of 2005-2014 was collected. Those selected nine general Ethiopian insurance companies are Ethiopia Insurance Corporation, Awash, Africa, Nice, Nile, Nyala, Unic, Global, and Nib insurance companies. Therefore, ninety (9*10) observations were used to empirically analyze the profitability determinants in general insurance industry within the Ethiopian context.

To investigate and identify the main determinants of profitability, which is proxied by ROA, of general insurance companies in Ethiopia, the author use five firm specific determinants and two macroeconomic determinants as independent variables. Those are;

- Liquidity(LQ);
- Tangibility(TNG)
- Volume of capital(VC)
- Premium growth(PG);
- Claim ratio(CR);
- Real GDP(GDP), and
- Inflation(INF)

Generally, to accomplish the study objective by analyzing the collected panel data from nine general insurance companies for ten consecutive years using Eviws 7, the author split this

chapter in to five sub sections. Those are descriptive statistics analysis, diagnostic assumption tests, selection of panel data model, multiple regression result, and hypothesis testing.

4.1. Descriptive Statistics of Variables:

The descriptive statistics of the sample firms includes the number of observations; mean distribution, standard deviation, minimum and maximum values of profitability (ROA) and eight explanatory variables over 10 sequential years as presented in Table2.

Table 2: Descriptive statistics of variables;

	ROA	LQ	TNG	VC	PG	CR	GDP	INF
Mean	0.07	1.03	0.32	11.05	0.25	0.64	0.11	0.18
Maximum	0.17	2.31	0.55	12.96	1.49	0.95	0.12	0.55
Minimum	-0.05	0.54	0.16	8.91	-0.10	0.06	0.10	0.03
Std. Dev.	0.04	0.25	0.09	0.88	0.23	0.16	0.01	0.16
Observations	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00

Source: EVies 7 output

Table 3: Companies' performance from the samples means of each variables;

Variables	Samples mean	Companies above The sample mean		Companies bellow The sample mean	
		In number	In %	In number	In %
ROA	0.07	5	55.6	4	44.4
LQ	1.03	4	44.4	5	55.6
TNG	0.32	3	33.3	6	66.7
VC	11.05	6	66.7	3	33.3
PG	0.25	4	44.4	5	55.6
CR	0.64	6	66.7	3	33.3

Source: Descriptive statistics result and appendix 8B.

NB. Since GDP and inflation are the same to all sampled companies it does not necessary to calculate their average.

4.1.1. Interpretation of Descriptive results :

This sub section encompasses interpretation of variables employed in this study by considering the descriptive statistics result in table 2 and table 3.

In general, the highly deviated in values of independent variables among the sampled general insurance companies over the study years will be expected to have a significant impact on ROA, which is the author want to see in the regression result.

However, for this study like the descriptive statistics, the deviation values between variables is measured as no deviation (Low), if the values of deviations of variables among the sampled companies lied between zero and 5%, Moderate it the deviation values lied between 5% and variables mean value, and High if the deviation values of variables lied above the mean values as well as near to 1.

Return on Asset (ROA):

Profitability is defined as the level of returns from profit. In this study the level of profitability is defined in terms of Return on Assets (ROA) of insurance firms in Ethiopia. The Return on Assets is used as dependent variable against a set of independent variables, and it is measured by the ratio of net income after tax to total asset. Return on Assets measures the returns in the total assets of general insurance firms in Ethiopia. It is expected that the higher the firms return on assets the better the effect will be on insurance firms' profitability.

According to table 2, the maximum, mean, and minimum value of ROA from the general insurance firms is 0.17, 0.07, and -0.05. This means some of those general insurance firms are generated an income/profit/ (ROA) at maximum of 0.17cents per unit of total asset, some of those firms are lose at minimum 0.05cents of loss per unit of total asset and some of them are generated a profit at average of 0.07cents per their total asset. According to table 3, out of nine samples selected general insurance companies 67%or 6 of them have a value of ROA above the average, while 33% or 3 of them have a value of ROA bellow the samples average value of ROA. So, one can understand that the first 6 companies have been performed well than those of three companies. Companies who got a value of ROA below the average

samples value of ROA should have increase their income through converting their non income earned asset to income earned asset underwriting a large volume of premium to have positive underwriting result by taking care of applicants towards transferring the material fact of the insurance product that will be proposed to insure, applying a risk management guidelines as well as programs to identify the risk area and preparing remedies to solve the problem considering the country rules and regulations. However, the deviation value of ROA across those 9 selected general insurance firms within the study years is around 4%. So, this implies that there is low deviation in value of ROA across each selected general insurance firms of Ethiopia within 10 years from the sample selected general insurance companies mean value of ROA (i.e. 0.07) over the whole10 years.

Liquidity (LQ):

In this study Liquidity is one explanatory variable which measures the firm's ability to use its near cash or "quick" assets to retire its liabilities. In this case Liquidity is measured as Ratio of Current Assets to Current Liabilities. The highest the ratio is the best the ability of company's liquidity management.

According to table 2, the maximum, minimum, and average value of liquidity is 2.31, 0.54, and 1.3 respectively. This implies that, the selected general insurance companies have birr 2.31 current asset at maximum, birr 0.54 current asset at minimum, and birr 1.3 current asset at average for every birr in current liability. According to table 3, from the samples that have been included in the study 11% of them got exactly and above (≥) the samples average value of liquidity ratio over 10 sequential years, while the remaining 89% of them have been got below the samples average value of liquidity (i.e. 1.31). Similarly, the deviation value in liquidity across the selected insurance companies of Ethiopia is 0.25, which indicates high difference in value of liquidity ratio within each company from the samples mean value of LQ. Therefore, there exists very high variation among the values of liquidity across the sample insurance companies included in this study.

Tangibility (TNG):

Tangibility is another firm specific explanatory variable employed in this study. It measures the share of Fixed Assets from Total Assets. TA = Fixed Assets / Total Assets.

According to table 2, the maximum, minimum, and mean values of tangibility across the selected sample of general insurance companies of Ethiopia are 0.55, 0.16, and 0.32 respectively. This implies that the maximum, average and minimum values of tangibility per unit of total asset are 0.55cents, 0.32cents and 0.16 cents. Considering the samples mean value as standard for each sample selected general insurance companies, 33% of them have got exactly and above (≥) their average value of TNG over 10 years, while the remaining 67% of them have got bellow their mean value of TNG (i.e. 0.32).Similarly, the variation value of tangibility across the selected sample size is 0.09, which shows a moderate deviation in value of TNG within each company across the study years from the samples mean value. Therefore, there is moderate deviation in value of tangibility across the selected sample of general insurance companies of Ethiopia.

Volume of Capital (VC):

VC is one of the independent variable in this study. It indicates the ability of insurers to undertake additional business. For this study it is measured as the log of capital/equity/. In this study it is expected that the highest in volume of capital will be the most continued, expanded, profitable and preferable insurance firm.

According to table 2, the maximum, minimum and average value of VC across the selected sample is 12.96, 8.91, and 11.05 respectively. Taking into account the samples mean value as standard for each sample selected general insurance companies,6 companies have got a value of VC above the samples average value of VC (see table 3). Hence, based on the idea that was expected by the author, the first 6 companies have good performance than those of 3 companies.

Similarly, From this table someone can understand that there is a high difference in volume of capital across the sample selected general insurance firms of Ethiopia, since the deviation

value of VC among the sampled insurance firms is 0.88 which shows there is high difference in value VC within each sample selected insurance from the samples mean value of VC (i.e. 11.05).

Premium Growth (PG):

In this study PG is an explanatory, which shows the growth of current gross written premium from previous year gross written premium in any single insurance firm as well as insurance sector. For my case it is measured by percentage change in gross written premium.

It is expected that high growth in volume of gross written premium will be high in profit of an insurance company. By referring to table 2, the PG value of the samples insurance companies included in this study at maximum, minimum, and at average is 1.49, -0.10, and 0.25 respectively. This means some insurance firms have been registered 149% at maximum, and 25% at average growth in volume of gross written premium in current year than the previous year. However, some of the sampled insurance firms registered a negative 10% minimum growth of gross written premium in current year than the previous year gross premium.

Considering the samples average value as comparison base, out of the nine samples selected general insurance companies 4of them have got value of PG exactly and above (≥) their average value of 0.25, while the remaining 5of them have got value of PG bellow (<) their average value. Thus, based on the above ground truth, the first 4 companies are good performer unlike those 5 companies, since they have PG value of above the samples mean value of PG.

Extra to the above, the deviation value of PG among the sampled general insurance firms in Ethiopia over 10 years is 0.23. Which means the premium growth value in each insurance company is very far from the samples mean value of PG (i.e. 0.25). Therefore, there is high deviation in value of PG among the sample selected general insurance companies of Ethiopia within ten sequential years from the mean value.

Claim Ratio (CR):

CR is one explanatory variable in this study. This ratio indicates how much percentage of net claims is incurred from the firm's or sectors net earned premium. Form insurers point of view low ratio is preferable, since low ratio means low damage/loss/ in any subject matter of general insurance product and low claim turnover. Therefore, it is expected that the more having low ratio is the more generating a good profit.

By looking towards table 2, the value of claim ratio of the selected general insurance companies at maximum, minimum, and average is 0.96, 0.06, and 0.65 respectively. This means that the net claim incurred across the sample of general insurance firms included in this study is at maximum 96%, at minimum 6%, and at average 65% of net premium earned. In view of the samples average value as comparison base, out of the nine sample selected general insurance companies 6 of them have got value of CR exactly and above or ≥ the samples average value of CR (i.e. 0.65), on the other hand 3of them have got a value of claim ratio bellow the samples average claim ratio value. Then, from the ground truth one can conclude that those 3 companies have a good performance in handling claim, unlike the remaining 6 companies.

Similarly, the difference in value of CR across the selected samples of general insurance companies is 0.16, which shows the values of CR of each sample selected insurance companies are moderately far from the samples mean value of claim ratio. Therefore, there is moderate deviation in value of claim ratio among the study sample size of nine general insurance companies in Ethiopia from their mean value.

Real GDP (GDP):

GDP is one of the macroeconomic explanatory variables included in this thesis.

GDP represents the total dollar value of all goods and services produced over a specific time period. It also shows the health of one country economy. In this study it is measured by a percentage change in Real GDP of the country. In this study it is expected that high percentage change in Real GDP is preferable because it indicates appreciating the country, the sector, as well as the firm's product value in dollar.

According to table 2, the maximum, minimum, and average values of GDP across those study periods are 0.12, 0.10, and 0.11 respectively. This means that the dollar value of all goods and services produced over the study year in Ethiopia was increased 12%, 11%, and 10% at maximum, at average and at minimum. However, the deviation value of GDP is. 1% which implies there is no difference in value of real GDP growth across the study years. This implies that the growths in real GDP across the study years are almost the same across the study years.

Inflation (INF):

Inflation is the second macroeconomic variable used in this study. Inflation is the rate at which the general level of prices for goods and services is rising and as a result the purchasing power of money is decreased. Logically it is the opposite of GDP. In this study inflation was measured by the annual percentage changes in the consumer price index (CPI). In my study it is expected that high percentage change will cause depreciating the country's money purchasing power and it is the same to the sectors or companies money in purchasing a specific national as well as international product.

According to table 2, the maximum, minimum, and mean value of inflation (CPI) with in the country across the study years was 0.55, 0.03, and 0.18 respectively. This implies the general level of prices for goods and services in the country across the study year registers a growth of 55% at maximum, 3% at minimum, and 18% at average.

Similarly, the deviation value of inflation is 16%, which indicates that the price of goods and services within each year are moderately far from the mean value of ten consecutive years. Therefore, there is a moderate deviation in value of inflation across each year from the average value of inflation over ten years. However, the value of inflation across those samples selected insurance companies is the same and there is no deviation in value of inflation.

4.2. Diagnostic Testing:

Before running a multiple regression result and concluding the result, it is mandatory to test the econometric assumption in order to know the proposed model validity and its statistical good fit. There are 5 critical assumptions relating to the classical linear regression model (CLRM). These assumptions are required to show that the estimation technique, Ordinary Least Squares (OLS), has a number of desirable properties, and also so that the hypothesis tests regarding the coefficient estimates could be validly conducted (Chris Brook, 2008).Considering the assumptions tested bellow, all assumptions are met (valid). Hence, the OLS model of this study is adequate, statistical good fit, and data's are represented correctly.

4.2.1. Constant Assumption 1: $E(ut) = 0$

The first assumption required is that the average value of the errors is zero. In fact, if a constant term is included in the regression equation, this assumption will never be violated (brook, 2008). In chapter three the researcher expected a constant term in his regression model. Similarly, according to the random effect result this study has a constant term (i.e. 0.011528). Which means the mean value of the errors is zero, and the estimates of slope coefficients are not biased. Therefore, this assumption is not violated.

4.2.2. Heteroscedastic Assumption : $var(ut) = \sigma 2 < \infty$

It has been assumed thus far that the variance of the errors is constant; this is known as the assumption of homoscedasticity. If the errors do not have a constant variance, they are said to be heteroscedastic. The best technique to test this assumption is using white test. Therefore, the White correction technique to the standard errors was applied to handle heteroscedasticity problem. To test heteroscedastic assumption white test considers three important factors that needs to be tested from the white heteroscedastic test result in order to know wither this assumption has a problem or not. Those are probability of f-statistics, TR^2, and Scaled explained SS. If the probability of f-statistics, TR^2, and Scaled explained SS of the heteroscedastic white test result is in excess (insignificant) of 5% then there is no hetroscedastic problem. However, if one of those three is fail then there is existence of hetroscedastic problem (Chris Brook, 2008).

According to the hetroscedastic white test result which is presented on table 4 below shows that the probability of f-statistics, TR^2, and Scaled explained SS is 35.91%, 34.61%, and 43.77% respectively. Hence, the probability of f-statistics, TR^2, and Scaled explained SS is in excess of 5% and then there is no problem of hetroscedastic. This implies that the assumption of homoscedasticity or errors have a constant variance.

Therefore, there is no ambiguity in this assumption, since errors have constant variance, which means Random effect estimators give unbiased, consistent coefficient estimates, and they are Blue(i.e., they have the minimum variance among the class of unbiased estimators.

Table 4: Heteroskedasticity Test: White;

Heteroskedasticity Test: White			
F-statistic	1.11927	Prob. F(7,82)	0.3591
Observation*R-squared	7.849288	Prob. Chi Square(7)	0.3461
Scaled explained SS	6.915328	Prob. Chi Square(7)	0.4377

Source: EVies 7 white test out put

4.2.3 Autocorrelation Assumption= cov(*ui , uj*) = 0 for *i = j*

This assumption implies disturbance term is the covariance between the error terms over time (or cross-sectional, for that type of data) is zero (brooks, 2008).

In other words, it is assumed that the 'errors are uncorrelated with one another. If the errors are not uncorrelated with one another, it would be stated that they are 'auto correlated' or that they are 'serially correlated'.

Muhammed Usman (2014) said that autocorrelation problem was mitigated if the data is panel data. Therefore, test for autocorrelation (errors associated with one observation are correlated with the error of any other observation) were not made since panel data analysis technique mitigates the autocorrelation problem. However, to be statistically sure the author used Durbin Watson stat to test autocorrelation problem, since Durbin Watson (DW) is a test for first order autocorrelation.

The Durbin-Watson Test for serial correlation assumes that errors are stationary and normally distributed with mean zero. It tests the null hypothesis HO that the errors are uncorrelated against the alternative hypothesis H1 that is errors are correlated.

If this null hypothesis was rejected, it would be concluded that there was evidence of a relationship between successive residuals, which implies the least-squares estimates sub-optimal, standard confidence intervals for betas are incorrect, and the error term is expectable. In fact, test statistic can be calculated using quantities that are already available after the random effect regression has been run.

To get a conclusion from the test, DW test compares the displayed statistic with lower and upper bounds in a table. Model assumption of DW is presented bellow in figure 4.2. 3.

Figure 4.2.3: Model Assumption of DW

Reject HO: positive autocorrelation	Inclusive: neither rejected nor accepted	Don't reject HO: no evidence of autocorrelation	Inclusive: neither rejected nor accepted	Reject HO: negative autocorrelation
0	DL	DU	**2** 4-DU	4-DL 4
0	(1.36)	(1.687)	**1.86** (2.313)	(2.64) 4

Where: DL= Lower Bound and DU=Upper bound

Considering the random effect regression result and Durbin-Watson 1% Significance Table at k'=7 (i.e. number of independent variables) and at n=90 (i.e. number of observation); DW is 1.85636(see appendix 2), DL is 1.360, DU is 1.687, 4-DU is 2.313, and 4-DL is 2.64.Hence, the above figure shows that the DW is between DU and 4-DU, which implies do not reject HO since there is no evidence of autocorrelation and errors are independent of each other.

Thus, this assumption is valid and that means the mean squared error (MSE) tend to correctly estimate the population error variance and the ordinary least squares (OLS) standard errors for the regression coefficients were estimated truly and correctly.

4.2.4. Multicollinarity Assumption:

Multicollinearity in regression is a condition that occurs when some predictor variables in the model are correlated with other predictor variables. Severe multicollinearity is problematic because it can increase the variance of the regression coefficients, making them unstable (Minitab.com).

One obstacle that presents difficulty in rendering analysis is the existence of multicollinearity. The standard statistical method for testing data for multicollinearity is analyzing the control variables` correlation coefficients (Muhammed Usman, 2014). Similarly, to measure multicollinearity, you can examine the correlation structure of the predictor variables and the variance inflation factors (VIF) (Minitab.com). Therefore, to test this multicolinarity problem the author used bi-variant correlations. According to Malhotra (2007) suggestion in order to find out the multicollinearity problem, the bi-variant correlations among the independent variables should be examined and the existence of correlation of about 0.75 or larger indicates a problem of multicollinearity.

According to the correlation matrix in table 5 below, the maximum correlation coefficient is 54%, which is the correlation between ROA and volume of capital, and liquidity and tangibility, which means all correlation values are less than 0.75. This implies that the OLS estimators are consistent and unbiased in the presence of stochastic regressors and they are not correlated with the error term of the estimated equation; they are interpreted reliably. As a result there is no multicollinearity problem in the model.

4.2.4.1. Bi-Variant Correlations Test:

The correlation coefficient represents the linear relationship between two variables. The most widely-used type of correlation coefficient is Pearson r, also called linear or product-moment correlation.

To find the association of the variables or determinants (magnitude and direction) with profitability (ROA) as well as with each independent variables Pearson product moment of correlation coefficient was used. Besides, correlation coefficient helps us to detect the

strength of their relationship. As it is illustrated from simple bi-variant correlation between variables, the result of the correlation shows positive as well as negative relation among themselves.

According to table 5 shown below, the first highly and positively associated independent variable with profitability is VC at correlation coefficient of 0.54, while GDP is the second negatively associated variable at correlation coefficient of -0.48 followed by claim ratio at correlation coefficient of -0.35.However, the highest correlation coefficient between independent variables is correlation of volume of capital (VC) and liquidity (LQ) that is 0.54.

Table 5: Bi-Variant Correlations

	ROA	LQ	TNG	VC	PG	CR	GDP	INF
ROA	100%	5%	5%	54%	0%	-35%	-48%	-10%
LQ		100%	54%	-9%	10%	-49%	24%	-14%
TNG			100%	-37%	4%	-39%	28%	-9%
VC				100%	-16%	-4%	-41%	-10%
PG					100%	6%	33%	16%
CR						100%	11%	13%
GDP							100%	19%
INF								100%

Source: EVies 7

4.2.5. Normality Assumption Test:

Recall that the normality assumption ($u_t \sim N(0, \sigma^2)$) is required in order to conduct single or joint hypothesis tests about the model parameter.

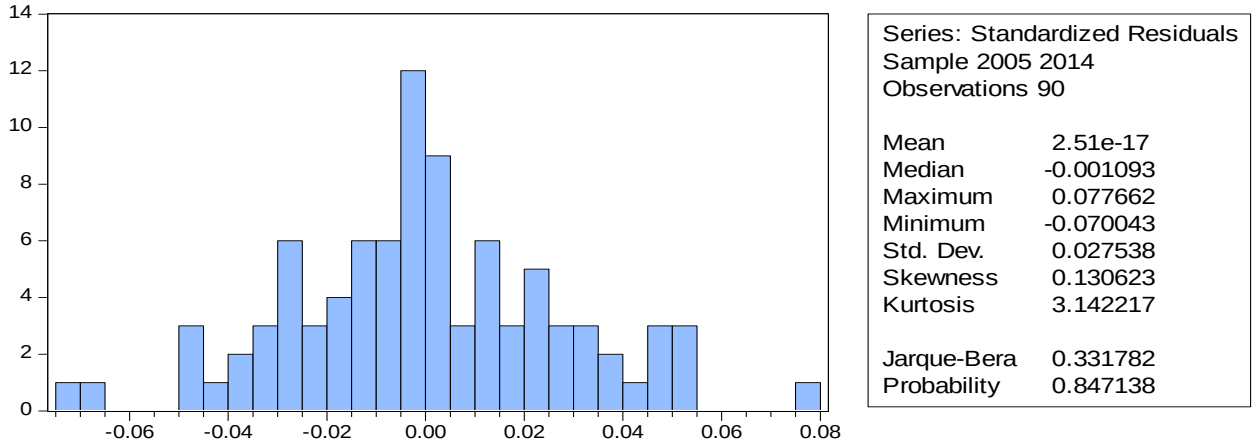
One of the most commonly applied tests for normality is the Bera-Jarque (BJ) test. BJ uses the property of a normally distributed random variable that the entire distribution is characterized by the first two moments the mean and the variance. The standardized third and fourth moments of a distribution are known as its skewness and kurtosis. Skewness measures

the extent to which a distribution is not symmetric about its mean value and kurtosis measures how flat the tails of the distribution are.

A normal distribution is not skewed and is defined to have a coefficient of kurtosis of three. BJ formalizes this by testing the residuals for normality and testing whether the coefficient of skewness and kurtosis are zero and three respectively. The Bera-Jarque probability statistics is also expected not to be significant @ significance level of 5% (brooks, 2008).

Therefore, the normality tests for this study (ROA as dependent variable) as shown in figure 4.2. 5 the kurtosis is close to 3(I.e. 3.14), and the BJ statistic had a p-value of 0.847, implying that the residuals are normally distributed. As a result this assumption is valid or unproblematic.

Figure 4.2.5: Normality Test



Source: EVies 7 output

4.3. Selection of panel data model:

This section represents econometrics model, and model specification.

4.3.1. Econometrics panel data model:

The nature of data that was proposed in this study enables the researcher to use panel/longitudinal/ data model which is deemed to have advantages over cross section and time series data methodology. According to Mohammed, (2007) the panel regression equation varies from a regular time-series or cross-section regression by the double subscript

attached to each variable. The model empirically tested for the dependent variable (ROA) was displayed as follows: **ROA**=$\beta_0+\beta_1(LQ_{it})+\beta_2(TNG_{it})+\beta_{3(}VC_{it})+\beta_{4(}PG_{it})-\beta_5(CR_{it})+\beta_7(GDP_{it})-\beta_8(IF_{it})+u_{it}$

4.3.2. Specification of model:

One of the most crucial questions in panel data modeling concerns the choice between fixed and random effect panel data model. To decide which model is most appropriate, many economists and financial analysts use the following criterion. If the individual-specific dependent unobserved effect (ui) is correlated with one or more of other independent variables, then the appropriate model is the fixed-effect model. If the individual-specific dependent unobserved effect (*ui*) are not correlated with one or more of the independent variables, and if they can be viewed as outcome of a random variable, then the correct model is the random-effect model (Muhammed Usman, 2014).

In this paper, to verify the reliability and functionality of the model and to measure the relationship between a dependent variable and one or more independent variables Hausman specification testing techniques have been devised to test and choose the appropriate regression model.

HO: Appropriate estimation model is Random effect, if P> chi^2 is insignificant at 1% significant level.

HA: Appropriate estimation model is fixed effect, if likelihood ratio of statistic and degree of freedom probability is significant at 1% significance level.

To help in choice of the appropriate model for the study the following tables have been prepared.

Table 6: Random Effect Test

Correlated random effects-hausman test			
Equation: Untitled			
Test cross-section random effect:			
Test summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	2.42312	7	0.9328

Source: Hausman test output of EViews 7

Table 7: Fixed Effect Likelihood Ratio Test

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.117082	(8,74)	0.3619
Cross-section Chi-square	10.26109	8	0.2472

Source: Hausman test output of EViews 7

As shown above in table 6, random effect Hausman test provide statistical evidence of P-value of 93.28%, which means the random-effect estimators are insignificant @ significant level of 1%. This implies the Null hypothesis (HO) has been accepted. Similarly, as shown above in table 7, fixed effect likelihood ratio test also provide an empirical evidence of P-value of 36% and 25% for cross-section F and cross-section Chi-square respectively. Hence, this result is insignificant at 1% test size the alternative hypothesis (HA) is rejected.

Therefore, the random-effect model is the appropriate estimation model for this study.

4.4. Multiple regression result:

This section presents a discussion of random effect results of inferential statistics. The researcher conducted a multiple regression analysis so as to investigate the determinants of profitability of general insurance companies in Ethiopia.

As stated above, the model estimated is a combination of both internal variables (LQ, TNG, PG, VC, and CR) and external variables (GDP, and INF).

In order to know the effect of those independent variables on profitability, the author have been employed a random effect model result using the statistical package of EViews 7. The Findings are presented in the following table.

Table 8: Results of the estimation model for measuring the profitability

Predictors	Beta Coefficients	Standard errors	T-statistics	Probability
C	0.011528	0.090902	0.126817	0.8994
LQ	-0.015943	0.016708	-0.954219	0.3428
TNG	0.153485	0.052933	2.899595	0.0048*
VC	0.025150	0.004822	5.216213	0.0000*
PG	0.038091	0.014453	2.635604	0.0100*
CR	-0.056532	0.023699	-2.385464	0.0194**
GDP	-2.035889	0.509939	-3.992415	0.0001*
INF	0.008555	0.020074	0.426174	0.6711
R^2=0.531822 Adjusted R^2=0.491856 Durbin Watson=1.856360				

- Source: EViews 7 Random effect regression output
- Dependent variable: ROA
- N.B. *Means Significant @ 1% which covers 0% up to 1%, and ** means significant @ 5%, which covers from 1.1% up to 5%.

Table 8 shows that the value of R^2 is 0.53 indicating that the profitability of general insurance companies in Ethiopia depends almost 53% of the independent variables namely, liquidity (LQ), Tangibility (TNG), Premium Growth(PG), Volume of capital(VC), Claim ratio(CR), Real GDP(GDP), and inflation(INF).This implies that the explanatory power of the model which was made of five firm specific variables and two macroeconomic variables on profitability of general insurance companies was 53%, while the remaining 47% were explained by other variables. Therefore, since the explanatory power of the model was above the finding of previous authors in Ethiopia by the same sector and title like Abate Gashaw (2012) who found R^2 of 47.8%, then it is good fit statistical model.

As can be observed from regression results on table 8, with the exception of liquidity and inflation other explanatory variables namely Tangibility (TNG), Premium Growth (PG), Volume of capital (VC), Claim ratio (CR), and Real GDP (GDP) were found to be

statistically significant in affecting profitability of general insurance companies in Ethiopia, holding other things constant. The regression result shows tangibility, volume of capital, and premium growth have a significant positive relationship with general insurance companies' profitability, while claim ratio and real GDP have a significant negative relationship with ROA. However, Liquidity and inflation have negative and positive relationship respectively with general insurance companies' profitability but statistically insignificant.

Therefore, the main important determinants of profitability of general insurance companies are tangibility, volume of capital, premium growth, claim ratio and real GDP.
From Table 8 of Random effect regression result, the regression equation can be developed as follows:

$$\textbf{ROA}=0.011528-0.015943(LQ_{it})+0.153485(TNG_{it})+0.025150(VC_{it})+0.038091(PG_{it})-0.056532(CR_{it})-2.035889(GDP_{it})+0.008555(IF_{it})+u_{it}$$

4.4.1. Interpretation of regression results based on random effect panel:

- According to the regression result liquidity has a negative relationship with profitability of general insurance companies of Ethiopia and has a beta coefficient of -0.016 approximately. However, it is not significant to influence insurance companies' profitability. Therefore, liquidity has no significant impact on general insurance companies' profitability in Ethiopia.

- The Beta coefficient (i.e. 0.153485) associated with tangibility from the random regression result reveals that a significant positive relationship with profitability of general insurance companies. Regression coefficient of tangibility at 0.15 implies that when TNG increases by 1% then the ROA will increase by 1.5%.Which means a company with high tangible asset is more profitable than a company with low tangibility. A significant positive relationship between volume of capital and profitability was observed in the regression result. The beta coefficient of volume of capital is 0.025 which implies a unit increases in VC will lead to increase insurance profitability by 2.5%.Thismeans a company with large volume of capital is more profitable than accompany with small volume of capital.

- The regression result also shows that the beta coefficient (i.e. 0.038) associated with premium growth tells a significant positive relationship with general insurance companies profitability. The regression coefficient of PG implies that a unit increases in PG will lead to increase profitability of general insurance by 3.8%. This indicates that company with high premium growth is more profitable than a company with low premium growth.
- Similarly, regression result also shows claim ratio has a significant negative relationship with profitability of general insurance companies in Ethiopia. The beta coefficient of CR is

  -0.0565, which implies that a unit increase in CR will lead to depreciate profitability of general insurance companies in Ethiopia by 5.65%. This means that a company with low claim ratio has a good profit than a company with high claim ratio.

- According to the regression result GDP has a significantly negative relationship with general insurance companies' profitability in Ethiopia. The beta coefficient of GDP is -2.04; this implies that a unit increase in GDP will lead 2.04 cents decrement in profitability of general insurance companies. To conclude with this result it is very difficult considering the truth that have been seen in the country which is a key for development of all sectors, however, the result implies that when growth of the country real GDP is high , insurance companies will become less profitable than at a time the country real GDP is low. This is may be due to increase in automobile demand by country citizens, which means in logic whenever the country economy is grow income of any person will increase; as a result its demand towards luxury goods also increase. Similarly, the economy of Ethiopia has been increased from time to time as well as the number of automobiles (motors), since in Ethiopia motor insurance is the major source of insurance sector premium(i.e. around 50% of the sector total gross premium is from motor insurance). Hence, the country citizens' have increased their demand towards motors as their income is increased hand in hand with the country economy. Therefore, as an obligation all motors must be insured, as a result the risk exposure as well as potential risks or claims of insurance companies can also increase. That's why GDP has a negative impact on profitability of insurance companies.

- Based on the regression result inflation has a positive but insignificant relationship with profitability of general insurance companies. Hence, inflation has no significant impact on profitability, even if it has a positive beta coefficient (i.e. 0.0085).

4.5. Hypothesis testing:

This section summarizes the expected relationship and the actual relationship of the seven independent variables namely , liquidity (LQ), Tangibility (TNG), Premium Growth (PG), Volume of capital (VC), Claim ratio(CR), Real GDP (GDP), and inflation (INF) with profitability (ROA) of general insurance companies of Ethiopia during the study period of 2005-2014G.C.

4.5.1. Liquidity (LQ):

The first hypothesis was formulated to evaluate the relationship of liquidity and ROA on the ground that there is significant positive relationship between liquidity and profitability of general insurance companies of Ethiopia. The regression results concerning liquidity show that there is negative and insignificant relationship between liquidity and profitability of general insurance companies in Ethiopia, since the regression coefficient is -0.16, and p-value of 0.34.

Hence, the result is inconsistent with the hypothesis of the study HA_1 is rejected. Likewise, the statistical result revealed weak negative relationship between the variables and it can be concluded that liquidity did not strongly explained the profitability of general insurance companies in Ethiopia; as a result it has no significant impact on ROA of general insurance companies in Ethiopia.

This study regression result is also consistent with the study finding by Daniel Mehari and Tilahun (2013), Bilal Javaria et al. (2013), Adams and Buckle (2000), and Abdelkader Derbali (2014). However, it is inconsistent with the finding by B.Charumathi (2012), Brown at al. (2001), Yassin and Ahmed (2012), and Doumpos et al. (2012).

4.5.2. Tangibility (TNG):

The second hypothesis predicted that there is a significant positive relationship between tangibility and general insurance companies' profitability in Ethiopia. The regression result also shows that tangibility has a significant positive relationship with profitability of general insurance companies, since its beta coefficient and probability is 0.15 and 0.48%. Hence, the hypothesis is consistent with the regression result, HA2 is accepted.

The result implies that the highest the level of fixed assets formation, the larger the insurance company is or a company with high fixed asset is more profitable than company with low fixed asset. The result is consistent with findings studied in Ethiopia by Daniel and Tilahun (2013). However, the regression result is inconsistent with findings by Naveed Ahmed et al. (2011), Abdelkader Derbali (2014), Yuvaraj and Abate Gashaw (2013) Abate Gashaw Ayele (2012). They all concluded that there is no significant relationship between tangibility and profitability (ROA) of insurance companies,

4.5.3. Volume of Capital (VC):

The third formulated hypothesis was "there is significant relationship between volume of capital and profitability of general insurance companies of Ethiopia". In consistent to the hypothesis, the regression result also shows that volume of capital has a significant positive relationship with profitability of general insurance companies in Ethiopia, since the coefficient and probability of VC is 0.025 and 0%, which implies that volume of capital is the main and the beast determinant of insurance companies profitability (ROA). Hence, the hypothesis is similar with the regression result and then HA_3 is accepted.

The result indicates that a company with large equity capital is profitable than a company with small equity capital. It also possible to say that a company with high volume of capital has the ability to protect insured and promote the stability and efficiency of financial system and absorb losses arising from claims. Similarly, the regression result is consistent with the regression result of Abate Gashaw (2012), Shami and Ahmed (2008), Yuvaraj and Abate Gashaw (2013), Indranarain (2009), Imad et al. (2011), Kim et al. (1995), Hifza Malik (2011), Berger (1995).

4.5.4. Premium Growth (PG):

The fourth hypothesis was established to find that the premium of growth has a significant positive relationship with general insurance companies' profitability. The regression result of this study also reveals that premium growth has a positive and significant relationship with profitability (ROA) of general insurance companies, since beta coefficient and probability of PG is 0.038 and 1% respectively. Hence, the hypothesis is similar with the regression result HA_4 is accepted. The result implies that a company with large growth in volume of gross premium is better in making profit and to be solvent than a company with small growth in volume of gross premium.

The result is also similar with findings by Naveed Ahmed et al. (2011), Yuvaraj and Abate (2013), Bilal Javaria et al. (2013, and Daniel and Tilahun (2013). However, it is inconsistent with finding of Kim et al. (1995), who said "rapid growth of premium volume is one of the causal factors of insurers' insolvency and being too obsessed with premium growth can lead to self-destruction".

4.5.5. Claim Ratio (CR):

The fifth hypothesis was formulated in order to examine that the claim ratio has a significant negative relationship with profitability of general insurance companies of Ethiopia. The multiple regression result of this study explains that claim ratio has a significant positive relationship with profitability (ROA) of Ethiopian general insurance, since the beta coefficient and probability of CR are -0.0565 and 1.94% respectively and it is the main determinant of Ethiopian general insurance companies 'profitability. Thus, the hypothesis is in line with the random effect regression result and then HA_5 is accepted.

Moreover, the regression result tells that a company with low claim is profitable than a company with high claim incurred. Similarly, one can expect that firms with lower claim ratios should be better performers, solvent and efficient in underwriting practice. This regression result is also consistent with findings by Daniel and Tilahun (2013), Doumpos et al. (2012), and Pervan et al. (2014). They conclude claim ratio has a significant negative impact on insurer's profitability.

4.5.6. Real GDP (GDP):

The sixth hypothesis was formulated to investigate that the real GDP has significantly positive relationship with profitability of Ethiopian general insurance companies. Conversely, the regression result of this study reveals that real GDP has negative and significant relationship with general insurers' profitability (ROA), since its beta coefficient and probability are-2.0358 and 0.01% respectively.

Thus, the hypothesis is not in agreement with the actual regression result and then HA_6 is rejected. Furthermore, this result is consistent with finding by Chen-Ying Lee (2014), who found a negative relation between real GDP and ROA. Similarly, Husni (2011) also found the same result that was a significant and negative relationship between ROA and Annual Growth Rate for Gross domestic product (RGDP) of the commercial banks in Jordan.

4.5.7. Inflation (INF):

The seventh hypothesis was predicted to identify that inflation has significantly negative impact on profitability of general insurance companies. While, the regression result shows that inflation has a positive and insignificant impact on profitability of general insurance companies of Ethiopia, since the beta coefficient and probability of INF are 0.0085 and 67% respectively.

So, the seventh hypothesis (i.e. HA_7) is rejected, since it is inconsistent with the regression result of the study. From the actual result one can conclude that inflation do not has influence on general insurance companies' profitability since the study could not get enough statistical significance though it has positive relationship with ROA. This result is also consistent with findings by Godfrey (2012), who found insignificant positive relationship between ROA and inflation.

CHAPTER FIVE

5.0. Summery, Conclusion and Recommendations:

The purpose of this chapter is to sum up the whole thesis in summarized manner. Accordingly, the first part deals on summery of the thesis and its major conclusions, and finally the chapter ends up with recommendations based on the study findings.

5.1. Summery and Conclusions:

Profitability of a company is the overriding goal for the success and growth of any business (Stefan Tangen, 2003), and in most of empirical studies and under this study, it is defined as a ratio between net income and total asset. Low profitability contributes to under-capitalization problems because it leads to fewer dollars as retained earnings and therefore to a reliance on external capital. Profitability of a firm can be influenced by firm specific and macroeconomic determinants.

Theoretically, to examine profitability issue many modern theories of profit have been developed, and they generally focus on the nature and determination of profit of firms. In this study the author tries to investigate the focus of 6 modern theories of profitability on profit. Those are dynamic theory, risk bearing theory, uncertainty bearing theory, monopoly theory, marginal productivity theory, and innovation theory. However, economists concluded that "those theories are defective in one way or the other. The basic defect (criticism) with those theories is that they particularize certain aspects of the function of a firm to the neglect of others. Thus, there is no single theory which gives a correct and comprehensive explanation on the nature and determinant of profit". However, empirically different researchers have been come up with different conclusions regarding the determinants of profitability.

The objective of this study is to examine the main determinants of profitability of general insurance companies in Ethiopia as measured by ROA across ten consecutive years starting from 2005 up to 2014. This study analyzed the determinants of profitability of Ethiopian general insurance companies by examining available empirical literature reviews conducted in different countries and by selecting 5 firm specific and 2 macroeconomic determinants considering the nature and data availability of the Ethiopian general insurance sector.

To achieve the above objective, the study was formulated seven alternative hypothesizes and used secondary data from nine general insurance companies who were selected purposively as a sample size.

To answer the above proposed main objective, descriptive statistics, diagnostic tests, selection of appropriate model, multiple regression result and test of hypothesis have been rune using statistical package data of EViews 7. The appropriate model that has selected for this study is random effect model since the diagnostic test of all assumptions are valid and met, as a result it is possible to conclude that the model is adequate, statistically good fit, and data's were represented validly.

As presented in the descriptive statistics section the average value and deviation value of ROA are 7% and 4% respectively, which indicates there is small variation in value of ROA across the sample selected general insurance companies since the values of ROA that have been registered by each sample selected companies is only deviated by 4% from the samples mean value of ROA over the study years.

The random effect regression result shows that tangibility, volume of capital and premium growth has significant and positive relationship, while claim ratio and Real GDP has significant and negative relationship with profitability (peroxied by ROA) of general insurance companies of Ethiopia. However, the random effect regression result reveals that liquidity and inflation have no significant relationship with profitability of general insurance companies of Ethiopia.

According to the result, the study author concluded that the main determinants of profitability of general insurance companies of Ethiopia are tangibility, volume of capital, premium growth, claim ratio, and real GDP since they have statistically significant impact @ confidence level of 99% and 95%. This conclusion implies that general insurance companies with high asset (fixed asset), large capital, large volume of gross premium, and low claims are more profitable than general insurance companies with small asset, capital, gross premium, and high claims.

Similarly, the random effect regression result reveals that the model variables explanatory power (R^2) is 53%, which means ROA of general insurance companies of Ethiopia is explained 47% by variables other than the study variables.

Furthermore, a cautious comparison of regression result with the expected sign between ROA and explanatory variables, alternative hypothesizes 2, 3, 4, and 5 have been accepted. While, alternative hypothesizes 1, 6, and 7 have been rejected since they are inconsistent with the actual result.

5.2. Recommendations:

Based on the research findings the following reachable recommendations were forwarded;

It is highly commendable to increase insurer's assets or fixed assets like real estate, building, and the like in line with the standards (limits), and rules and regulations of the National bank of Ethiopia investment directive No.SIB/25/2004. This directive is issued by NBE to mitigate the financial risks that are resulted from lack of investment diversification as well as adverse safety characteristics; which leads the insurance companies to be solvent. Hence, this directive advice that; those insurance companies can invest in to income earning assets to maximize their profit. For instance, they can at most invest 10% their admitted asset on real estate in order to maximize profits. However, there are not yet established limits regarding investment on the other types of fixed assets.

Similarly, general insurance companies should increase their capital (i.e. It must be more than 60million birr for general insurers and 15million for life insurers), as they expected as requirement to add business or to inter in to a new business in any sector. So, they can raise their capital by converting their non income earning assets to income earning assets like treasury bills, bank deposit and equity shares in line with the NBE investment directive No.SIB/25/2004. This would lead them to secure their space in the competitive market, to become solvent, to expand their business, to attract more customers, investors and to be financially strong and to maximize profit.

Likewise, general insurance companies should have to give attention in underwrite large volume of premium which is at aggregate until 7 times their capital (equity) with a high net growth, since a company with large volume of premium has an ability to handle incurred claims and it can has a positive underwriting result which is a good source in earning a high profit.

Finally, all general insurance companies should pay due attention in reducing incurred claims (i.e. less than 70%) by identifying the risk areas and managing it or they need to maintain and implement good management guidelines and risk management program to reduce their risk exposure at the time of underwriting and then after when claim occur, otherwise negatively impact profitability. Since, claim ratio is the second most important determinant that negatively influenced the ROA of general insurance companies in Ethiopia. Moreover, if claim ratio of general insurance companies tends to rise, it will be necessary to purchase more reinsurance to diversify risk and avoid insolvency and augment profitability.

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Appendixes:

Appendix 1: Pooled OLS

Dependent Variable: ROA				
Method: Panel Least Squares				
Date: 05/08/15 Time: 07:05				
Sample: 2005 2014				
Periods included: 10				
Cross-sections included: 9				
Total panel (balanced) observations: 90				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C (Constant)	0.02042	0.08033	0.2542	0.8
LQ (Liquidity)	-0.01983	0.016235	-1.22152	0.2254
TNG (Tangibility)	0.149091	0.046628	3.197452	0.002
VC (Volume of Capital)	0.024716	0.004066	6.078004	0
PG (Premium Growth)	0.038546	0.01424	2.706826	0.0083
CR (Claim Ratio)	-0.06007	0.022928	-2.61993	0.0105
GDP (Real GDP)	-2.00241	0.494114	-4.05253	0.0001
INF (Inflation)	0.007305	0.020082	0.363767	0.717
R-squared	0.55317	Mean dependent var		0.073265
Adjusted R-squared	0.515026	S.D. dependent var		0.041171
S.E. of regression	0.028671	Akaike info criterion		-4.18115
Sum squared resid	0.067408	Schwarz criterion		-3.95894
Log likelihood	196.1517	Hannan-Quinn criter.		-4.09154
F-statistic	14.50217	Durbin-Watson stat		1.770518
Prob(F-statistic)	0			

Appendix 2: Panel EGLS (Random effect test)

Dependent Variable: ROA				
Method: Panel EGLS (Cross-section random effects)				
Date: 05/10/15 Time: 05:59				
Sample: 2005 2014				
Periods included: 10				
Cross-sections included: 9				
Total panel (balanced) observations: 90				
Swamy and Arora estimator of component variances				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C (Constant)	0.011528	0.090902	0.126817	0.8994
LQ (Liquidity)	-0.01594	0.016708	-0.954219	0.3428
TNG (Tangibility)	0.153485	0.052933	2.899595	0.0048
VC (Volume of Capital)	0.02515	0.004822	5.216213	0
PG(Premium Growth)	0.038091	0.014453	2.635604	0.01
CR(Claim Ratio)	-0.05653	0.023699	-2.385464	0.0194
GDP(Real GDP)	-2.03589	0.509939	-3.992415	0.0001
INF(Inflation)	0.008555	0.020074	0.426174	0.6711
Effects Specification				
			S.D.	Rho
Cross-section random			0.007622	0.0667
Idiosyncratic random			0.028509	0.9333
Weighted Statistics				
R-squared	0.531822	Mean dependent var		0.055949
Adjusted R-squared	0.491856	S.D. dependent var		0.03936
S.E. of regression	0.028057	Sum squared resid		0.064552
F-statistic	13.30673	Durbin-Watson stat		1.85636

Prob(F-statistic)	0		
Unweighted Statistics			
R-squared	0.552594	Mean dependent var	0.073265
Sum squared resid	0.067495	Durbin-Watson stat	1.775426

Appendix 3: Hausman Test:

Correlated Random Effects - Hausman Test				
Equation: Untitled				
Test cross-section random effects:				
Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random		2.423123	7	0.9328
Cross-section random effects test comparisons:				
Variable	**Fixed**	**Random**	**Var(Diff.)**	**Prob.**
LQ	-0.010398	-0.015943	0.000034	0.3434
TNG	0.177301	0.153485	0.00303	0.6653
VC	0.026947	0.02515	0.000038	0.7704
PG	0.03712	0.038091	0.000015	0.8049
CR	-0.051328	-0.056532	0.000102	0.6062
GDP	-2.086922	-2.035889	0.122302	0.884
INF	0.011908	0.008555	0.000018	0.4279
Cross-section random effects test equation:				
Dependent Variable: ROA				
Method: Panel Least Squares				
Date: 05/08/15 Time: 07:09				
Sample: 2005-2014				
Periods included: 10				
Cross-sections included: 9				
Total panel (balanced) observations: 90				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C (Constant)	-0.019725	0.137296	-0.143669	0.8862

LQ (Liquidity)	-0.010398	0.017703	-0.587354	0.5588
TNG (Tangibility)	0.177301	0.076368	2.321663	0.023
VC (Volume of Capital)	0.026947	0.007821	3.445455	0.0009
PG (Premium Growth)	0.03712	0.014978	2.478289	0.0155
CR (Claim Ratio)	-0.051328	0.02576	-1.99255	0.05
GDP (Real GDP)	-2.086922	0.618336	-3.375061	0.0012
INF (Inflation)	0.011908	0.020515	0.580456	0.5634
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.601318	Mean dependent var		0.073265
Adjusted R-squared	0.520504	S.D. dependent var		0.041171
S.E. of regression	0.028509	Akaike info criterion		-4.11738
Sum squared resid	0.060144	Schwarz criterion		-3.67297
Log likelihood	201.2823	Hannan-Quinn criter.		-3.93817
F-statistic	7.44076	Durbin-Watson stat		2.000122
Prob(F-statistic)	0			

Appendix 4: Fixed effect test of likelihood ratio of hausman test:

Redundant Fixed Effects Tests				
Equation: Untitled				
Test cross-section fixed effects				
Effects Test	Statistic	d.f.	Prob.	
Cross-section F	1.117082	(8,74)	0.3619	
Cross-section Chi-square	10.26109	8	0.2472	
Cross-section fixed effects test equation:				
Dependent Variable: ROA				
Method: Panel Least Squares				
Date: 05/12/15 Time: 05:03				
Sample: 2005 2014				
Periods included: 10				
Cross-sections included: 9				
Total panel (balanced) observations: 90				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C(Constant)	0.02042	0.08033	0.2542	0.8
LQ(Liquidity)	-0.01983	0.016235	-1.22152	0.2254
TNG(Tangibility)	0.149091	0.046628	3.197452	0.002
VC(Volume of Capital)	0.024716	0.004066	6.078004	0
PG(Premium Growth)	0.038546	0.01424	2.706826	0.0083
CR(Claim Ratio)	-0.06007	0.022928	-2.61993	0.0105
GDP(Real GDP)	-2.00241	0.494114	-4.05253	0.0001
INF(Inflation)	0.007305	0.020082	0.363767	0.717
R-squared	0.55317	Mean dependent var		0.073265
Adjusted R-squared	0.515026	S.D. dependent var		0.041171

S.E. of regression	0.028671	Akaike info criterion	-4.18115
Sum squared resid	0.067408	Schwarz criterion	-3.95894
Log likelihood	196.1517	Hannan-Quinn criter.	-4.09154
F-statistic	14.50217	Durbin-Watson stat	1.770518
Prob(F-statistic)	0		

Appendix 5: Heteroskedasticity White Test

Heteroskedasticity Test: White(without cross terms)				
F-statistic	1.11927	Prob. F(7,82)		0.3591
Obs*R-squared	7.849288	Prob. Chi-Square(7)		0.3461
Scaled explained SS	6.915328	Prob. Chi-Square(7)		0.4377
Test Equation:				
Dependent Variable: RESID^2				
Method: Least Squares				
Date: 05/12/15 Time: 19:06				
Sample: 1 90				
Included observations: 90				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.001427	0.001569	0.909439	0.3658
LQ^2	-0.00011	0.000217	-0.491126	0.6246
TNG^2	0.002342	0.002784	0.841158	0.4027
VC^2	-7.62E-06	7.06E-06	-1.079287	0.2836
PG^2	0.00018	0.00047	0.38303	0.7027
CR^2	-0.00018	0.000754	-0.243817	0.808
GDP^2	0.003984	0.082138	0.048509	0.9614
INF^2	0.002333	0.001273	1.83226	0.0705
R-squared	0.087214	Mean dependent var		0.000749
Adjusted R-squared	0.009294	S.D. dependent var		0.001097
S.E. of regression	0.001092	Akaike info criterion		-10.7166
Sum squared resid	9.78E-05	Schwarz criterion		-10.4944
Log likelihood	490.2453	Hannan-Quinn criter.		-10.627
F-statistic	1.11927	Durbin-Watson stat		1.933185
Prob(F-statistic)	0.359118			

Appendix 6:

A). Company financial data format:

Year	Company	Current asset	Current liability	Total asset	Fixed asset	Capital	GWP	NPW	NPE	NCI	NI
2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014	Ethiopian insurance corporation (EIC)										
2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014	Awash(AIC)										

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2014	…ETC.										

Where;

GWP= Gross written premium; **NPW**= Net premium written; **NPE**= Net premium earned

NCI=Net claim incurred; **NI=** Net income

B). Country level data format:

Year	Real Gross domestic product (GDP)	Inflation by consumer price index(CPI)
2004		
2005		
2006		
2007		
2008		
2009		
2010		
2011		
2012		
2013		
2014		

Appendix 7: Financial ratios of 9 selected general insurance companies for 10 consecutive years:

Year	Company	ROA	LQ	TNG	VC	%ΔGWP or PG	CR	%ΔGDP or GDP	%ΔCPI or INF
2005	EIC=1	0.07	1.15	0.16	11.60	0.11	0.54	0.12	0.11
2006	1	0.05	1.23	0.34	12.48	0.14	0.67	0.12	0.11
2007	1	0.07	1.21	0.32	12.41	0.20	0.69	0.12	0.15
2008	1	0.09	0.99	0.26	12.33	0.19	0.72	0.11	0.55
2009	1	0.06	1.11	0.26	12.41	0.18	0.73	0.1	0.03
2010	1	0.13	1.09	0.24	12.49	0.33	0.62	0.11	0.07
2011	1	0.08	0.99	0.2	12.47	0.27	0.74	0.11	0.38
2012	1	0.08	0.94	0.18	12.65	0.51	0.56	0.11	0.21
2013	1	0.11	0.97	0.17	12.80	0.37	0.67	0.1	0.07
2014	1	0.14	0.99	0.19	12.96	-0.08	0.6	0.11	0.07
2005	AIC=2	0.08	1.16	0.39	10.43	1.49	0.55	0.12	0.11
2006	2	0.05	1.1	0.34	10.50	0.36	0.66	0.12	0.11
2007	2	0.06	0.99	0.31	10.65	0.28	0.78	0.12	0.15
2008	2	0.07	0.82	0.3	10.73	0.16	0.7	0.11	0.55
2009	2	0.06	0.79	0.27	10.80	0.14	0.81	0.1	0.03
2010	2	0.11	0.83	0.31	11.12	0.19	0.67	0.11	0.07
2011	2	0.07	0.78	0.26	11.37	0.48	0.62	0.11	0.38
2012	2	0.08	0.85	0.23	11.60	0.58	0.66	0.11	0.21
2013	2	0.12	0.89	0.27	11.91	0.08	0.61	0.1	0.07
2014	2	0.09	0.84	0.27	12.04	0.02	0.64	0.11	0.07
2005	AFRICA=3	0	1.12	0.32	10.46	0.13	0.73	0.12	0.11
2006	3	0.07	1.16	0.29	10.75	0.27	0.6	0.12	0.11
2007	3	0.02	1.08	0.25	10.69	0.22	0.81	0.12	0.15
2008	3	0.04	1	0.2	10.73	0.29	0.82	0.11	0.55
2009	3	0.05	0.94	0.21	10.82	0.13	0.83	0.1	0.03

2010	3	0.06	0.89	0.19	11.07	0.45	0.82	0.11	0.07
2011	3	0.04	0.83	0.18	11.25	0.39	0.82	0.11	0.38
2012	3	0.05	0.67	0.19	11.46	0.40	0.85	0.11	0.21
2013	3	0.05	0.54	0.22	11.60	-0.10	0.85	0.1	0.07
2014	3	0.07	0.63	0.23	11.74	0.02	0.9	0.11	0.07
2005	NICE=4	-0.05	0.71	0.29	8.91	0.24	0.84	0.12	0.11
2006	4	0.06	0.73	0.32	9.21	0.20	0.65	0.12	0.11
2007	4	0.06	0.95	0.32	9.44	0.18	0.65	0.12	0.15
2008	4	0.06	0.93	0.33	9.59	0.16	0.67	0.11	0.55
2009	4	0.05	0.81	0.32	9.70	0.14	0.68	0.1	0.03
2010	4	0.06	0.99	0.3	9.84	0.32	0.68	0.11	0.07
2011	4	0	1.12	0.21	9.82	0.25	0.73	0.11	0.38
2012	4	0.12	1.05	0.25	10.49	0.68	0.54	0.11	0.21
2013	4	0.1	1.16	0.27	11.01	0.13	0.59	0.1	0.07
2014	4	0.06	1.12	0.26	11.11	0.05	0.7	0.11	0.07
2005	NYALA=5	0.04	1.08	0.48	10.86	0.08	0.49	0.12	0.11
2006	5	0.08	1.2	0.42	10.86	0.27	0.59	0.12	0.11
2007	5	0.08	1.08	0.42	10.88	0.15	0.52	0.12	0.15
2008	5	0.06	0.97	0.37	10.87	0.17	0.68	0.11	0.55
2009	5	0.12	0.91	0.43	11.09	-0.04	0.62	0.1	0.03
2010	5	0.14	0.98	0.4	11.23	0.34	0.59	0.11	0.07
2011	5	0.13	1.02	0.42	11.42	0.10	0.55	0.11	0.38
2012	5	0.14	1.1	0.4	11.73	0.34	0.41	0.11	0.21
2013	5	0.13	1.14	0.38	12.00	0.30	0.46	0.1	0.07
2014	5	0.12	1.22	0.4	12.28	0.09	0.54	0.11	0.07
2005	NILE=6	0.04	0.84	0.35	10.88	0.17	0.72	0.12	0.11
2006	6	0.04	1.02	0.27	10.81	0.24	0.74	0.12	0.11
2007	6	0.02	0.88	0.25	10.76	0.10	0.86	0.12	0.15
2008	6	-0.03	0.68	0.23	10.69	-0.01	0.83	0.11	0.55
2009	6	0.02	0.72	0.25	10.79	0.11	0.69	0.1	0.03

2010	6	0.14	0.93	0.36	11.29	0.16	0.57	0.11	0.07
2011	6	0.09	0.96	0.35	11.46	0.34	0.71	0.11	0.38
2012	6	0.1	1.09	0.36	11.78	0.45	0.71	0.11	0.21
2013	6	0.1	1.11	0.35	11.90	-0.04	0.7	0.1	0.07
2014	6	0.11	1.09	0.34	12.01	0.17	0.7	0.11	0.07
2005	GIC=7	-0.02	1.02	0.41	10.13	-0.08	0.74	0.12	0.11
2006	7	0	1.24	0.47	10.63	0.44	0.68	0.12	0.11
2007	7	0.09	1.11	0.4	10.70	0.69	0.72	0.12	0.15
2008	7	0.17	1.11	0.38	10.93	0.36	0.59	0.11	0.55
2009	7	0.05	1.03	0.31	10.89	0.04	0.77	0.1	0.03
2010	7	0.14	1.17	0.37	11.28	0.10	0.58	0.11	0.07
2011	7	0.08	1.19	0.35	11.41	0.29	0.71	0.11	0.38
2012	7	0.1	1.25	0.35	11.75	0.48	0.64	0.11	0.21
2013	7	0.14	1.27	0.38	12.01	0.04	0.54	0.1	0.07
2014	7	0.11	0.91	0.38	12.18	0.10	0.54	0.11	0.07
2005	UNIC=8	0.03	2.25	0.52	9.40	0.31	0.43	0.12	0.11
2006	8	0.03	2.31	0.55	9.72	0.39	0.06	0.12	0.11
2007	8	0.04	1.54	0.52	9.86	0.15	0.5	0.12	0.15
2008	8	0.05	0.85	0.45	9.89	0.21	0.51	0.11	0.55
2009	8	0.07	0.96	0.42	10.04	0.05	0.08	0.1	0.03
2010	8	0.08	0.84	0.4	10.11	0.24	0.44	0.11	0.07
2011	8	0.03	0.92	0.43	10.23	0.49	0.84	0.11	0.38
2012	8	0.01	0.92	0.32	10.30	0.84	0.95	0.11	0.21
2013	8	0.11	1.13	0.35	10.69	-0.02	0.57	0.1	0.07
2014	8	0.12	1.35	0.43	11.10	0.15	0.48	0.11	0.07
2005	NIC=9	0.09	0.98	0.41	10.15	0.61	0.77	0.12	0.11
2006	9	0.05	1	0.41	10.29	0.41	0.69	0.12	0.11
2007	9	0.07	1.05	0.37	10.51	0.43	0.95	0.12	0.15
2008	9	0.11	0.86	0.26	10.41	0.51	0.66	0.11	0.55
2009	9	0.08	0.94	0.26	10.84	0.32	0.68	0.1	0.03

2010	9	0.09	0.98	0.25	11.04	0.31	0.66	0.11	0.07
2011	9	0.08	1	0.26	11.28	0.26	0.29	0.11	0.38
2012	9	0.07	0.97	0.22	11.54	0.55	0.3	0.11	0.21
2013	9	0.09	1.05	0.27	11.84	-0.06	0.3	0.1	0.07
2014	9	0.1	1.11	0.3	12.19	0.06	0.3	0.11	0.07

Where:

%Δ= percentage change

PG= Premium growth

GDP= Growth in real GDP

INF= Inflation

Appendix 8:

A. Financial ratios with their sum and average on each sample selected insurance companies over 10 years;

Year	Company	ROA	LQ	TNG	VC	CR	%ΔGWP	%ΔGDP	%ΔCPI
2005	EIC=1	0.07	1.15	0.16	11.60	0.54	0.11	0.12	0.11
2006	1	0.05	1.23	0.34	12.48	0.67	0.14	0.12	0.11
2007	1	0.07	1.21	0.32	12.41	0.69	0.20	0.12	0.15
2008	1	0.09	0.99	0.26	12.33	0.72	0.19	0.11	0.55
2009	1	0.06	1.11	0.26	12.41	0.73	0.18	0.10	0.03
2010	1	0.13	1.09	0.24	12.49	0.62	0.33	0.11	0.07
2011	1	0.08	0.99	0.2	12.47	0.74	0.27	0.11	0.38
2012	1	0.08	0.94	0.18	12.65	0.56	0.51	0.11	0.21
2013	1	0.11	0.97	0.17	12.80	0.67	0.37	0.10	0.07
2014	1	0.14	0.99	0.19	12.96	0.6	-0.08	0.11	0.07
Sum		0.88	10.7	2.32	124.61	6.54	2.23	1.11	1.75
Average		0.088	1.07	0.23	12.46	0.65	0.22	0.11	0.18
2005	AIC=2	0.08	1.16	0.39	10.43	0.55	1.49	0.12	0.11
2006	2	0.05	1.1	0.34	10.50	0.66	0.36	0.12	0.11
2007	2	0.06	0.99	0.31	10.65	0.78	0.28	0.12	0.15
2008	2	0.07	0.82	0.3	10.73	0.7	0.16	0.11	0.55
2009	2	0.06	0.79	0.27	10.80	0.81	0.14	0.10	0.03
2010	2	0.11	0.83	0.31	11.12	0.67	0.19	0.11	0.07
2011	2	0.07	0.78	0.26	11.37	0.62	0.48	0.11	0.38
2012	2	0.08	0.85	0.23	11.60	0.66	0.58	0.11	0.21
2013	2	0.12	0.89	0.27	11.91	0.61	0.08	0.10	0.07
2014	2	0.09	0.84	0.27	12.04	0.64	0.02	0.11	0.07
Sum		0.79	9.05	2.95	111.14	6.7	3.78	1.11	1.75
Average		0.079	0.91	0.3	11.11	0.67	0.38	0.11	0.18
2005	AFRICA=3	0	1.12	0.32	10.46	0.73	0.13	0.12	0.11
2006	3	0.07	1.16	0.29	10.75	0.6	0.27	0.12	0.11

2007	3	0.02	1.08	0.25	10.69	0.81	0.22	0.12	0.15
2008	3	0.04	1	0.2	10.73	0.82	0.29	0.11	0.55
2009	3	0.05	0.94	0.21	10.82	0.83	0.13	0.10	0.03
2010	3	0.06	0.89	0.19	11.07	0.82	0.45	0.11	0.07
2011	3	0.04	0.83	0.18	11.25	0.82	0.39	0.11	0.38
2012	3	0.05	0.67	0.19	11.46	0.85	0.40	0.11	0.21
2013	3	0.05	0.54	0.22	11.60	0.85	-0.10	0.10	0.07
2014	3	0.07	0.63	0.23	11.74	0.9	0.02	0.11	0.07
Sum		0.45	8.86	2.28	110.56	8.03	2.21	1.11	1.75
Average		0.045	0.89	0.23	11.06	0.8	0.22	0.11	0.18
2005	NICE=4	-0.05	0.71	0.29	8.91	0.84	0.24	0.12	0.11
2006	4	0.06	0.73	0.32	9.21	0.65	0.20	0.12	0.11
2007	4	0.06	0.95	0.32	9.44	0.65	0.18	0.12	0.15
2008	4	0.06	0.93	0.33	9.59	0.67	0.16	0.11	0.55
2009	4	0.05	0.81	0.32	9.70	0.68	0.14	0.10	0.03
2010	4	0.06	0.99	0.3	9.84	0.68	0.32	0.11	0.07
2011	4	0	1.12	0.21	9.82	0.73	0.25	0.11	0.38
2012	4	0.12	1.05	0.25	10.49	0.54	0.68	0.11	0.21
2013	4	0.1	1.16	0.27	11.01	0.59	0.13	0.10	0.07
2014	4	0.06	1.12	0.26	11.11	0.7	0.05	0.11	0.07
Sum		0.52	9.57	2.87	99.13	6.73	2.34	1.11	1.75
Average		0.052	0.96	0.29	9.91	0.67	0.23	0.11	0.18
2005	NYALA=5	0.04	1.08	0.48	10.86	0.49	0.08	0.12	0.11
2006	5	0.08	1.2	0.42	10.86	0.59	0.27	0.12	0.11
2007	5	0.08	1.08	0.42	10.88	0.52	0.15	0.12	0.15
2008	5	0.06	0.97	0.37	10.87	0.68	0.17	0.11	0.55
2009	5	0.12	0.91	0.43	11.09	0.62	-0.04	0.10	0.03
2010	5	0.14	0.98	0.4	11.23	0.59	0.34	0.11	0.07
2011	5	0.13	1.02	0.42	11.42	0.55	0.10	0.11	0.38
2012	5	0.14	1.1	0.4	11.73	0.41	0.34	0.11	0.21

2013	5	0.13	1.14	0.38	12.00	0.46	0.30	0.10	0.07
2014	5	0.12	1.22	0.4	12.28	0.54	0.09	0.11	0.07
Sum		1.04	10.7	4.12	113.22	5.45	1.82	1.11	1.75
Average		0.104	1.07	0.41	11.32	0.55	0.18	0.11	0.18
2005	NILE=6	0.04	0.84	0.35	10.88	0.72	0.17	0.12	0.11
2006	6	0.04	1.02	0.27	10.81	0.74	0.24	0.12	0.11
2007	6	0.02	0.88	0.25	10.76	0.86	0.10	0.12	0.15
2008	6	-0.03	0.68	0.23	10.69	0.83	-0.01	0.11	0.55
2009	6	0.02	0.72	0.25	10.79	0.69	0.11	0.10	0.03
2010	6	0.14	0.93	0.36	11.29	0.57	0.16	0.11	0.07
2011	6	0.09	0.96	0.35	11.46	0.71	0.34	0.11	0.38
2012	6	0.1	1.09	0.36	11.78	0.71	0.45	0.11	0.21
2013	6	0.1	1.11	0.35	11.90	0.7	-0.04	0.10	0.07
2014	6	0.11	1.09	0.34	12.01	0.7	0.17	0.11	0.07
Sum		0.63	9.32	3.11	112.36	7.23	1.69	1.11	1.75
Average		0.063	0.93	0.31	11.24	0.72	0.17	0.11	0.18
2005	GIC=7	-0.02	1.02	0.41	10.13	0.74	-0.08	0.12	0.11
2006	7	0	1.24	0.47	10.63	0.68	0.44	0.12	0.11
2007	7	0.09	1.11	0.4	10.70	0.72	0.69	0.12	0.15
2008	7	0.17	1.11	0.38	10.93	0.59	0.36	0.11	0.55
2009	7	0.05	1.03	0.31	10.89	0.77	0.04	0.10	0.03
2010	7	0.14	1.17	0.37	11.28	0.58	0.10	0.11	0.07
2011	7	0.08	1.19	0.35	11.41	0.71	0.29	0.11	0.38
2012	7	0.1	1.25	0.35	11.75	0.64	0.48	0.11	0.21
2013	7	0.14	1.27	0.38	12.01	0.54	0.04	0.10	0.07
2014	7	0.11	0.91	0.38	12.18	0.54	0.10	0.11	0.07
sum		0.86	11.3	3.8	111.90	6.51	2.45	1.11	1.75
Average		0.086	1.13	0.38	11.19	0.65	0.25	0.11	0.18
2005	UNIC=8	0.03	2.25	0.52	9.40	0.43	0.31	0.12	0.11
2006	8	0.03	2.31	0.55	9.72	0.06	0.39	0.12	0.11

2007	8	0.04	1.54	0.52	9.86	0.5	0.15	0.12	0.15
2008	8	0.05	0.85	0.45	9.89	0.51	0.21	0.11	0.55
2009	8	0.07	0.96	0.42	10.04	0.08	0.05	0.10	0.03
2010	8	0.08	0.84	0.4	10.11	0.44	0.24	0.11	0.07
2011	8	0.03	0.92	0.43	10.23	0.84	0.49	0.11	0.38
2012	8	0.01	0.92	0.32	10.30	0.95	0.84	0.11	0.21
2013	8	0.11	1.13	0.35	10.69	0.57	-0.02	0.10	0.07
2014	8	0.12	1.35	0.43	11.10	0.48	0.15	0.11	0.07
Sum		0.57	13.1	4.39	101.34	4.86	2.81	1.11	1.75
Average		0.057	1.31	0.44	10.13	0.49	0.28	0.11	0.18
2005	NIC=9	0.09	0.98	0.41	10.15	0.77	0.61	0.12	0.11
2006	9	0.05	1	0.41	10.29	0.69	0.41	0.12	0.11
2007	9	0.07	1.05	0.37	10.51	0.95	0.43	0.12	0.15
2008	9	0.11	0.86	0.26	10.41	0.66	0.51	0.11	0.55
2009	9	0.08	0.94	0.26	10.84	0.68	0.32	0.10	0.03
2010	9	0.09	0.98	0.25	11.04	0.66	0.31	0.11	0.07
2011	9	0.08	1	0.26	11.28	0.29	0.26	0.11	0.38
2012	9	0.07	0.97	0.22	11.54	0.3	0.55	0.11	0.21
2013	9	0.09	1.05	0.27	11.84	0.3	-0.06	0.10	0.07
2014	9	0.1	1.11	0.3	12.19	0.3	0.06	0.11	0.07
Sum		0.83	9.94	3.01	110.08	5.6	3.39	1.11	1.75
Average		0.083	0.99	0.3	11.01	0.56	0.34	0.11	0.18

B. Sum and average values of each variables value for each companies over 10 years and their comparison with samples mean value by saying bellow, above and equal(=).

Year	Company	ROA	LQ	TNG	VC	%ΔGWP	CR	%ΔGDP	%ΔCPI
2005-2014	EIC=1								
SUM	1	0.88	10.67	2.32	124.61	2.23	6.54	1.11	1.75
company mean	1	0.09	1.07	0.23	12.46	0.22	0.65	0.11	0.18
Samples mean		0.07	1.03	0.32	11.05	0.25	0.65	0.11	0.18
bellow/above		above	above	bellow	above	bellow	equal	equal	equal
2005-2014	AIC=2								
SUM	2	0.79	9.05	2.95	111.14	3.78	6.70	1.11	1.75
company mean	2	0.08	0.91	0.30	11.11	0.38	0.67	0.11	0.18
Samples mean		0.07	1.03	0.32	11.05	0.25	0.65	0.11	0.18
bellow/above		above	bellow	bellow	above	above	above	equal	equal
2005-2014	AFRICA=3								
SUM	3	0.45	8.86	2.28	110.56	2.21	8.03	1.11	1.75
company mean	3	0.05	0.89	0.23	11.06	0.22	0.80	0.11	0.18
Samples mean		0.07	1.03	0.32	11.05	0.25	0.65	0.11	0.18
bellow/above		Bellow	bellow	bellow	above	bellow	above	equal	equal
2005-2014	NICE=4								
SUM	4	0.52	9.57	2.87	99.13	2.34	6.73	1.11	1.75
company mean	4	0.05	0.96	0.29	9.91	0.23	0.67	0.11	0.18
Samples mean		0.07	1.03	0.32	11.05	0.25	0.65	0.11	0.18
bellow/above		bellow	bellow	bellow	bellow	bellow	above	equal	equal
2005-2014	NYALA=5								
SUM	5	1.04	10.70	4.12	113.22	1.82	5.45	1.11	1.75
company mean	5	0.10	1.07	0.41	11.32	0.18	0.55	0.11	0.18
Samples mean		0.07	1.03	0.32	11.05	0.25	0.65	0.11	0.18
bellow/above		above	above	above	above	bellow	bellow	equal	equal

2005-2014	NILE=6								
SUM	6	0.63	9.32	3.11	112.36	1.69	7.23	1.11	1.75
company mean	6	0.06	0.93	0.31	11.24	0.17	0.72	0.11	0.18
Samples mean		0.07	1.03	0.32	11.05	0.25	0.65	0.11	0.18
bellow,=,above		bellow	bellow	bellow	above	bellow	above	equal	equal
2005-2014	GIC=7								
SUM	7	0.86	11.30	3.80	111.90	2.45	6.51	1.11	1.75
company mean	7	0.09	1.13	0.38	11.19	0.25	0.65	0.11	0.18
Samples mean		0.07	1.03	0.32	11.05	0.25	0.65	0.11	0.18
bellow/above		above	above	above	above	equal	equal	equal	equal
2005-2014	UNIC=8								
SUM	8	0.57	13.07	4.39	101.34	2.81	4.86	1.11	1.75
company mean	8	0.06	1.31	0.44	10.13	0.28	0.49	0.11	0.18
Samples mean		0.07	1.03	0.32	11.05	0.25	0.65	0.11	0.18
bellow/above		bellow	above	above	bellow	above	bellow	equal	equal
2005-2014	NIC=9								
SUM	9	0.83	9.94	3.01	110.08	3.39	5.60	1.11	1.75
company mean	9	0.08	0.99	0.30	11.01	0.34	0.56	0.11	0.18
Samples mean		0.07	1.03	0.32	11.05	0.25	0.65	0.11	0.18
bellow/above		above	bellow	bellow	bellow	above	bellow	equal	equal

NB. Samples mean is the mean value described in descriptive statistics table, while sum and accompany mean are self-computed using excel and driven from appendix 8A.