

***DETERMINANTS OF NON LIFE INSURANCE BUSINESS  
DEVELOPMENT IN ETHIOPIA***

**BY  
BIRHANU DERESSA**



*A Thesis Submitted to School of Graduate Studies of Jimma University in  
Partial Fulfilment of the Requirement for the Award of the Degree of Master of  
Science in Banking and Finance*

**JIMMA UNIVERSITY  
COLLEGE OF BUSINESS AND ECONOMICS  
DEPARTMENT OF BANKING AND FINANCE**

JUNE, 2021  
JIMMA, ETHIOPIA

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## **CERTIFICATE**

*This is to certify that the thesis entitles “Determinants of non-life insurance business development in Ethiopia”, submitted to Jimma University for the award of the Degree of Master of Science in Banking and Finance and is a record of bonafide research work carried out by Mr. Birhanu Deressa Negesa, under our guidance and supervision*

*Therefore, we hereby declare that no part of this thesis has been submitted to any other university or institution for the award of any degree or diploma.*

*Main Adviser’s Name*

*Date*

*Signature*

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## DECLARATION

I hereby declare that this thesis entitled "*Determinants of non-life insurance business development in Ethiopia*" has been carried out by me under the guidance and supervision of Dr. Demis Hailegebreal and Mr. Mohamednur Kadire.

The thesis is original and has not been submitted for the award of any degree or diploma to any university or institution.

Researcher's Name

Date

Signature

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## **Abstract**

*This study examines the macro-economic and firm-specific determinants of non-life insurance business development in Ethiopia. As a result, this study adopts the Explanatory research type to meet the objective of the study. Panel Data collected from the National Bank of Ethiopia (NBE) and twelve non-life insurance businesses operating in Ethiopia from the period 2010-2019. The researcher used purposive sampling techniques and quantitative research approach. The study adopted random effect regression model was employed to analyse the panel data of the study by using the stata16 version. The finding of this study was financial development, firm sizes, Premium growth have a positives and statistically significant at 1% level of confidence with (non-life) general insurance business in Ethiopia measured by gross written premium. Underwriting risk has a negative and statistically significant with (non-life) general insurance business in Ethiopia at 1% level of confidence. On the other hand, the remaining three variables- Gross domestic product growth and trade openness have a positive and insignificant at 5% level of confidence. Leverage ratio (LR) a negative and statistically insignificant influence on non-life insurance business developments. The study suggests that general insurance companies and other participants of the general insurance industry should have more considered premium growth, firm size, financial development, and underwriting risk toward enhancing the level of the country's non-life insurance business development.*

**Keywords:** Non-life insurance, Development, Firm-specific, Macroeconomic, Ethiopia

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## **LIST OF ACRONYMS/ABBREVIATIONS**

- CLRM: Classical Linear Regression Model
- EIC = Ethiopian Insurance Company
- FEM = Fixed Effect Model
- FID=Financial development
- FS= Firm size
- GDP = Gross domestic product
- IPR= Insurance penetration rate
- NBE = National Bank of Ethiopia
- OLS=Ordinary least square
- PG=Premium growth
- REM =Random Effect Model
- TO = Trade openness
- U risk= Underwriting risk
- VIF= Variance Inflation Factor

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

The fundamental idea behind the establishment of every insurance company is to transfer risks from one economic unit to the other and income from the good state (favourable class of business) to the bad state to comfort investment and resource arrangements. This leads to define the term insurance as a device that protects against loss related to property and life (Malik 2011). The role of insurance is reducing risks. As a risk transfer mechanism, insurance provides financial protection from unpredictable losses. This risk and uncertainty are created due to globalization, liberalization, and innovation in science and technology. Insurance is a way to minimize and provide protection against those risks which are beyond human control. It is a way to indemnify those unpredictable losses(Pant and KC 2017).

There are two broad types of insurance service; life & non-life/general insurance service. Life insurance is a contract between an insurance policy holder and an insurer or assurer, where the insurer promises to pay a designated beneficiary a sum of money (the benefit) in exchange for a premium, upon the death of an insured person (often the policy holder).Non-life/general insurance is a contract between an insurance policy holder and an insurer, which is insurer promises to pay a designated beneficiary a sum of money (the benefit) in exchange for a premium upon the damage or loss of properties and liabilities that mainly includes a cover for vehicles, marine, engineering materials, fire-related accidents and pecuniary classes of risks (Öner Kaya 2015)

There is a long-held view that insurance market activities promote economic growth through the financial intermediation role of mobilizing long-term funds for financial markets (Alhassan and Biekpe 2016). According to Feyen, Lester et al. (2011), insurance facilitates investment by reducing the amount of capital that businesses and individuals need to keep at hand to protect themselves from uncertain events. The insurance sector plays a great role in financial and economic development. By introducing risk pooling and reducing the impact of large losses on firms and households, the sector reduces the amount of capital that would be needed to cover these losses individually, encouraging additional output, investment,

innovation, and competition. The insurance industry has largely contributed to our economy, without insurance contracts, the business would be more difficult and costly, and a great part of them would probably never take place. Also, the economy would lag behind its potential, the wealth of nations would be sharply reduced, and social unity would fall apart. In short, as far as ordinary life is concerned, individuals would be much more cautious in all that they do, probably even cancel some of their risky activities. Therefore, it can be said that the insurance scheme is almost as indispensable to the functioning of modern society as is the legal system that protects both companies and individuals against any risk (Abba and Nagga 2006).

According to Brokešová and Vachálková (2016) changes in the macroeconomic situation added to the growth of economic advancement and caused an increase in the effective demand and the incomes and wealth of individual subjects of countries. This, in turn, enabled the use of modern technological processes in the economy and raised the consumption of basic and luxurious goods and services, including insurance. Consequently, the prerequisites for the development of the insurance sector would be created. In addition, based on theoretical studies, the economic development of a country is one of the most significant determinants influencing the structure, size, and overall development of the insurance sector Kafková and Kracinovsky (2008), Tipurić, Pejić Bach et al. (2008). In line with this, if individuals do not have a sufficient economic and financial level and the overall standard of living is low, the insurance business will not prosper. Consequently, when the standard of living improves, the wealth of the people grows, as does the level of education and the demand for insurance, as the financial means accumulate and in turn boost the economic growth of the country (Brokešová and Vachálková 2016).

Insurance penetration is the ratio of gross insurance premiums to the GDP. It measures how deep the insurance sector is within a given economy. A high penetration rate reflects a higher contribution by the insurance sector to the country's economy. Insurance outgrows economic development by encouraging savings, decreasing the level of unnecessary precautionary savings and translating dormant capital into free capital by providing risk mitigation for players in the various sectors within the economy (Liedtke 2007).

Despite the insurance sector plays critical role for financial, economic development and reasonable evidence that the sector has promoted economic growth, there have been few studies examining the factors that affect the development of the insurance business

particularly in emerging countries like Ethiopia. Moreover, even if there are studies conducted in the area of insurance, the majority of the existing empirical research focuses on the growth, financial performance, and profitability of the life sector or non-life insurance determinants. Based on this, this study aims to examine the determinants of non-life insurance business development in Ethiopia by using the gross written premium (GWP) as a dependent variable of the non-life insurance on the selected macroeconomic variables and firm-specific factors to identify the factors that have a significant and potential influence on the development of the non-life insurance business in Ethiopia. The non-life part is preferred to be studied separately for the reason that it is the significant sector in terms of premium products. According to (NBE, 2017), non-life insurance got the dominant position in the Ethiopian insurance market constituting on average more than 90% of the total national premium production for the last 6 fiscal years.

This paper has own contribution in determining factor that affects non-life insurance business development in Ethiopia and helpful for policy makers, regulatory body and others stockholders in a particular non-life insurance company, to develop their service, profit, their branches, and their overall company development from understanding macroeconomic factors and firm-specific factors in Ethiopia.

## **1.2. Statement of the Problem**

Business development entails tasks and processes to develop and implement growth opportunities within and between organizations. It is a subset of the fields of business, commerce and organizational theory. Business development is the creation of long-term value for an organization from customers, markets, and relationships. Business development can be taken to mean any activity by either a small or large organization, non-profit or for-profit enterprise which serves the purpose of developing the business in some way. In addition, business development activities can be done internally or externally by a business development consultant. External business development can be facilitated through Planning Systems, which are put in place by governments to help small businesses. In addition, reputation building has also proven to help facilitate business development.

According to NBE data, the industry's aggregate contribution to national GDP (i.e. the penetration rate) is around 0.5 per cent, which is less than 1% and the insurance density is Br. 78 in 2017. This status depicts the low level of insurance development in Ethiopia from some African countries. For instance, in neighbouring Kenya insurance penetration is 2.83 per cent

and in South Africa, it is 17 per cent, Namibia 6.69%, Lesotho 4.76%, and Zimbabwe 4.09% and Rwanda 1.74% (statista.com, 2017). This shows that the country's insurance business contribution to the national economy as compared with other African countries is small which calls for serious attention. This means that the level of development of the insurance sector of the country can be said as it is in its emergent stage. Thus, there may be some factors that have affected the growth of the insurance market which requires an investigation (Daniel 2019). However, despite this, the industry level of insurance penetration rate (i.e. the ratio of written premium to GDP) that represents the contribution of the insurance industry to the national economy and the insurance density (i.e. ratio of written premium to the total population i.e. insurance per capita) which represents the level of per individual citizens annual insurance consumption are low in Ethiopia.

□ Furthermore, Ethiopia's insurance industry has been playing a growing role in long-term economic progress and improving living standards by channelling household savings from a large portion of the population into productive investments. The sector also promotes economic advancement through its unique funding channels and investments as well as providing sizable job opportunities. Similarly, following the country's socio-economic growth, the insurance business has witnessed rapid expansion as the opening of the sector to domestic private investors and currently, these private insurance companies continued competition for better market share. (Fisher, Hellin et al. 2019)

With this regard, most of the previous kinds of literature confirm that the insurance business is sensitive and highly correlated with the macroeconomic environment. For instance, Mashayekhi and Fernandes (2007) suggest that the insurance sector is closely linked with macroeconomic factors (inflation, currency controls, and the national income of a country), regulation and supervision, and the achievement of national development objectives, as well as the international trade regime. In addition, Faugère and Van Erlich (2003) concluded that growth in gross written premiums is among the key insurance variables which are highly correlated with the macroeconomic environment. Elango and Jones (2011) also examined factors that drive the insurance demand of emerging countries and the study finding indicates demographic, economic, and institutional variables are the factors that can have a greater effect on insurance demand although their level of influence is not the same. Further, (Dragos 2014) conducted on the factors that influence the demand for life and non-life insurance in emerging countries from Europe and Asia. The study finds that urbanization, income, and

their distribution and population degree of education are the relevant factors for the development of the insurance sector. A few researchers have tried to show the relationship between the macroeconomic factors and insurance demand in Ethiopia. Among these studies, for instances Yilma (2014) examined the determinants of life insurance demand in Ethiopia by using time series data from 1983 to 2012. Sulaiman, Migiro et al. (2015) investigated the factors that influence the life insurance market in Ethiopia using time series data from 1979/80 to 2007/08.

In addition, AYALIEW (2013) examined the factors that affect the development of the life insurance industry in Ethiopia for a time series data for the period 1991-2010. Meko, Lemie et al. (2019) investigated the determinants of life insurance demand in Ethiopia by using the balanced panel data model to examine the determinants of life insurance demand using data collected from four insurance companies for sixteen years, from 2001-2016. Other researchers were done previously in Ethiopia by using firm specific variables (such as solvency, loss ratio, investment return). For instance, determinants of non-life insurance premium growth of private insurance companies in Ethiopia by (Abera and Yirsaw , SEYOUM 2017) assumed and studied were macroeconomic and firm-specific factors.

Generally, the previous study done in the area of insurance on the profitability of insurance companies, performances of insurances company, demands of insurance companies, challenges and prospects of insurance companies, were done mostly either life insurance or non-life insurance. Most of the studies conducted in Ethiopia have been focusing on the profitability of insurance companies in Ethiopia. Among these researchers, Berhe and Kaur (2017) , Dejene (2015) Kebede (2016), and ZEYEDE (2018) can be mentioned.

Most researchers were done in insurance business industry in different years, mostly on life insurance or non-life insurance business but only one study was done in Ethiopia on both by Daniel (2019) determinants of insurance business development by examining the economic and demographic determinants of insurance business development in Ethiopia. The study used 38 annual secondary time series data covering the period from 1980 to 2017. As far the researcher knowledge was focused only on external factors affecting insurance business development in Ethiopia. Based on this, this study was aimed to identify the factors that have the potential and significant determine non-life insurance business development in Ethiopia by estimating different the selected macroeconomic and firm-specific factors on non-life insurance business.



So, no research was conducted on determining non-life insurance business development in Ethiopia by using the following selected macroeconomic and firm-specific factors. The selected economic variables were gross domestic product growth, financial developments (bank developments) and trade openness. The selected firm-specific factors were firm size, underwriting risk, premium growth, and leverage ratio. So the researcher's would like to do on non-life insurance business development in Ethiopia.

First, the researcher was included both the internal and external factors that determine the development of the non-life insurance business Ethiopia. Second, the researcher's methodology was unique from the previous researcher done in insurances business development in Ethiopia by Daniel (2019) used 38 annual secondary time series data, but this study was using panel data. Third, by introducing some additional new variables as explanatory variables that were not examined in previous researches conducted in Ethiopia. No research was done on this title specifically on non-life insurance business developments using the above selected factors. So this study was full above gaps that existed and the study was examining on determinants of non-life insurance business development in Ethiopia.

### **1.3 Objective of the Study.**

#### **1.3.1. General Objective**

The general objective of this study was to examine the factors that determine non-life insurance business development in Ethiopia.

#### **1.3.2. Specific objectives**

Concerning the general objective of the study, the researcher aims to achieve the following two specific objectives. These specific objectives were;

1. To examine the effect of gross domestic product growth, financial developments, and trade openness on non-life insurance business development in Ethiopia.
2. To examine the effect of firm size, underwriting risk, premium growth, and leverage ratio on non-life insurance business development in Ethiopia.

### **1.4. Research hypothesis**

After a brief review of the previous theoretical and empirical studies related to non-life insurance business development, the researcher formulates the assumed hypothesis of each explanatory variables of the study as follow:

**GDP growth:** when an economy grows through producing more goods and services, consumers have more disposable income which to purchase assets. As they purchase more valuable assets, they are likely to consider the risk of damage and /or loss to those assets and therefore set aside more to secure their assets through insurance. Cummins and Outreville (1992) propose that in principle and all other things being equal as the level of economic development of a country increases, the volume of business increases, and the capacity of the insurance company to supply service also increases. In addition, Christophersen and Jakubik (2014) also suggest that there is a strong link between gross written premium and economic growth. Based on the above facts this variable is hypothesized as follow:

*H1: Gross domestic product growth influences non-life insurance business development positively and significantly in Ethiopia.*

**Financial or banking sector Development:** As identified by(Beck and Webb 2003) life insurance demand is significantly influenced by the banking sector development and (Daniel 2019) was studied on financial developments. It is expected that the banking sector development to be positively correlated with life insurance consumption. Well-functioning banks may increase the confidence consumers have in other financial institutions, e.g. life insurers. (Outreville 1996) finds a significantly positive relationship between financial sector development and life insurance penetration.

*H2: Financial developments have a positive and significant effect on non-life insurance development in Ethiopia.*

**Trade openness:** Petkovski and Jordan (2014)) find that trade openness is significant, suggesting that more open countries accumulate more insurance assets. Therefore in this study trade openness is hypothesized as follow

*H3: Trade openness affects non-life insurance business development positively and significantly in Ethiopia.*

**Firm size** -Many studies have been conducted to examine the effect of firm size on firm profitability Mehari and Aemiro (2013) ; (Burca and Batrinca 2014) ; (Boadi, E. K., Antwi, S., & Lartey, V. C. 2013)(Boadi, Antwi et al. 2013); According to (Öner Kaya 2015).and (Suheyli 2015)are among other researchers who investigate the effect of size on firm profitability. However, the results are inconsistent. In numerous pieces of kinds of literature, it has been suggested that company size is positively related to financial performance. For

instance, (Suheyli 2015) examines the Determinants of Insurance Companies Profitability in Ethiopia and the results of the study indicate that the profitability of insurers is positively and significantly influenced by size. (Malik 2011) also, find a significantly positive association between the size of the company and profitability. Furthermore, (Ayele 2012) and (Mehari and Aemiro 2013) in their study results identified size as the most important determinant factors of profitability and it is positively related.

***H4-** Firm size has a positive and significant impact on the development of non-life insurance in Ethiopia.*

**Underwriting risk-** Underwriting risk is the risk that the premiums collected will not be sufficient to cover the cost of coverage. Barth and Eckles (2009), found a negative relationship between premium growth and changes in loss ratios, suggesting that premium growth alone does not necessarily result in higher underwriting risk. Organizations that engage in risky activities are likely to have more volatile cash flows than entities whose management is more averse to risk-taking (Fama and Jensen 1983). Therefore, a negative connection between the underwriting risk and the insurers' financial performance is expected, since taking an excessive underwriting risk can affect the company's stability through higher expenses. Furthermore, insurance companies with high annual insurance losses will tend to increase their level of corporate management expenses example, claims investigation and loss adjustment costs that could further worsen a decline in their financial performance. Excessive risk-taking could adversely affect the performance of insurance companies.

The insurers undertake to accept default risk when people and properties are covered. (Srivastava and Ray 2013) argued that income from underwriting insurance and return on investment are the proxies of financial performance. Underwriting return has a positive relationship on investment that would increase the financial performance of the life insurance companies (Akotey, Sackey et al. 2013)

***H5:** Underwriting risk has a negative and significant effect on general insurance business development in Ethiopia.*

**Premium growth (PG)** – 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. Being too obsessed with growth can lead to self-destruction as other important objectives may be neglected. There is some research done by using these

variables are such as (Kripa and Ajasllari 2016) (Chen and Wong 2004, Hailegebreal 2016)as both types of research claim the existence of positive and significant relation between premium growth rate and companies' profitability.

*H6: Premium growth has a positive and significant effect on general insurance business development in Ethiopia.*

**Leverage Ratio:** - Leverage is the amount of debt used to finance a company's assets. It was measured by the total debt to total equity value (Capital and reserve) of the company(Mehari and Aemiro 2013); insurers generate leverage from unearned premiums, from unexpired policies, and any outstanding claim amount (Lee 2014). Large insurance companies that have high total gross written premium have a higher leverage coefficient (Pervan and Pavić-Kramarić 2012). Leverage measures the degree to which a business is utilizing a debt fund (Kazeem 2015). Therefore, the studies conducted by (Kazeem 2015), (Sumaira and Amjad 2013)states that bad investment decisions lead to a negative leverage-profitability relationship which suggesting that highly leveraged companies tend to achieve less profitability of the non-life insurance business.

However, the studies conducted by (Berhe and Kaur 2017), (Mehari and Aemiro 2013, Sambasivam and Ayele 2013) and (Mehari and Aemiro 2013) have found evidence in support of a positive relationship which suggesting that a highly leveraged insurer has better enjoyed financial performance achieved. Therefore, these conflicting results provide genuine incentives for further investigation of this relationship. From the above theoretical explanations, the researchers anticipate that the relationship between the profitability of the general insurance companies and leverage is a negative sign.

*H7: Leverage ratio has influence non-life insurance business development positively and insignificantly in Ethiopia*

### **1.5. Significance of the Study**

The major objective of this study was determining the effect of macroeconomic and firm-specific factors have on non-life insurance business development in Ethiopia and the researcher expected that the result from the study would be used as an important guide for insurance companies, policymakers, and other stakeholders working to improve the insurance business. Further, the finding of the thesis was useful for insurance companies in developing their existing markets and/or choosing new potential markets. For policymakers,

understanding the determinants of non-life insurance business developments may help adjust their regulations to assist the development of the general insurance business, which is an important engine for long-run economic growth and prosperity. The research finding was also helped the stakeholders in the insurance sector as guidance and to understand and consider the factors that influence the business before and at the time making decisions and before and during the formulation of important policies and strategies. Finally, the thesis was become an important source and guide for those who have an interest to study the area of insurance business and related areas in Ethiopia.

### **1.6. Scope of the Study**

This study was focused on examining factors that determines non-life insurance business development with selected macroeconomic and firm-specific factors in Ethiopia. As dependent variable of gross written premium (GWP), and an independent variable, the researcher was selected both the demand leading external factors and supply leading internal factors. Selected economic factors were (gross domestic product growth, financial development and trade openness) and firm-specific factors (firm size, underwriting risk, premium growth, and leverage ratio) variables. The reason for selecting these variables was filling the research gap and availability data, not done before by other researchers by using panel data on non-life insurance business. Among the private 16 insurance companies in Ethiopia, 11 private insurance companies were selected and 1 state insurance company was select for study.

The researcher has selected twelve insurance companies for the study. The scope of the study the selected insurance companies was Ethiopia insurance corporation, Awash Insurance Company S.C, Africa Insurance Company S.C, National Insurance Companies of Ethiopia (NICE) S.C, Nyala Insurance Company S.C., Nile Insurance Company S.C., The United Insurance Company S.C., Global Insurance Company S.C., NIB Insurance Company S.C, lion insurance corporations, Ethio- life and general insurance S.C and Oromia insurance sharing company. These companies were selected purposely because of their age formation insurance formed before the 2010 year and insurance companies that have data of 10 years were selected for the study. To have a long time series, recently established companies have to be excluded from the study. Because there was not has 10 years of data for the study. The rest insurance is represented by a selected insurance company and they are few in numbers. The period of study was 10 years, which was a nonlife insurance business selected for study

starting from the year 2010/11 to 2019/20. Both public and private insurance companies and only non-life insurance companies were included in this study.

### **1.7 Operational Definitions**

Business development- Business development entails tasks and processes to develop and implement growth opportunities within and between organizations.

Premium: - This is the amount, which is paid by the insured to the insurers for their policies the consideration for which the insurer gives protection to the insured (CII, 2014).

Gross Written Premiums (GWP) - Total premiums generated from all policies (contracts) written by an insurer within a given period (CII, 2014).

Underwriting risk- is the risk that the premiums collected will not be sufficient to cover the cost of coverage

### **1.8 Limitation of the Study**

Financial statement presentations of the studied general insurance companies have been different from each other, even in a single company different financial statement format used over the years. It was difficult to take the intended data but the researchers, by communicating the respective insurance companies department which is responsible for issuing the financial statement. The study limited only to the quantitative measure of nonlife insurance companies development in Ethiopia without any overall development tool measurement tool, which means that there are other qualitatively expressed factors such as the attitude of customers towards insurance, opinion of the experts in the industry about what qualitative factors could affect insurers development that could have been captured through interview or questionnaire and strengthened the output of this study.

### **1.9 Organization of the Paper**

For a systematic and scientific approach, this research work was divided into five chapters. Based on this, the first chapter introduces the research subject briefly and outlines the research background, incorporating the problems and results from past studies. Furthermore, the significance, scope, operational definitions, limitations, and hypothesis of the study are also included. Chapter two includes a theoretical review related to general insurance and empirical review. Chapter three is research design and methodology. Chapter four is results and discussions in which the finding results are interpreted. Finally, Chapter five brings to an end the research with the conclusion, recommendations, and further research direction.

# CHAPTER TWO

## LITERATURE REVIEW

This chapter consists of two sections. The first section (2.1.) deals with insurance-related theoretical studies, section (2.2.) discusses previous empirical literature on the area of non-life insurance business development.

### **2.1. Theoretical Literature review**

Agency theory is the foundation of this intermediary relationship. Agency theory is a management and economic theory that attempts to explain relationships and self-interest in business organizations. It describes the relationship between principals and agents and the delegation of control. It explains how best to organize relationships in which one party principal (P) determines the work and which another party (agent (A) performs or makes decisions on behalf of the principal. According to agency theory terms, the insuring public would constitute the owners or principals and the insurance agents would constitute the managers or agents. There is an agency loss which is the extent to which returns to the residual claimants, the owners fall below what they would be if the principals, the owners, exercised direct control of the corporation (Jensen & Meckling, 1976). There is a low trust on the insurance industry by the insuring public (IRA, 2012). On the back of this low trust, the insuring public engages agents in the form of insurance agents and insurance brokers to act on their behalf while entering into insurance contracts.

The theoretical model explaining the demand for insurance was first developed by (Outreville 1996). (Porat, Spiegel et al. 1991) showed that insurance demand is dependent on the allocation process of the consumer during his whole life. In his life-cycle approach, Yaari (1965) worked with the issue of uncertainty of a consumer's life span. He proved that the consumer's lifetime utility function is influenced by the time of the individual's death, his preference to bequeath income for dependents, and to direct a part of his earnings towards retirement. The lifetime utility function of a consumer is maximized by a direction of prices (containing insurance premiums) and by a direction of interest rates. This approach assumes that the insurance demand is dependent on interest rates, expected earnings of an individual during his life, wealth, and the price for insurance products.

Mossin (1968) the model also led to the prediction that insurance would be an inferior good i.e. the rich backed by greater funds would be more likely to self-insure and demand less insurance cover. Wealth and income are however correlated with many other factors related to insurance demand. For example, a wealthier person tends to have greater assets at risk and due to their lifestyle faces different levels of risk. Wealthier people may also have different attitudes towards risk and a different level of education about risk and insurance.

Mayers and Smith Jr (1986) the theoretical model of the demand for property insurance by individuals implicitly assumes that individuals can form correct estimates of the probabilities associated with all possible loss outcomes. In his analysis, factors that are important determinants of insurance consumption include wealth, the probability of loss, the price of insurance, the value of the item exposed to risk, and the utility function of the individual considering the purchase of insurance. Smith finds that when the price of insurance per dollar of coverage is less than one and the probability of no loss is greater than zero the optimal insurance purchasing decision may entail either purchasing or not purchasing coverage.

Lewis (1989) extended the model of Yaari (1965) by allowing the preferences of beneficiaries and dependents. In other words, he included also other members of the household in his model, not just the main earner as in the approach of Yaari (1965). He suggests that the probability of the main earner's death and the risk degree are positively correlated with the life insurance demand. Respectively, the household's wealth and policy-loading factor are negatively linked with the insurance demand. However, there are many other factors driving insurance consumption. Among the most substantial belong price of insurance, the stability of the monetary system, development of banking and market sector, urbanization or corruption control. In the approach of (Lewis 1989), these determinants could be expressed by the policy-loading factor because they are supposed to influence the insurance costs. Insurance demand theory based on the expected utility paradigm Szpiro (1985) suggests that an individual's purchase of insurance depends on several different factors. These factors include the individual's income and wealth, the price of insurance, the individual's degree of risk aversion, and the probability of loss (Browne et al 2000, p76).

### **2.1.1 Concept of Insurance**

According to Khan, Alam et al. (2011), Insurance is a risk transfer mechanism that ensures full or partially not suffers loss help the unsuccessful ones who suffer a loss during a defined insurance period (Kripa and Ajasllari 2016). It seems Insurance not only facilitates economic



transactions through risk transfer and indemnification but it also promotes financial intermediation (Shala, Ahmeti et al. 2014). More specifically, insurance can have effects such as promote financial stability, mobilize savings, facilitate trade and commerce, and 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. Mitoko (2013) Insurance provides economic protection from identified risks occurring or discovered within a specified period. Insurance is a unique product in that the ultimate cost is often unknown until long after the coverage period, while the revenue premium payments by policyholders are received before or during the coverage period (Mehari and Aemiro 2013).

Insurance is an important growing part of the financial sector in virtually all developed and developing countries a resilient and well-regulated insurance industry can significantly contribute to economic growth and efficient resource allocation through a transfer of risk and mobilization of savings. The insurance business is usually divided into two main classes namely: a) General insurance business - This is a contract between an insurer and the insured where the insurer undertakes to indemnify the assured against losses, which may result from the occurrence of specified events within specified periods. General insurance business can be subdivided into motor, fire, accident, oil, and gas, contractors' all risks and engineering risks; marine and credit insurance, bond and surety ship, etc. This is a contract between the assurer and the assured whereby the assurer undertakes to pay benefits to the policy holder on the attainment of a specified event. b) Life assurance business: comprises individual life business, group life insurance, and pension business, health insurance business and annuities. Mitoko (2013), financial compensation for the loss or damage caused by event(s) beyond the control of the insured party, under an insurance contract, a party (the insurer) indemnifies the other party (the insured) against a specified amount of loss, occurring from specified eventualities within a specified period, provided a fee called premium is paid. Insurance compensation is normally proportionate to the loss incurred and the basic purpose is to put the insured in the same financial position as he/she was before the loss.

Malik (2011) insurance plays a crucial role in the development of commercial and infrastructural businesses. From the latter perspective, it promotes financial and social stability; mobilizes and channels savings; supports trade, commerce, and entrepreneurial activity, and improves the quality of the lives of individuals and the overall wellbeing in a country. The financial system comprises of financial institutions, financial instruments, and financial markets that provide an effective payment, credit system, risk transfer, and there by

facilitating channelizing of funds from savers to the investors of the economy (Charumathi 2012).

The term insurance is defined by referring to two important schools of thought: i) transfer school and ii) pooling school. According to transfer school, “insurance is a device for the reduction of uncertainty of one party, called the insured, through the transfer of particular risks to another party; called the insurer, who offers a restoration, at least in part of economic losses suffered by the insured” (Boadi, Antwi et al. 2013). According to pooling school “the essence of insurance lies in the elimination of uncertainty or risk of loss for the individual through the combination of a large number of similarly exposed individuals” Chen and Wong (2004), Insurance operates on the principle of pooling risks where the people contribute to a common fund in form of premiums and where the lucky ones who do not suffer loss help the unlucky ones who suffer a loss during a defined insurance period (Kripa and Ajasllari 2016). Insurance provides economic protection from identified risks occurring or discovered within a specified period. Insurance is a unique product in that the ultimate cost is often unknown until long after the coverage period, while the revenue premium payments by policyholders are received before or during the coverage period (Mehari and Aemiro 2013). Insurance is an important growing part of the financial sector in virtually all developed and developing countries a resilient and well-regulated insurance industry can significantly contribute to economic growth and efficient resource allocation through transfer of risk and mobilization of savings.

### **2.1.2 Insurance business in Ethiopia.**

Under the Ethiopian directive number 746/12, insurance is defined as, an activity by an insurer to indemnify another person, in exchange for consideration called premium, against damage, destruction, loss, or liability in respect of a certain risk or peril to which the object of the insurance may be exposed or to pay a sum of money or another thing of value depending upon the happening of a certain event.

The history of the insurance business is as far back as the modern form of banking service in Ethiopia which was introduced in 1905. At the time, an agreement was reached between Emperor Menelik II and a representative of the British-owned National Bank of Egypt to open a new bank in Ethiopia. Similarly, modern insurance service, which was introduced in Ethiopia by foreigners, mark out their origin as far back as 1905 when the bank of Abyssinia

began to transact fire and marine insurance as an agent of a foreign insurance company. Modern insurance business in Ethiopia was started in 1905 according to various sources as stated by (Abebe 2009). Referring chamber of commerce, Gebreal (2016), also expressed that there were 19 insurance companies in 1954, 33 insurance companies in 1960, and 40 insurance companies in 1967. Based on proclamation No. 83/1994 and proclamation on the Licensing and Supervision of Banking and Insurance, seventeen insurance companies- were established and they are currently (as of 2019) operating in Ethiopia. So, the insurance business in Ethiopia was decreasing to 17 insurance companies. Due to the nationalization of all private insurance companies by the Derg Regime, all private insurance companies ceased operation and a new public insurance company was established.

According to a survey made in 1954, nine insurance companies were providing insurance services in the country. Except for Imperial Insurance Company that was established in 1951, all the remaining insurance companies were either branches or agents of foreign companies. In 1960, the number of insurance companies increased considerably and reached 33. At that time insurance business like any business was classified as trade and was administered by the provisions of the commercial code. According to(Abebe 2009), the first significant event that the Ethiopian insurance market observed was the issuance of Proclamation No. 281/1970, and this proclamation was issued to provide for the control & regulation of insurance business in Ethiopia. Consequently, it created an insurance council and an insurance controller's office. The controller of insurance licensed 15 domestic insurance companies, 36 agents, 7 brokers, 3 actuaries & 11 assessors following the provisions of the proclamation immediately in the year after the issuance of the law.

In addition to this, the law required an insurer to be a domestic company whose share capital (fully subscribed) not be less than Ethiopian Birr 400,000 for a general insurance business, Birr 600,000 in the case of long-term insurance business, and Birr 1,000,000 to do both long-term & general insurance business. The proclamation defined 'domestic company' as a share company having its head office in Ethiopia and 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.

After four years that is after the enactment of the proclamation, the military government that came to power in 1974 put an end to all private enterprises. Then all insurance companies

operating were nationalized and 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. In the years following nationalization, Ethiopian Insurance Corporation became the sole operator. After the change in the political environment in 1991, the proclamation for the licensing and supervision of insurance business heralded the beginning of a new era.

Immediately after the enactment of the proclamation in 1994, private insurance companies began to be established. Insurance companies in Ethiopia are supervised by the National Bank of Ethiopia under the legislative regulation of Insurance Proclamation No. 591/2008 and Article 42 of the Licensing and Supervision of Insurance Business Proclamation No. 86/1994. According to NBE data, the industry's aggregate contribution to national GDP (i.e. the penetration rate) is around 0.5 per cent, which is less than 1% and the insurance density is Br. 78 in 2017. This status depicts the low level of insurance development in Ethiopia from some African countries. For instance, in neighbouring Kenya insurance penetration is 2.83 per cent and in South Africa, it is 17 per cent, Namibia 6.69%, Lesotho 4.76%, and Zimbabwe 4.09% and Rwanda 1.74% (statista.com, 2017). This shows that the country's insurance business contribution to the national economy as compared with other African countries is small which calls for serious attention. This means that the level of development of the insurance sector of the country can be said as it is in its emergent stage. Thus, there may be some factors that have affected the growth of the insurance market which requires an investigation (Daniel 2019). However, despite this, the industry level of insurance penetration rate (i.e. the ratio of written premium to GDP) that represents the contribution of the insurance industry to the national economy and the insurance density (i.e. ratio of written premium to the total population i.e. insurance per capita) which represents the level of per individual citizens annual insurance consumption are low in Ethiopia. Currently, there are 17 insurance companies in operation and both public owned and private insurance companies which are operating as of January 2020.

### **2.1.3. Contributions of non-life insurance to the economy**

Their non-life insurance products include aviation insurance, Fire and Allied Perils Insurance, Marine Insurance, Engineering, Motor, Liabilities, Accident & Health, Workmen's and Pecuniary in Ethiopia (Negash 2018). The non-life insurance sector plays an important role in the economy because of its key characteristics of risk transfer and indemnification, and pooling of losses and payment of fortuitous losses (Rejda 2011). Risk transfer is the basic

element of nonlife insurance; it involves transferring a pure risk, such as the risk of disability, poor health, premature death, destruction and theft of property, and personal liability lawsuits, from the insured to the insurer, who typically has a stronger financial position than the insured (Rejda 2011).

Another essential property of non-life insurance is indemnification for losses that the insured can recover to achieve the approximate financial position before losses having occurred (Rejda 2011). Based on the underwriting process, which includes collecting, inspecting, and analysing the information concerning risks, non-life insurers can estimate risks and the probability of losses, and thus may offer appropriate policies to help the insured reduce risks by providing useful risk management (Brainard and Schwartz 2008).

Further, non-life insurers can provide the insured with risk-averse equipment such as seatbelts, smoke detectors and automatic fire extinguishing systems and extinguishing agents. In addition to these benefits, the non-life insurance sector provides economic benefits such as investing as a financial intermediary and complementing other financial intermediaries. Insurance occupies an important place in the complex modern world since risk, which can be insured, has increased enormously in every walk of life. This has led to growth in the insurance business and the evolution of various types of insurance covers. The insurance sector acts as a mobilizer of savings and a financial intermediary and is also a promoter of investment activities. It can play a significant role in the economic development of a country, while economic development itself can facilitate the growth of the insurance sector. (Rao 2010) reported that Insurance is a vital economic activity and there is an excellent scope for its growth in emerging markets, like Ethiopia. The opening up of the insurance sector has raised high hopes among people of the world. In recognizing its benefit, Arora and Mehta (2010) have shown that Insurance companies will have to take initiative in educating people about the benefits of taking insurance, and also they should come with more innovative and flexible plans so that the people are encouraged to take policies. If people are aware of the insurance policy, they should understand the reality of why they are insured and should try to understand its essence.

## **2.2. Empirical literature review**

In this section, the researcher tries to present previously studied empirical researches that have been conducted in the area of non-life insurance business and related areas.

Beck and Webb (2003) researched 68 countries of the world, with the intent to investigate what drives the large variance in life insurance consumption across countries. Three different measures of life insurance consumption and incorporate various economic, demographic, and institutional factors were used in their research. Accordingly, they found that countries with high income per capita levels, more developed banking sectors, and lower inflation tend to consume larger amounts of life insurance. In addition, life insurance consumption is observed to be positively influenced by private savings rate and real interest rate. However, factors such as education, life expectancy, young dependency ratio, and size of social security did not appear to be robustly associated with life insurance consumption.

Moreover, Hwang and Gao (2003) conducted on the determinants of demand for life insurance in the case of China. The study has found that several significant factors which have influenced people in China to purchase life insurance products in the past decade are directly related to the increase in the level of income, the increase in education levels, and the change in the social structure (such as family structure and urbanization). However, the research fails to show the negative effect of inflation on the life insurance demand in China, even China experienced high inflation in the mid-1990s.

Lee (2014) undertakes the study on the relationship between firm-specific factors and macroeconomics on profitability in the Taiwanese property-liability insurance industry using the panel data over the 1999 - 2009 for ten consecutive periods. Two dependent variables such as operating ratio and return on assets for the two kinds of profitability indicators used to measure insurers' profitability and the impact of twelve independent variables which including underwriting, financial leverage, firm size, underwriting risk, firm growth, reinsurance, return on investment, market share, diversification, input cost, economic growth rate, inflation rates, and financial holding. The multiple regression OLS models were used in the analysing data and a random effect model was selected.

The findings show that underwriting risk, financial leverage, reinsurance dependence, financial holding, and input cost has significantly and negatively related to the ROA whereas the return on investment is positively and significantly related to ROA. This finding implies that high underwriting risk, subsidiaries of financial holding group compared with other insurance companies leads the Property and Casualty insurance to lower profitability measured by ROA. In addition, the economic growth rate has a significant influence on

profitability in the operating ratio model but an insignificant influence on profitability in the ROA model.

Zhang and Zhu (2005) conducted a study in China, using data for 225 cities, which examines the determinants of China's insurance development, measured by premium volume, insurance density, and insurance penetration. Their results reveal that foreign direct investment is more significant for the property than for life insurance. Per capita GDP is the only variable significant for all measures of life consumption, while the total population, savings deposit, education attainment, telephone ownership per capita, social welfare expenditure, and young dependency are significant for life premiums. Variables such as wage level, savings deposit, and investment in fixed assets, report their significant effect on the demand for property insurance.

Pervan and Kramaric (2012) investigate the influence of market share and diversification on nonlife insurance performance for eleven (11) consecutive years from the period of 1999-2009. To conduct their study internal variables like firms' profitability from previous years, market share, diversification. Control variables like ownership, industrial concentration, GDP per capita, and inflation are used whereas ROA is used as a measure of the dependent variable. According to their studies, the underlying relationships have been investigated in different industries and different disciplines state that still there is no consistency exists either in the magnitude or statistical significance of the relationship between market share (and diversification as well) on one side and companies' performance on the other side. Therefore, the direction of the relationship is also somewhat questionable. While some authors find this relationship to be positive, others reveal its negative association.

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

Hailegebreal (2016) conducted the study on macroeconomic and firm-specific determinants of profitability of the insurance industry in Ethiopia. The study considers the firm-specific

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

Gemechis (2017) investigate determinants of profitability of the non-life insurance sector in Ethiopia. The Source of data for the study was secondary data collected from twelve (12) insurance companies for a period of six years (2010/11-2015/16) with a total of 72 observations through panel data. The dependent variables were ROA as a proxy of profitability and the independent variables were industry concentration ratio, leverage, diversification, underwriting risk, reinsurance dependence, GDP, inflation, and liquidity. The finding revealed that the industry concentration ratio and leverage have a statistically significant and positive relationship with profitability. On the other hand, diversification, underwriting risk, and reinsurance dependence have a negative and statistically significant relationship with profitability. Based on this finding, the study suggests that the management bodies of the insurance companies should give high attention to firm and industry-related variables, particularly by adopting better risk management strategies and better internal control to achieve superior profitability.

Elango and Jones (2011) focused to understand what factors drive the demand for insurance, measured by insurance density and premium growth rate, in emerging markets using panel data during the years 1998-2008. Their finding indicates that demographic factors explain a greater variance relative to economic and institutional variables for insurance density, while economic factors explain the greatest amount of variance in terms of insurance growth rates. Munir, Khan et al. (2012) studied the impacts of macroeconomic & demographic variables on demand for life insurance consumption in Pakistan. Based on this, the study found that among the economic variable's financial development, gross savings, income level affect life



insurance consumption positively whereas the price of insurance is inversely linked with life insurance demand. In addition, the demographic variables of crude birth rate, crude death rate, old age dependency ratio, urbanization also have a positive relationship with life insurance demand in that country.

AYALIEW (2013) examined the factors that affect the development of the life insurance industry in Ethiopia for a time series data for the period 1991-2010. Accordingly, the study concludes that life insurance demand is determined by factors such as per capita income, life expectancy, real interest rate, and inflation. Finally, he suggested that the life insurance industry in Ethiopia seriously consider these factors to bring a significant contribution to the growth of the country's insurance industry. There is also another study conducted by (Yilma 2014) on determinants of life insurance demand in Ethiopia. The researcher used time-series data from 1983-2012 on six selected variables (i.e. income, inflation, and real interest rate, level of education, life expectancy, and dependency ratio). The OLS regression result of the study shows that income, inflation, life expectancy, education and real interest rate are the factors that significantly influence demand for life insurance in Ethiopia but in the study, dependency ratio has found no significant influence on demand for life insurance.

Petkovski and Jordan (2014) examined the determinant of non-life insurance consumption in 16 countries in Central and South-Eastern Europe (CSEE) during the period 1992-2011. The study finds that non-life insurance penetration increase with higher per-capita income and the number of passenger cars per 1,000 people, which have positively and significantly influence non-life insurance consumption in 16 countries in the CSEE. They also find that trade is significant, suggesting that more open countries accumulate more insurance assets. Also, the results from other institutional factors underline the importance of the rule of law in non-life insurance consumption. Therefore, it is worth noticing that the protection and enforcement of property rights will facilitate the demand for non-life insurance policies. However, some of the initial variables such as financial development, education, and inflation do not have a statistically significant influence on demand for non-life insurance.

Dragos (2014) studied the different factors that influence life and non-life insurance demand in emerging countries from Asia and Europe. The researcher used panel data of 17 emerging economies in 10 years. Its findings indicate that income would be the significant and positive determinant of non-life insurance demand in CEE countries but it is insignificant for life insurance demand and in Asian countries. Urbanization has a positive influence on Asian

country's life insurance demand but not in the CEE countries but it is significant for non-life insurance demand in both regions. In addition, education was found significant only for non-life insurance in both regions whereas income distribution affects both regions' insurance demand negatively. In line with this Zyka and Myftaraj (2014) conducted on factors affecting the insurance sector development in Albania over the period 1999 to 2009. By applying a co-integration regression analysis this study finds that population size, economic growth, urbanization, and paid claims are the factors that have a positive impact on the aggregate insurance premium of the country. Further, they justify that because these variables affect the culture of the population to use insurance products (all increases the level of demand for insurance) leads to an increase in the premium level. However, in the study market share of the largest company will negatively affect the level of premiums suggests that if one company holds a high market share there is a tendency to monopoly which reduces competition in the market.

Hodula, Janku et al. (2020)) examine determinants of life and non-life insurance premiums for a panel of 90 countries during the period 2000-2008. The results show that premiums are driven by per capita income, population size and density, demographic structures, income distribution, the size of the public pension system, state ownership of insurance companies, the availability of Financial Stability Report, private credit, and religion. The study further points out that the development of the insurance sector can be influenced by some policy variables.

Sulaiman, Migiro et al. (2015) investigated the factors that influence the life insurance market from Ethiopia's perspective. It employs secondary data on eleven independent variables – six of which are economic and five demographic variables for a period of 28 years from 1979/1980 to 2007/2008. The error correction mechanism (ECM), the Johansen co-integration test, and the Augmented Dickey-Fuller test were utilized in its econometric analysis. The result shows a long-term balanced connection between the variables. Inflation had a statistically noticeable negative impact on the demand and supply in the life insurance market. In addition, there was a statistically significant negative effect of the young dependency ratio on life insurance market demand while the old dependency ratio had a statistically significant positive relation to life insurance supply.

(Abbas and Ning) conducted their study on the factors that drive the development of the insurance industry in Tanzania. The study applied an OLS regression method based on 20-

year time series data. Their study suggests that there is a strong relationship between the development of the insurance sector and economic growth in Tanzania. Specifically, they found that GDP per capita harms insurance premiums in Tanzania which contradicts the previous studies. In addition, they found that inflation and real interest rate affect Tanzania's insurance industry negatively and significantly whereas the GDP growth rate is positive and significant in determining the growth of the insurance industry.

Trinh, Nguyen et al. (2016) examined the Determinants of non-life insurance expenditure in both developed and developing countries in a panel data set covering 36 developed countries and 31 developing countries for the period 2000–2011. They find that economic freedom, income, bank development, urbanization, culture, and law systems are the key drivers of the non-life insurance expenditure across countries even if their impacts differ significantly between the groups of developed and developing countries.

Burić, Smolović et al. (2017) analysed the impact of GDP, unemployment rate, wages, and the interest rate on total life premium in Western Balkans in the period 2005 to 2015 by using panel data analysis. Based on this the study finds that most of the above-mentioned economic factors have a significant impact on the total life premium of countries of the Western Balkans. Specifically, it shows that GDP and wages have a significant and positive impact on demand for life insurance, while the impact of the unemployment rate and interest rate is negative.

By using a balanced panel data model Meko et al (2019) also examined the determinants of life insurance demand in Ethiopia using the data collected from four insurance companies for sixteen years, from 2001-2016. The regression result of this study shows that real interest rate, life expectancies, age dependency ratio, urbanization, and inflation have a positive and significant effect at 1% and 5% significance level on life insurance demand in Ethiopia, whereas GDP per capita and price of insurance were found insignificant to affect life insurance demand in Ethiopia. Finally, they noted that in marketing their life insurance products concerned insurance companies should consider these factors into account.

### **2.2.1. Determinants of non-life insurance business development**

Based on the reviewed theoretical and empirical literature, in this section, the researcher was going to present the factors that have been found as a possible determinant of the non-life insurance business developments in previously conducted studies.

## **1. Economic factors of non-life insurance business development.**

**GDP growth** -is defined as  $GDP_t - GDP_{t-1}$  divided by  $GDP_{t-1}$ . GDP is one of the primary macroeconomic indicators used to measure the health of the economy of a country, and it is a measure of the overall economic output within a country over a particular time, usually a year. Rao and Birkanu (2012) stated that GDP is one of the macroeconomic indicators used to measure the health of the economy of a country, and it is a measure of the overall economic output within a country's borders over a particular time, usually a year. Vejzagic (2011) analysed macroeconomic determinants of commercial bank's profitability in Malaysia and found that real GDP is significant and has a positive relationship with Banks' profitability. Murungi (2014) GDP growth positively affects insurers profitability that is, growth of overall economic activity encourage demand for insurers services and indirectly result in higher insurers income. When an economy grows through producing more goods and services, consumers have more disposable income which to purchase assets. As they purchase more valuable assets, they are likely to consider the risk of damage and /or loss to those assets and therefore set aside more to secure their assets through insurance (Chitiyo 2017). (Cummins and Outreville 1992) propose that in principle and all other things being equal as the level of economic development of country increases, the volume of business increases, and the capacity of the insurance company to supply service also increases. In addition, (Christophersen and Jakubik 2014) also suggest that there is a strong link between gross written premium and economic growth. Improved economic activity will raise the demand for non-life insurance, improve income and spending, which will increase investment appetite and create greater demand for protection and saving needs, which in turn will boost the sale of life insurance (UNCTAD, 2018).

**Financial or banking sector Development:** As identified by (Beck and Webb 2003) life insurance demand is significantly influenced by the banking sector development and (Daniel 2019) was studied on financial developments. It is expected that the banking sector development to be positively correlated with life insurance consumption. Well-functioning banks may increase the confidence consumers have in other financial institutions, e.g. life insurers. They also provide life insurers with an efficient payment system. The efficient development of the entire financial system - as might be reflected in the absence of interest rate ceilings and other policies - is thought to help life insurers invest more efficiently. (Outreville 1996) finds a significantly positive relationship between financial sector development and life insurance penetration.

**Trade openness:** Petkovski and Jordan (2014) find that trade openness is significant, suggesting that more open countries accumulate more insurable assets. In addition, Newbery and Stiglitz (1984) suggest that trade openness contributes to the development of the financial sector by increasing the necessity of insurance and risk diversification through financial institutions due to increasing uncertainty, income volatility, foreign competition, and higher exposure to external shocks. Trade openness is measured by looking at the ratio of exports (and imports) to GDP (Outreville 2013). The expectation is that more openness (i.e. higher ratio) would positively impact non-life insurance demand, as increased trade would require more companies to protect their goods and/or services against potential future losses or damage, increasing the need for non-life insurance products (Chitayo 2017).

## **2. Firm-specific factors for insurance business development**

**Firm size** - In this study, firm size is computed as the logarithm of the total assets of the insurance company. A positive linkage between firm size and developments of general insurance is expected since larger firms have more resources, better risk diversification, complex information systems, and better expenses management.es in potential areas.

Many studies have been conducted to examine the effect of firm size on firm profitability (Mehari and Aemiro 2013) ; (Burca and Batrinca 2014) ; (Boadi, E. K., Antwi, S., & Lartey, V. C. 2013)(Boadi, Antwi et al. 2013) ; According to (Öner Kaya 2015).and (Suheyli 2015)are among other researchers who investigate the effect of size on firm profitability. However, the results are inconsistent. In numerous pieces of literature, it has been suggested that company size is positively related to financial performance. For instance, (Suheyli 2015)examines the Determinants of Insurance Companies Profitability in Ethiopia and the results of the study indicate that the profitability of insurers is positively and significantly influenced by size. (Malik 2011)also, find a significantly positive association between size of the company and profitability. Further (Ayele 2012)and (Mehari and Aemiro 2013) in their study results identified size as the most important determinant factors of profitability and it is positively related.

Several studies have been conducted to examine the effect of size on the financial performance of insurance companies. Most of the researchers in insurance have found a positive relationship between size and profitability. For example, Demirguc & Maksimovic (1998) and Sommer (1996) have established a positive correlation between size and profitability. Also, Asimakopoulos et al. (2009) found that the profitability of companies is

positively impacted by company size. Browne et al. (2001) has shown empirically that company size is positively related to the financial performance of US life insurance companies. Moreover, Almajali et al. (2012) surveyed 25 insurance companies of Jordan during the period 2002-2007 by using many basic statistical techniques such as T-test and Multiple-regression. The results showed that Size has a positive statistical effect on the financial performance of Jordanian Insurance Companies.

Lietivos Bankas (2015) demonstrated large volumes of the insurance market were due to growth in insurance branches. According to McKinsey's Global Insurance Industry Insights insurers must concentrate their resources to increase their market share on the segments and regions that offer the most potential for high growth, such as big cities in emerging markets. As per Swiss Re (2015) global insurance review, the growth of the insurance sector in the Philippine is attributed to the establishment of new branches.

**Underwriting risk**-Underwriting is the process of selecting certain types of risks that have historically produced a profit and rejecting those risks that do not fit the underwriting criteria of the insurer. Sound underwriting guidelines are pivotal to an insurers' financial performance. Insurance prices are established based on estimates of expected claim costs and the costs to issue and administer the policy. The estimates and assumptions used to develop policy pricing may prove to ultimately be inaccurate. This may be due to poor assumptions, changing legal environments, increased longevity, higher than expected weather catastrophes (Nissim 2010).

Underwriting risk is the risk that the premiums collected will not be sufficient to cover the cost of coverage. It comprises a high proportion of an insurer's overall risk. Huge fluctuations in net premiums written indicate a lack of stability in underwriting operation of an insurance company. An unusual increase in net premiums written might indicate that the company is engaging in the so called cash-flow underwriting to attempt to survive its financial difficulty. However, this is not necessarily the case. An unusual increase in net premiums written could indicate favourable business expansion if it is accompanied by adequate reserving, profitable operations, and stable products mix (National Association of Insurance Commissioner, 2001). Good underwriting risk selection normally produces a favourable loss ratio. This means the premium collected, less loss and expenses, produces a profit for the insurer. Insurers must carefully underwrite all risks to avoid being the victim of adverse selection. The underwriting

risk reflects the adequacy or otherwise of insurers' underwriting performance (Adams and Buckle 2003).

Barth and Eckles (2009), found a negative relationship between premium growth and changes in loss ratios, suggesting that premium growth alone does not necessarily result in higher underwriting risk. Organizations that engage in risky activities are likely to have more volatile cash flows than entities whose management is more averse to risk-taking (Fama and Jensen 1983). Therefore, a negative connection between the underwriting risk and the insurers' financial performance is expected, since taking an excessive underwriting risk can affect the company's stability through higher expenses. Furthermore, insurance companies with high annual insurance losses will tend to increase their level of corporate management expenses example, claims investigation and loss adjustment costs that could further worsen a decline in their financial performance. Excessive risk-taking could adversely affect the performance of insurance companies.

The insurers undertake to accept default risk when people and properties are covered. Srivastava and Ray (2013) argued that income from underwriting insurance and return on investment are the proxies of financial performance. Underwriting return has a positive relationship on investment that would increase the financial performance of the life insurance companies (Akotey, Sackey, Amoah, & Manso, 2013).

**Premium growth (PG)** – 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. There is some research done by using these variables are such as (Kripa and Ajasllari 2016) (Chen and Wong 2004, Hailegebreal 2016) as both types of research claim the existence of positive and significant relation between premium growth rate and companies' profitability.

**Leverage ratio**-Leverage is the amount of debt used to finance companies assets. It was measured by the total debt to total equity value (Capital and reserve) of the company (Mehari and Aemiro, 2013; Asrat and Tesfahun, 2016). Insurers generate leverage from unearned premiums, unexpired policies, and any outstanding claim amount (Lee, 2014). Leverage measures the degree to which a business is utilizing a debt fund (Kazeem, 2015). Therefore, the studies conducted by Simon (2016), Kazeem (2015), Sumaira and Amjad (2013), and Ayele and Sambasivam (2013) states that bad investments decisions lead to a negative

leverage-profitability relationship which suggesting that highly leveraged companies tend to achieve less profitability of the non-life insurance business. However, the studies conducted by Teklit and Jasmindeep (2017), Malik (2011), Sumaira and Amjad (2013), Ayele and Sambasivam (2013), Jovovic et.al., (2014) and Mehari and Aemiro (2013) have found evidence in support of a positive relationship which suggesting that a highly leveraged insurer has better enjoyed financial performance achieved. Therefore, these conflicting results provide genuine incentives for further investigation of this relationship. From the above theoretical explanations, the researchers anticipate that the relationship between the profitability of the general insurance companies and leverage is a negative sign.

### **2.2.2 Conclusion and Knowledge gap**

From the above-reviewed literature's it is possible to conclude that while prior studies have examined insurance demand, profitability, financial performances, challenges of insurance in both developed and emerging markets none has exclusively examine the determinant of non-life insurance business development in the Ethiopia. Most researchers were done in insurance business industry in different years, mostly on life insurance or non-life insurance business but only one study was done in Ethiopia on both by Daniel (2019) determinants of insurance business development by examining the economic and demographic determinants of insurance business development in Ethiopia. The study used 38 annual secondary time series data covering the period from 1980 to 2017. As far the researcher knowledge was focused only on external factors affecting insurance business development in Ethiopia.

Based on this, this study was aimed to identify the factors that have the potential and significant determine non-life insurance business development in Ethiopia by estimating different the selected macroeconomic and firm-specific factors on non-life insurance business by adding internal factors. So, no research was conducted on determining non-life insurance business development in Ethiopia by using the following selected macroeconomic and firm-specific factors. The selected economic variables were gross domestic product growth, financial developments (bank developments) and trade openness. The selected firm-specific factors were firm size, underwriting risk, premium growth, and leverage ratio. So the researcher's would like to do on non-life insurance business development in Ethiopia.

First, the researcher was included both the internal and external factors that determine the development of the non-life insurance business Ethiopia. Second, The researcher's methodology was unique from the previous researcher done in insurances business

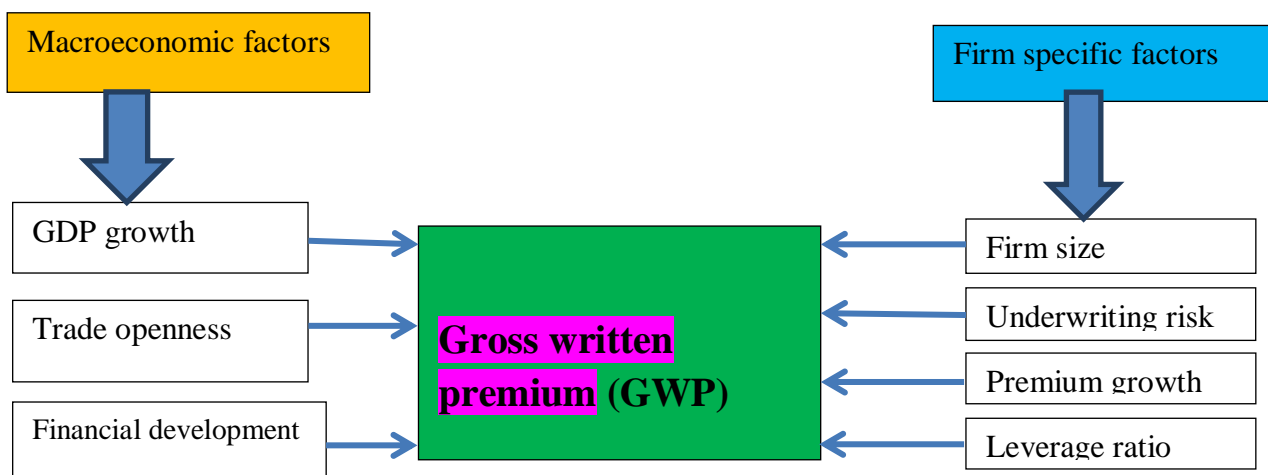


development in Ethiopia by Daniel (2019) used 38 annual secondary time series data, only external factors. Third, by introducing some additional new variables as explanatory variables that were not examined in previous researches conducted in Ethiopia. No research was done on this title specifically on non-life insurance business developments using the above selected factors. So this study was full above gaps that existed and the study was examining on determinants of non-life insurance business development in Ethiopia.

### 2.2.3 Conceptual framework

As discussed above non-life insurance business development was influenced by both internal and external factors. The researcher identified and included in this study determinants of non-life insurance business development when gross written premium was as dependent variable. Selected macroeconomic factors and firm-specific factors were as independent variables. Among macroeconomic factors were financial development, trade openness and the gross domestic product growths were studied in this study. Among firm-specific factors, firm size premium growth, underwriting risk, and leverage ratio, were studied in this study. This conceptual framework that is the relation between nonlife insurance business developments and selected macroeconomic and selected firm-specific factors as illustrated below.

Figure 2.1 Conceptual framework



Source: By Researcher based on previous theoretical and empirical review.

# CHAPTER THREE

## RESEARCH DESIGN AND METHODOLOGY

### 3.1 Research Design

It is a road map of the research discussed in this section. The study was explanatory research designed to conduct a quantitative research approach. Explanatory research is actually a type of research design which focuses on explaining the aspects of your study in a detailed manner. The study was to evaluate determinants of non-life insurance business development in Ethiopia selected insurance companies in Ethiopia. The data was necessary for the quantitative approach were determined based on the variables to be analysed.

### 3.2. Population of the Study

The population is the total of the collection of all elements having similar characteristics; (Cooper and Schindler 2001) The population of the study was the non-life insurance business in Ethiopia. Among the all insurance industry the only nonlife insurance was selected and life insurance was not selected for study as discussed on the objective of the study. According to the population of the study were 17 insurance companies in Ethiopia for the period of 2010/11 to 2019/20. The researcher selects the year based on Insurance companies that had 10 years of data and insurance companies that formed before 2011. Based on their establishment year twelve (12) insurance companies were selected for the study.

### 3.3. Sampling technique

Among the private 16 insurance companies in Ethiopia, private insurance companies eleven were selected and one state insurance company was selected for the study. In this study, the researcher was chosen an insurance company purposively based on their age of formation. The researcher selects insurance that formed before 2011 in Ethiopia. Because among insurance 17 insurance existed in Ethiopia twelve (12) insurance were represent the other for determining non-life insurance business development in Ethiopia. So the researcher, purposive sampling techniques were used for conducting this research. As it is discussed in the scope of the study the selected insurance companies were Ethiopia insurance corporation (EIC), Awash Insurance Company S. C (AIC), Africa Insurance Company S. C (AIC), National Insurance Companies of Ethiopia (NICE) S.C, Nyala Insurance Company S.C, Nile Insurance Company S.C, The United Insurance Company S.C, Global Insurance Company S.C, NIB Insurance Company S.C, Lion insurance corporations, Ethio life, and General

insurance S.C and Oromia insurance company. These companies were selected purposely because of their age. To have a long time series, recently established companies have to be excluded from the study. Because it was represented by a selected insurance company and they are few in numbers. In this study, the period of study was 10 years of nonlife insurance business for the year 2010/11 to 2019/20. Both public and private non-life insurance companies were included in this study.

### **3.4. Source and Type of data.**

The data was secondary data required for quantitative research approach. The data collected were panel data which have the dimensions of both time series and cross-sections. The panel data covers dependent variables and independent variables. Therefore, this study was based on secondary yearly data collected from twelve insurance company's audited financial statements from NBE. The study was used secondary data that would be obtained from the National Bank of Ethiopia, World Bank (World Development Indicators), which would be used as a data source.

### **3.5 Variable and Their Measurement**

Based on literature review and empirical studies the researcher was identified relevant influential factors to be included in the quantitative research. This identification may not be exhaustive. However, the researcher suggests at this point that further indicators may be explored and discussed in the future. It is also to be noted that this study is only focused on quantitative analysis.

#### **3.5.1 Dependent Variable**

**Gross written premium:** In this study, the dependent variable is non-life insurance business development which is measured by the gross insurance premium. Gross written premium is the most usual and simplest indicator of insurance industry development and it can be defined as the total premium written and assumed by an insurer before deductions for reinsurance and ceding commissions and are the principal source of an insurance company's revenues. Previous researchers such as Zhang and Zhu (2004), Cepelakova (2015) and Christophersen & Jakubik (2014) used gross insurance premium in their study as a measure of the country's insurance sector development.

- Gross written premium (GWP)= Natural log of GWP

### 3.6.2 Independent variables

As an independent variable, the researcher was selected both internal and external factors means macroeconomic factors (gross domestic product growth, financial developments, and trade openness) and internal factors of some firm-specific (leverage ratio, premium growth, firm size, underwriting risk,) factors. The justification behind selecting these variables is due to the availability of data and those variables were influential factors. Panel data would be constructed consisting matrix of time series (ten years) with selected 12 insurance companies. Below the researcher presents the definition and measurement of each of the explanatory variables of the study.

**GDP growth-** GDP growth is defined as GDP at the time of  $t$  less GDP at the time of  $t$  minus one divided by GDP at the time of  $t$  minus 1. GDP is one of the primary macroeconomic indicators used to measure the health of the economy of a country, and it is a measure of the overall economic output within a country over a particular time, usually a year. Economic growth indicates an increase in the production of goods and services over a specific period. This study used the percentage change in annual real GDP as a measure of economic growth which is the increase in the inflation-adjusted market value of the goods and services produced over time

- GDP growth-percentage change in annual real GDP

**Financial development (FID)**-Measurement of financial development seems controversial because countries differ in their institutional environment and have different financial structures according to their development stage (Outreville 1990).

- For this study, we use the broad money to GDP ratio (M2/GDP) as a measure of financial development.

**Trade openness:** shows inward and outward movement of goods through a country or territory including movements through customs warehouses and free zones. Goods include all merchandise that either adds to or subtracts from the stock of material resources of a country or territory by entering (imports) or leaving (exports) the country's economic territory. Trade openness is measured by looking at the ratio of exports (and imports) to GDP (Outreville 2013).

- Accordingly, this study has used the sum of import and export to GDP as a proxy to trade openness.

**Size of the firm (FS)**-Performance is likely to increase in size because larger firms will have better risk diversification, more economic scale advantage, and overall better cost efficiency. In this study, total asset is used as a proxy for Company Size.

➤ Firm Size = Natural log of total assets

**Underwriting risk (U risk)**-Underwriting is the process of selecting certain types of risks that have historically produced a profit and rejecting those risks that do not fit the underwriting criteria of the insurer. Underwriting risk is the risk that the premiums collected will not be sufficient to cover the cost of coverage. Underwriting risk is the risk of loss borne by an underwriter.

➤ claim incurred / premium earned

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

➤  $PG = (GWP(t) - GWP(t-1)) / GWP(t-1)$

**Leverage ratio (LV)**: It is a financial ratio that indicates the percentage of a firm's assets that are financed with debt. The Leverage Ratio is measured as:

➤ Leverage Ratio= Total Liabilities/Total Assets

Table 3. 2 Summary of variable measurements

Type-of variable/s	Variable	Measurement	Notation	Expected sign
Dependent	Gross written premium	Natural log of GWP	GWP	
Independent Variables	Gross domestic product	$(GDP_t - GDP_{t-1}) / GDP_{t-1}$	GDP	+
	Financial development	Broad money to GDP ratio (M2/GDP)	FID	+
	Trade openness	The sum of import-export divided by GDP	TO	+
	Underwriting risk	claim incurred / premium earned	U risk	-
	Firm size	Natural log of total assets	FS	+

	Premium growth	(GWP (t) – GWP (t-1)) / GWP (t-1)	PG	+
	Leverage ratio	Total Liabilities/Total Assets	LR	-

### 3.6. Model specification.

The degree of relationship between two variables can be studied using correlation analysis. However, since the Gross insurance premium has a probability of distribution, to determine the impact of different variables regression analysis is required. The researcher used the following equation to develop the equation.

$$Y_{it} = \alpha + \beta X_{it} + \varepsilon \dots \dots \dots 1$$

Where: -  $Y_{it}$  is the dependent variable for the firm 'i' in years,  $\alpha$  is the constant term,  $\beta$  is the coefficient of the independent variables of the study, X it is the independent variables for firm 'i' in year 't' and  $\varepsilon$  the normal error term.

$$GWP = \alpha + \beta_1 GDP_{growth_{it}} + \beta_2 FID_{it} + \beta_3 TO_{it} + \beta_4 FS_{it} + \beta_5 URISK_{it} + \beta_6 PG_{it} + \beta_7 LR_{it} + \varepsilon \dots \dots \dots 2$$

Where: Variables as represented by;

GWP= Gross written premium

FID=Financial development

GDP = Gross domestic product growth

PG=Premium growth

U risk= Underwriting risk

TO= Trade openness

FS= Firm size

LR= Leverage ratio. i- Is insurance companies 1.....12 t- is number of years the number of years 1 ... .10 and also  $\alpha$ = Constant or interpretation of the parameters  $\beta$  is a coefficient of variables relationships where the estimator is true or efficient, linear or consistent, and unbiased. And assuming  $\varepsilon$  is error term assuming average value of the errors is zero, errors

have constant variance and covariance between the error terms over time is zero that is errors were uncorrelated.

### **3.7. Data Analysis technique**

The data was analysed by panel data of time serious with cross section of insurance companies. In this type of distribution of data analysis techniques that were conducted are descriptive statistics, correlations analysis, and multiple linear regression analysis, and models assumption tests. The researcher was used STATA 16 statistical software to analyse the data. In descriptive statistics, the maximum, minimum, mean, and standard deviation of the 12 insurance companies panel data of dependent variable and independent variables was discussed.

### **3.8 Models Assumption Tests**

To maintain the data validity and robustness of the regressed result of the research, the basic classical linear regression model (CRLM) assumptions must be tested for identifying any misspecification and correcting them to augment the research quality. According to Park, (2002), four basic CLRM assumptions need to be satisfied and that was tested in this study, which was: errors equal to zero mean tests, normality, homoscedasticity, and Multicollinearity; these are:

#### **3.5.1 Assumption 1: The errors have zero mean ( $e = 0$ )**

According to Gujarati (2012), if a constant term is included in the regression equation, this assumption will never be violated.

#### **3.5.2. Assumption 2: The Normality Test**

The normality assumption assumes that the errors of prediction are normally distributed. The Skewness-Kurtosis used to check the null hypothesis that the sample is drawn from a normally distributed population (Gujarati 2012).

#### **3.5.3. Assumption 3: The Homoscedasticity Test**

Multiple linear regressions require that the variance is homoscedastic. Heteroskedasticity occurs when the variance of the error term does not have constant variance. The parameter estimates for partial regression coefficients including the intercept are not biased if this assumption is violated; however, the standard errors are biased and hence significance tests may not be valid (Gujarati 2012). To test for homoscedasticity, the Breush-Pagan Test and the White test were used.

#### **3.5.4. Assumption 4: The Multicollinearity test**

Multicollinearity refers to the situation in which independent variables are highly correlated; resulting in a paradoxical effect, whereby the regression model fits the data well, but none of the independent variables has a significant impact in predicting the dependent variable (Gujarati 2012). Among several ways of Multicollinearity tests, the Pearson coefficient of correlation between variables and the Variance Inflation Factor (VIF) was used to detect any problem.



# CHAPTER FOUR

## RESULTS AND DISCUSSIONS

This chapter presents the results and discussions concerning the relationship between non-life insurance gross written premium as a dependent variable and gross domestic product growth, financial developments, trade openness, underwriting risk, premium growth, firm size, leverage ratio as independent variables. Thus, the chapter presents detailed information on the findings of the study and discussion regarding the relationship between a dependent variable and independent variables.

### 4.1. Descriptive Statistics Analysis

The following Table 4.1 provides a summary of the descriptive statistics of all variables for the twelve Ethiopian general insurance for a period of ten years from the year 2010–2019 with 120 observations. The Table reports the mean, minimum, maximum, standard deviation, and number of observations and the descriptive statistics were presented and discussed as follow; as shown in Table 4.1, the descriptive statistics were presented for the “overall” observations, “between” cross-sections (the 12 insurance companies) and values “within” individual companies. The total number of observations is 120, which is a product of twelve (12) general insurance companies (cross-sections) and 10 time-series data for each company.

Regarding to gross written premium (GWP) of the non-life insurance business in Ethiopia, the mean value has (1.23e+10) birr across the ten years included in the study. There were also around (5.85e+10) birr deviations from the mean value across the ten years included in the study. The maximum (5.47e+11) and minimum (1561921), birr this is a relatively high variation from the average value. The maximum and minimum of gross domestic product growth are 9.461 and 4.054 respectively with a mean of 6.8149 is about indicating the gross domestic product growth of general insurance companies varied with ( 1.428855) this indicates low dispersion from the average value.

The maximum and minimum of financial developments (bank developments) are 33.5412 and 25.3452 respectively with a mean was 29.11807 about indicating the financial developments of general insurance company varied with (2.497693) this indicates low dispersion from the average value. The Mean value of trade openness is 0.39076, the standard deviation is 0.0698714 with the minimum value 0.2882 and the maximum value is 0.4923. The mean value of firm size and its standard deviation were (6.96e+08) and (7.78e+08) birr respectively. The

maximum and minimum firm sizes over the years were 4.34e+09 and 2.72e+07 birr respectively.

Regarding UR (underwriting risk), the Mean value is 0.2807115, the standard deviation of 0.2912374 is with the minimum value -0.4618 and the maximum value is 1.5622. Regarding PG (premium growth), the Mean value is 0.0557911; the standard deviation is 0.0621218 with a minimum value of 0.001321 and the maximum value is 0.284321. The Mean value of the leverage ratio is 0.7146238 standard deviation is 0.0831147 with a minimum value of 0.5429186 and the maximum value is 0.8224487.

Table 4. 1. Descriptive statistics

Variable	O b s	Mean	Std. Dev.	Min	Max
<b>GWP</b>	120	1.23e+10	5.85e+10	1561921	5.47e+11
<b>GDP growth</b>	120	6.8149	1.428855	4.054	9.461
<b>FD</b>	120	29.11807	2.497693	25.3452	33.5412
<b>TO</b>	120	0.39076	0.0698714	0.2882	0.4923
<b>Firm size</b>	120	6.96e+08	7.78e+08	2.72e+07	4.34e+09
<b>U risk</b>	120	0.2807115	0.2912374	-0.4658	1.5622
<b>PG</b>	120	0.0557911	0.0621218	0.001321	0.284321
<b>LR</b>	120	0.175302	0.1447076	0.02752	0.974531

Source: Own computation via Stata version 16, 2021

## 4.2 Correlations Analysis

The major purpose of the correlation matrix in this particular study was to indicate the linear association between the dependent and independent variables. According to (Brooks 2008) the correlation between two variables measures the degree of linear association between them. The values of the correlation coefficient always lie between a positive one and a negative one. When the correlation coefficient is a positive one, it means that there is a perfect positive relationship between the two selected variables; while a correlation coefficient of negative one indicates a perfect negative association between the two variables. On the other hand, a correlation coefficient of zero indicates that there is no linear relationship between the two variables. Based on below Table 4.2 Pearson correlation matrix is applied to examine the association between growth written premium versus gross domestic product growth, financial developments, trade openness, underwriting risk, firm size, premium growth, leverage ratio, as independent variables. The result of Pearson correlation matrix indicates that growth written premium has a positive correlation with financial development, trade openness

premium growth, and leverage ratio while the correlation between growths written premiums with the left variables is negative. Regarding to below Table 4.2 financial development is 0.7347 correlations with trade openness and GDP growth was negatively correlated with this amount (-.0433) financial development. GWP was with this amount (0.5027) financial development. Besides the result of the correlation analysis made in below Table indicates that there is no multicollinearity problems among explanatory variables since each of them are not above 0.8 thresholds. As noted by in Gujarati (2004), a serious problem for multicollinearity has occurred if the correlation is about 0.8 or larger. As observed from the Table, multicollinearity is not a serious problem since the majority of correlation coefficients are below 0.7347 (Malhotra, 2004).

Table 4. 2 Correlations analysis

	GWP	GDP growth	FD	TO	Firm size	U risk	PG	LR
<b>GRP</b>	<b>1.0000</b>							
<b>GDP</b>	<b>-0.0116</b>	<b>1.0000</b>						
<b>FD</b>	<b>0.5027</b>	<b>-.0433</b>	<b>1.0000</b>					
<b>TO</b>	<b>0.4881</b>	<b>-.0193</b>	<b>0.7347</b>	<b>1.0000</b>				
<b>Firmsize</b>	<b>-0.1592</b>	<b>-.1782</b>	<b>-.3108</b>	<b>-0.3697</b>	<b>1.0000</b>			
<b>U risk</b>	<b>-0.4763</b>	<b>0.0492</b>	<b>-.4291</b>	<b>-.5196</b>	<b>0.6353</b>	<b>1.0000</b>		
<b>PG</b>	<b>0.2122</b>	<b>.0716</b>	<b>-.0950</b>	<b>-.0474</b>	<b>-.0366</b>	<b>-.0257</b>	<b>1.0000</b>	
<b>LR</b>	<b>0.3806</b>	<b>-0.0912</b>	<b>0.3947</b>	<b>0.4580</b>	<b>-.6191</b>	<b>-.5880</b>	<b>0.0248</b>	<b>1.0000</b>

Source: Own computation via Stata version 16, 2021

### 4.3. Tests for the Classical Linear Regression Model (CLR) Assumptions

This section presents the test for the assumptions of the classical linear regression model (CLR) namely the error have zero mean, normality, Heteroskedasticity test, and Multicollinearity.

#### 4.3.1. The Errors Have Zero Mean ( $e = 0$ ).

According to Brooks (2008), if a constant term is included in the regression equation, this assumption will never be violated. Thus, the regression model used in this study was include a constant term, even if not significant.

### 4.3.2. Normality Test

According to Gujarati (2004), Normality can be tested either by graphical or numerical/statistical methods. As the result, this study tests the normality of data by using both graphical and statistical methods. A Skewness /Kurtosis test is the statistical method used to test normality numerically further more the graphical method is normal probability plot (NPP) is used to test the normality of data.

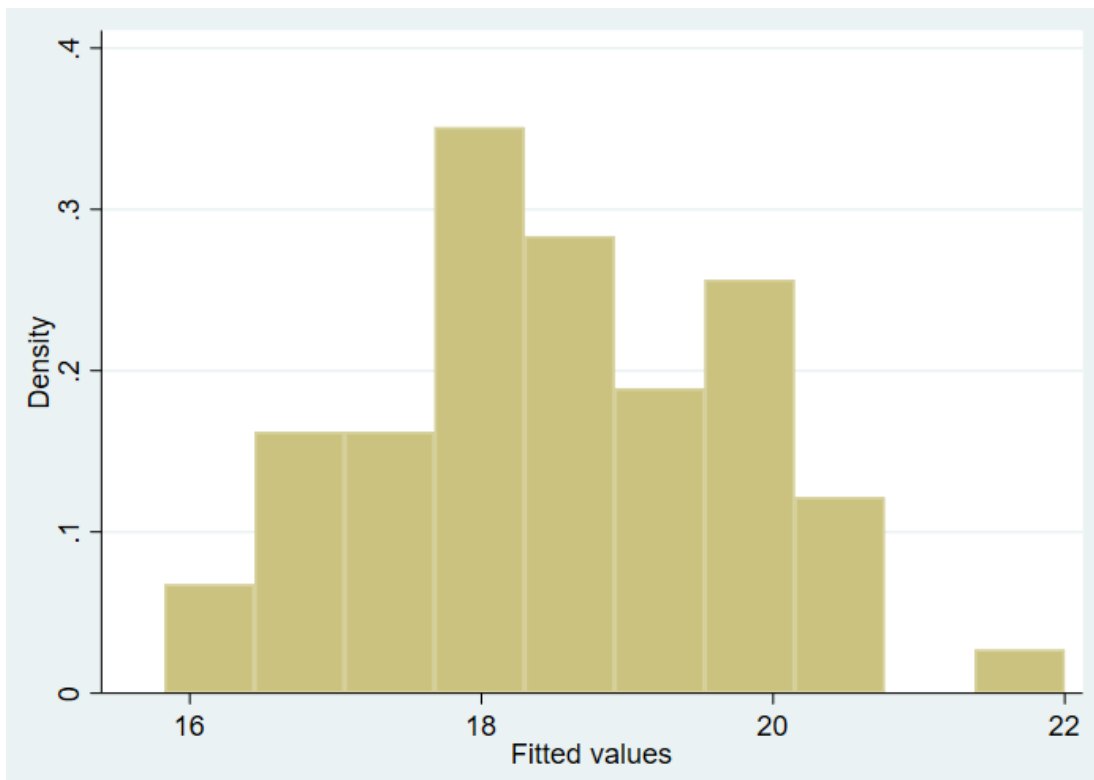
As indicated on Skewness/Kurtosis tests in Table 4.3 below, on the test result, the “p” value for all variables is greater than the already determined 0.05 level of significance. This leads to accepting the null hypothesis, which says that the data is normal. The “p” values for all variables are 0.6099 greater than 0.05 levels of significances and the researcher was also showed the normality of data by graphical methods as shown Figure 4.1 below. So the data was normal.

Table 4.3 Skewness/kurtosis tests for normality

Variable	O b s	P r (skewness)	P(kurtosis)	A d j chi2(2)	Prob.chi2
Residual	120	0.9458	0.3253	0.99	0.6099

Source: Own computation via Stata version 16, 2021

Figure 4.1 Histogram from the sample of non-life insurance companies (2010-2019)



Source: Own computation via Stata version 16, 2021

### 4.3.3. Heteroskedasticity Test

To detect the heteroskedasticity problems, Breusch-Pagan or Cook Weisberg test was utilized in this study. This test states that if the p-value is significant at 95 confidence interval, the data has a heteroskedasticity problem, whereas if the value is insignificant (greater than 0.05), the data has no heteroskedasticity problem. Thus, as shown in Table 4.4, there is no heteroskedasticity problem for this study hence the p-value is 34.78% showing an insignificant value.

Table 4.4 Test for Heteroskedasticity

Breusch-Pagan/Cook-Weisberg test for heteroskedasticity

H0=constant variable

Variables=fitted values of IPR

<b>Chi2(1)</b>	<b>0.88</b>
<b>Prob &gt;chi2</b>	<b>0.3478</b>

Source: Own computation via Stata version 16, 2021

### 4.3.4. Multicollinearity

Multicollinearity refers to the situation in which independent variables are highly correlated; resulting in a paradoxical effect, whereby the regression model fits the data well, but none of the independent variables has a significant impact in predicting the dependent variable (Gujarati, Bernier et al. 2004). Furthermore, the existence of Multicollinearity is tested by calculating the Variance Inflation Factor (VIF) where a VIF coefficient greater than 10 indicates the presence of Multicollinearity(Chatterjee and Price 1977). The results in Table 4.6 report a mean VIF of 2.45, which is much lower than the limit of 10, the VIFs for individual variables were also very low; hence, the Multicollinearity assumption was fulfilled.

Table 4.5 Variance Inflation Factor (VIF) of the explanatory variables

<b>Variable</b>	<b>VIF</b>	<b>1/VIF</b>
<b>U risk</b>	4.37	0.228774
<b>LR</b>	4.05	0.246742
<b>TO</b>	2.45	0.408347
<b>FD</b>	2.22	0.451324
<b>Firm size</b>	1.91	0.523492
<b>GDP growth</b>	1.12	0.896605

<b>PG</b>	1.02	0.980145
<b>Mean VIF</b>	2.45	

Source: Own computation via Stata version 16, 2021

#### 4.4 Model Specification Test (Fixed effect versus Random effect)

This study uses panel data; two types of panel estimator approaches can be employed, namely: fixed-effects models (FEM) and random effects models (REM) (Brooks 2008). According to Maddala and Lahiri (1992) conducting Hausman test for model specifications to decide whether the FE or RE the null hypothesis is random effects (REM) and the alternative hypothesis is fixed effect (FEM), if the Hausman test result is statically significant then we accept the alternative hypothesis but the result is statically insignificant then we accept the null hypothesis. Therefore, this research to examine for model specifications to decide whether the FEM or REM, Hausman specifications test was conducted and the hypotheses denoted as follows The result providing evidence in favour of the Hausman test for fixed effect and random effect as presented in Table 4.7 the p-value for tests is 0.3647 the probability value is high, meaning that more than 5% meaning that the fixed effect model was not appropriate to explain the result. So to identify the appropriate model needs a further test of Breush and pagan Lagrangian multiplier test.

**Null hypothesis:** Random effects is appropriate

**Alternative hypothesis:** The fixed effect is appropriate

Table 4.6 Hausman Fixed-Random specification test

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<b>Prob chibar2 =0.3647</b>
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Source: Own computation via Stata version 16, 2021

#### ➤ Further Test for Appropriate Model

Further test was also conducted to choose between random effect versus pooled OLS regression model by using Breush and pagan Lagrangian multiplier test and the result shows that random effect regression model is fitted for the study since the P-value is significant at 5% level of confidence. As it showed from below in Table 4.7 of further test for selection of random and ordinary least squares the probability of chibar2 squares is significant. This implies that random effect regression model is appropriate since  $\text{prob} > \text{chibar2} = 0.000$  less than 0.05. Since is  $\text{Prob} > \text{chibar2}$  significant at 5% level of significance pooled OLS not was selected.

Table 4.7 Breusch and pagan Lagrangian multiplier test for a random effect.

$$I_{pr} [code,t] = Xb + u[code] + e[code,t]$$

Estimated results:

	Var	Sd = sqrt (var)
Gwp	3.404101	.1.845021
e	1.597328	1.263854
u	.3534801	.594542
Test: var(u)=0	Chibar2(01) =15.33 Prob>chibar2(01) = <b>0.0000</b>	

Source: Own computation via Stata version 16, 2021

#### 4.5 Regression Results Analysis

This section presents over all the empirical results of the regressions. To examine the relationship between gross written premium and independent variables regression analysis was undertaken. In the following Table coefficients, standard errors, t-values, and p-values for explanatory variables, and R-squared, adjusted R-squared, Standard Error of regression, and F-statistic for the regression, and number of observations included in the study are presented.

From below Table 4.8, R-square is (0.4510) and adjusted R –square is (0.4167). This means that the 45.1% variation in gross written premium is captured or explained by seven independent variables while the remaining change is due to other factors. As Rendón (2012) in general, overall of coefficient of values of R-square below 0.2 (20%) are considered weak, between 0.2 and 0.4, moderate, and above 0.4 (40%), strong. Therefore, R-square of this study is categorized under “strong” because it’s overall of coefficient R-square is above 40%.

As indicated on the regression result below Table 4.8, of the seven independent variables were financial development, firm sizes, Premium growth have a positives and statistically significant at 1% level of confidence with (non-life) general insurance business in Ethiopia. Underwriting risk has a negative and statistically significant with (non-life) general insurance business in Ethiopia at 1% level of confidence. On the other hand, the remaining three variables- Gross domestic product growth and trade openness have a positive and insignificant at 5% level of confidence. Leverage ratio (LR) a negative and statistically insignificant influence on the gross written premium.

In general, the whole model is statistically significant. Since the model's F-statistics tests the fitness of the model and a recommended F-statistics should be greater than 5 for it to be considered fit, this study obtained an F-statistic of 13.14 which is greater than 5 hence the model was fit for estimation (Brooks, 2008). The regression F-statistic (13.14) and the p-value of zero attached to the test statistic reveal that the null hypothesis that all of the coefficients are jointly zero should be rejected. Thus, it implies that the explanatory variables in the model were able to explain variations in the dependent variable. A P-value of 0.0000 indicates strong statistical significance, which enhanced the reliability and validity of the model. The random effect model estimation regression result in the below Table 4.8 shows coefficient intercept ( $\alpha$ ) is 24.04586 per cent. This means, when all explanatory variables took a value of zero, the average value GWP would take 24.04586 per cent and statistically significant at 5% of the significance level. The study also interprets the result as follow:

$$IPRi_t = 24.04586 + 0.8269416 \text{ GDP growth} + 0.0488994 \text{FD} + 0.1207285 \text{TO} + 16.78254 \text{ Firm size} - 0.1907512 \text{U risk} + 7.93306 \text{PG} - 0.028729 \text{LR} + \varepsilon_i_t$$

## 4.6 Discussion Results

### A. Gross written premium (GWP) and Gross Domestic Product (GDP growth)

As the random effect regression result presented from Table 4.8 below, there have insignificant at 5% level of confidence and a positive relation between GDP growth and the development of General Insurance in Ethiopia with Coefficient of this amount (0.8269416) and P-value of 0.065. Holding other independent variables constant at their average value, when GDP growth increased by one unit, gross written premium of sampled Ethiopian non-life insurance companies would be increased by 82.69416% and the researcher reject the hypothesis one because of expect that a positive relationship between GDP growth and non-life insurance premium.

This implies could be the relationship between GDP growth and nonlife insurance was direct relationship, because of GDP of the country is one of the most important external factors which determine the development of different business. This finding is similar with (Daniel 2019). This result is inconsistent with to the result of previous studies such as the finding of Outriville (1990) which founds that economic growth is among the significant factors that influence to increase the in property-liability insurance consumption of countries. And inconsistent with Abbas and Ning (2016) conducted their study on the factors that drive the



development of the insurance industry in Tanzania, GDP per capita negative relation with insurance premium.

### **B. Gross written premium (GWP) and financial developments (FD)**

The result of random effect model from Table 4.8 below shows that on financial developments or banks developments has a positive and statically significant at 1% level of confidence with nonlife insurance business developments. Coefficient of this variable was (0.048972) and the P-value of 0.004. Holding other independent variables constant at their average value, when increased Financial developments by one unit, gross written premium of sampled Ethiopian nonlife insurance companies would be increased by 4.8972% and the researcher accept the hypothesis two of the study due to, there is positive relationship and significant between Financial developments and gross written premium.

This finding is consistent with (Lewis (1989), Sen (2008), Jordan K. (2012), Beck and Webb (2003), Munir and Khan (2012). This finding inconsistent with Trinh, Nguyen et al. (2016) examined the Determinants of non-life insurance expenditure in both developed and developing countries. This study is also inconsistent with the short-run regression output finds a significant and negative effect of financial development on non-life insurance (Daniel 2019).

This may be due to the fact that financial sector development is associated with the widespread securitization of cash flows, which enables households to secure future income through the ownership of financial assets. By offering similar benefits, non- life insurance is expected to generate higher sales in countries with a high level of financial development and this increase non-life insurance demand because peoples aware the importance of financial instruments and they will start to use non-life insurance products as saving alternatives. In addition, well-functioning banks and other financial institutions may increase the confidence consumers have in other financial institutions such as insurance which offers almost similar financial services.

Further, these financial institutions, especially banks, provide insurers with an efficient payment system which enable insurers to offer quality and efficient insurance service to their clients and this also increase the demand for their services. In relation to this, Patrick (1966) suggests that the lack of financial growth is a manifestation of the lack of demand for financial services. In addition, he noted that as the real side of the economy develops (i.e. the

financial system); demand for various new financial services (such as insurance services) materializes.

### **C. Gross written premium (GWP) and trade openness (TO)**

As the random effect regression result presented from Table 4.8 below, there have insignificant at 5% level of confidence and a positive relation between trade openness and the development of General Insurance in Ethiopia with Coefficient of this amount (0.1207285) and P-value of 0.456. Holding other independent variables constant at their average value, when trade openness increased by one unit, gross written premium of sampled Ethiopian non-life insurance companies would be increased by 12.07285% and the researcher reject the hypothesis three of the study, because of a positive and significant relationship between trade openness and non-life insurance premium.

This implies that more openness (i.e. higher ratio) would have a positive impact on insurance demand, but not favourable effect on non-life insurance business in this study. This may be due to our country Ethiopia not having high trade openness ratio. Thus, the growth of import-export activity influences positively the insurance demand of a country. This result in consistent with this (Newbery and Stiglitz, 1984, Svalery and Vlachos, 2002) notes that trade openness contributes to the development of the financial sector by increasing the demand (necessity) for insurance products due to increasing uncertainty, income volatility, foreign competition, and higher exposure to external shocks. In addition, (Petkovski and Jordan (2014) suggest that the more open countries accumulate more insurance assets

### **D. Gross written premium (GWP) and Firm Size (FS)**

The results of the random effect model from Table below 4.8 presented that, there was a significant at 1% level of confidence and a positive relationship between firm size and development of General Insurance business in Ethiopia with P-value of 0.000. The coefficient is (16.78254). Holding other independent variable remain constant, which is interpreted as one percent change in the firm size would lead to a increase 16.78254 percent change on the development of Ethiopian general insurance business which measured by gross written premium. The researcher accept hypothesis four of the study.

This finding consistent with For instance, Malik (2011) finds significantly positive association between size of the company and profitability of insurance companies. This result shows that, large general insurance in Ethiopia can make a better developed than the small

ones because large general insurance companies normally have a greater total assets to absorb in the insurance market than small insurance companies and have more economies of scale in terms of claim handling, which is the most significant production factor for delivering insurance services, modern information systems and a better expenses management.

The main reasons behind this summarized as follows. First, large general insurance companies normally have a greater capacity for dealing with adverse market fluctuations than small insurance companies. Second, large general insurance companies usually can relatively easily recruit able employees with professional knowledge compared with small insurance companies. Third, large general insurance companies have economies of scale in terms of the labour cost, which is the most significant production factor for delivering insurance services.

#### **E. Gross written premium (GWP) and underwriting risk (U risk)**

The results random effect model of the study revealed that there is a significant at 1% level of confidence and negative relationship. More specifically the coefficient between underwriting risk is -0.1907512 with a P-value of 0.000. Holding other independent variables constant at their average value, when underwriting risk increased by one unit, nonlife insurance gross premium of sampled Ethiopian nonlife insurance companies would be decreased by 19.07512 % and the researcher accept hypothesis five of the study.

This implies that underwriting risk was a negative favourable effect on the non-life insurance business development in Ethiopia in ten years (2010-2019). The results indicate that low underwriting risk produces a positive effect on development. It implies that higher underwriting risk increases the operating ratio, indicating an adverse effect on the firm's development. This finding is consistent with previous studies Gemechis (2017), and (Burca and Batrinca 2014). This finding also similar with Lee (2014) macro-economic and firm specific factors profitability of property liability insurance industry in Taiwanese.

#### **F Gross written premium (GWP) and Premium growth (PG)**

The result of premium growth from random effect regression has a positive relationship and significant with nonlife insurance developments in Ethiopia at a 1% level of confidence. The coefficient of is (7.93306) and the P-value of 0.000. Researcher accept the hypothesis six of the study and that there is a positive relationship and significant between premium growth and non-life gross written premium.

Holding other independent variables constant at their average value, when Premium growth (PG) increased by one unit, nonlife insurance gross premium of sampled Ethiopian nonlife insurance companies would be increased by 0.079336% .This finding is supported by other literature such as Hailegebreal (2016)and Al-Shami (2008) as both types of research claim the existence of positive and significant relation between premium growth rate and companies' profitability. This result is inconsistent with (Habtamu Berhanu Abera 2020).

This implies that higher premium growth of non-life insurance gross written premium annually has a positive impact on developments of non-life business. This means, higher premium growth means higher development of the general insurance business. Because of when insurance premium of general insurance companies in Ethiopia increases their developments of general insurance also increases. So premium growth of insurance companies in Ethiopia has strong positive relationship with developments of non-life insurance business.

#### **G. Insurance penetration rate (IPR) and Leverage ratio (LR)**

The regression result indicates that the leverage ratio is negatively and insignificantly related to the developments of the non-life insurance companies in Ethiopia for the last ten years on this study. More specifically the coefficient of leverage ratio from Table 4.8 above is -.028729 and statistically insignificant with P-value is 0.761.Holding other independent variables constant at their average value, when the Leverage ratio increased by one unit, nonlife insurance premium of sampled Ethiopian nonlife insurance companies would be decreased by 2.8729% .The researcher accept the hypothesis seven of the study,that there is a negative relationship between Leverage ratio and non-life gross written premium. This result is inconsistent with that of Adams and Buckle (2000),(Jing-shui 2004),and Elango, Ma et al. (2008) on performances of insurance companies in Ethiopia.

Table 4.8 Regression Results for determinants of the non-life/general insurance business in Ethiopia.

<b>GWP</b>	<b>COEF.</b>	<b>Std. Err.</b>	<b>T</b>	<b>P&gt; t </b>	<b>[95%Conf</b>	<b>Interval]</b>
<b>GDP growth</b>	0.8269416	.448972	1.84	<b>0.065</b>	-.0530273	1.70691
<b>FD</b>	0.0488994	.0170862	2.86	<b>0.004*</b>	.0154111	.0823877
<b>TO</b>	0.1207285	.1619488	0.75	<b>0.456</b>	-.1966853	.4381424
<b>Firm size</b>	16.78254	4.609994	3.64	<b>0.000*</b>	7.747115	25.81796
<b>U risk</b>	-.1907512	.0519711	-3.67	<b>0.000*</b>	-.2926127	-.0888897

<b>PG</b>	7.93306	2.224715	3.57	<b>0.000*</b>	3.572699	12.29342
<b>LR</b>	-.028729	.0944691	-0.30	<b>0.761</b>	-.213885	.1564271
<b>-cons</b>	24.04586	7.975409	3.02	<b>0.003</b>	8.41435	39.67738
F(7,112)=13.14	Adjusted R-squared=0.4167					
Prob>F=0.0000	Root					
Rsquared=0.4510	MSE=1.4091					

Source: Own computation via Stata version 16, 2021. Note- \* Significance at 1% level

The Table below 4.9 shows, that the summary of actual result that the researcher get from the regression and the hypothesis of expected result that researcher was predicted in chapter one.

Table 4. 9 Summary of hypothesis testing

Variables	Expected result	Actual result	Decision
GDP growth	Pos and sign	Pos and insign	Reject
FID	pos and sign	pos and sign	Accept
Trade openness	Pos and sign	Pos and insign	Reject
Firm size	Pos and sign	Pos and sign	Accept
Underwriting risk	Neg and sign	Neg and sign	Accept
Premium growth	Pos and sign	pos and sign	Accept
Leverage ratio	Neg and ins	Neg and ins	Accept

Where, Pos = Indicates positive, sign= significant, Neg= Negative, ins= Insignificant

Source: own computation

# CHAPTER FIVE

## CONCLUSIONS AND RECOMMENDATIONS

This chapter is organized into three subsections. 5.1 Conclusions of major findings section 5.2 the recommendations, and 5.3 further research direction.

### 5.1. Conclusions

The main objective of this study was to examine determinants of non-life/general insurance business developments in Ethiopia. The researcher focused on selected macroeconomic factors and firm-specific factors determining developments of the nonlife insurance business in Ethiopia. The researcher conducted a quantitative approach for conducting this study. The researcher used random effect model of regression analysis after test based on the breusch pagan and Lagrangian multiplier test and used for estimation covers 12 non-life private and public insurance companies in Ethiopia from the year 2010 to 2019 that data were collected from National Bank of Ethiopia (NBE) and World Bank. The researcher, purposive sampling techniques and quantitative research approach were used for conducting this research. Data of the dependent variable and the independent variables were tested for the assumptions of the classical linear regression model (CLRM) namely the error have zero mean, normality, heteroskedasticity test, and Multicollinearity. The independent variables of twelve insurance companies of ten years data were GDP growth, financial development (FID), trade openness (OP), underwriting risk, Premium growth (PG), Firm size (FS), and leverage ratio (LR), were factors that determine of the non-life/general insurance business development in Ethiopia.

As indicated on the regression result of the seven independent variables were financial development, firm sizes, Premium growth has a positives and statistically significant at 1% level of confidence with (non-life) general insurance business in Ethiopia. Underwriting risk has a negative and statistically significant with (non-life) general insurance business in Ethiopia at 1% level of confidence. On the other hand, the remaining three variables- Gross domestic product growth and trade openness have a positive and insignificant at 5% level of confidence. Leverage ratio (LR) a negative and statistically insignificant influence on the gross written premium. The R-square is (0.4510) and adjusted R –square is (0.4167). This means that the 45.1% variation in gross written premium is captured or explained by seven independent variables while the remaining change is due to other factors In general, the

whole model is statistically significant. Since the model's F-statistics tests the fitness of the model.

## **5.2. Recommendations**

Based on the regression result of the study the following were recommended:-

General insurance companies in Ethiopia should be focused on premium growth, to develop their insurance business developments. To develop premium growth of general insurance companies in Ethiopia should broaden the scope of products available, service quality and increase insurance company's gross written premiums, insurance companies need to modify their products to the unique needs of local companies and attracts consumers in the non-life insurance market.

Firm Size has a positively significant effect on the development of Ethiopian general insurance companies. Non-life insurance companies should increase their company size as they expected as a requirement to add a business or to enter into a new business( open new insurance branch) in any sector. In addition to this, they can raise their size by converting their non-income earning assets to income-earning assets like treasury bills, bank deposits, 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. Through opening various branches which will lead the company to be more accessible to clients and result in the increase of its production which will have add on effect on the increase of the company's capital. In addition to this opening various branches, it will increase the accessibility of non-life insurance services. This helps the company to have more clients and to identify the need for insurance services for different societies and areas. The size of the company could also help it work with world-class reinsurers who are respected and have high capacity. So, the study recommends that general insurance companies operating in Ethiopia should focus on their size to improve their developments.

Underwriting risk is negatively related to the developments of the non-life/general insurance business in Ethiopia with statistical significance. This implies that a higher level of claims incurred results in lower developments. This shows that minimizing claims incurred and at the same time increasing earned premium will improve the insurers' developments. Minimizing claims incurred could be increasing earned premium by reducing risk-bearing policy through imposing higher rate on the policy which has higher risk.

In addition to the above general insurance business in Ethiopia should be more correlated with financial developments, especially banks in Ethiopia because of financial developments was more interconnected with general insurance business developments positively. Finally, the regulatory body of Ethiopian insurance companies that is NBE should have to work more with non-life insurance companies to develop.

### **5.3. Further Research Direction**

In this section, the researcher gives an insight for further researchers as a possible researchable area especially for those who have an interest to study the area of insurance. Thus, this study tries to show effect of external factors (i.e. selected economic variables) and internal factors (premium growth, firm size, underwriting risk, leverage ratio) on the non-life insurance business development in Ethiopia. Besides the impact of economic and firm-specific factors, the development of insurance should also be analyzed concerning other external factors such as institutional, socio- demographic and socio-cultural factors and in addition to these, internal and external determinants of life insurance business in Ethiopia.



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## APPENDIX

### Appendix A- Regression

. reg gwp gdpgrowth fd to firmsize urisk pg lr

Source	SS	df	MS	Number of obs	=	120
Model	182.692274	7	26.0988963	F(7, 112)	=	13.14
Residual	222.39572	112	1.98567607	Prob > F	=	0.0000
Total	405.087994	119	3.40410079	R-squared	=	0.4510
				Adj R-squared	=	0.4167
				Root MSE	=	1.4091

gwp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gdpgrowth	.37456	.4684174	0.80	0.426	-.553549	1.302669
fd	.0422284	.0133393	3.17	0.002	.0157982	.0686586
to	.1913705	.1553241	1.23	0.221	-.1163843	.4991252
firmsize	15.31277	5.06522	3.02	0.003	5.276691	25.34886
urisk	-.1874093	.0553192	-3.39	0.001	-.2970171	-.0778014
pg	7.277019	2.100351	3.46	0.001	3.115443	11.43859
lr	-.0420296	.1041166	-0.40	0.687	-.2483234	.1642642
_cons	23.72159	8.352954	2.84	0.005	7.17128	40.2719

### Appendix B-Descriptive analysis

sum gwp gdpgrowth fd to firmsize urisk pg lr

Variable	Obs	Mean	Std. Dev.	Min	Max
gwp	120	1.23e+10	5.85e+10	1561921	5.47e+11
gdpgrowth	120	6.8149	1.428855	4.054	9.461
fd	120	29.11807	2.497693	25.3452	33.5412
to	120	.39076	.0698714	.2882	.4923
firmsize	120	6.96e+08	7.78e+08	2.72e+07	4.34e+09
urisk	120	.2807115	.2912374	-.4658	1.5622
pg	120	.0557911	.0621218	.001321	.284321
lr	120	.7146238	.0834147	.5429186	.8224487

### APPENDIX C-Correlation Analysis

```
corr gwp gdpgrowth fd to firmsize urisk pg lr
(obs=120)
```

	gwp	gdpgrowth	fd	to	firmsize	urisk	pg	lr
gwp	1.0000							
gdpgrowth	-0.0116	1.0000						
fd	0.5027	-0.0433	1.0000					
to	0.4881	-0.0193	0.7347	1.0000				
firmsize	-0.1592	-0.1782	-0.3108	-0.3697	1.0000			
urisk	-0.4763	0.0492	-0.4291	-0.5196	0.6353	1.0000		
pg	0.2122	0.0716	-0.0950	-0.0474	-0.0366	-0.0257	1.0000	
lr	0.3806	-0.0912	0.3947	0.4580	-0.6191	-0.8588	0.0248	1.0000

#### APPENDIX D-Normality Data Tests

```
sktest residual
```

Variable	Skewness/Kurtosis tests for Normality				
	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	joint Prob>chi2
residual	120	0.9458	0.3253	0.99	0.6099

#### APPENDIX E-Heteroskedasticity Tests

```
. hettest
```

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of gwp

chi2(1) = 0.88

Prob > chi2 = 0.3478

#### APPENDIX F-Multicollinearity Tests by Variance Inflation factor (VIF)

```
. vif
```

Variable	VIF	1/VIF
urisk	4.37	0.228774
lr	4.05	0.246742
to	2.45	0.408347
fd	2.22	0.451324
firmsize	1.91	0.523492
gdpgrowth	1.12	0.896605
pg	1.02	0.980145
Mean VIF	2.45	



APPENDIX-G Random effect model regression

```

Random-effects GLS regression           Number of obs   =       120
Group variable: code                   Number of groups =        12

R-sq:                                   Obs per group:
    within = 0.4587                      min =          10
    between = 0.4231                     avg =         10.0
    overall = 0.4453                      max =          10

corr(u_i, X) = 0 (assumed)              Wald chi2(7)    =       92.82
                                           Prob > chi2     =       0.0000
    
```

gwp	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
gdpgrowth	.8269416	.448972	1.84	0.065	-.0530273	1.70691
fd	.0488994	.0170862	2.86	0.004	.0154111	.0823877
to	.1207285	.1619488	0.75	0.456	-.1966853	.4381424
firmsize	16.78254	4.609994	3.64	0.000	7.747115	25.81796
urisk	-.1907512	.0519711	-3.67	0.000	-.2926127	-.0888897
pg	7.93306	2.224715	3.57	0.000	3.572699	12.29342
lr	-.028729	.0944691	-0.30	0.761	-.213885	.1564271
_cons	24.04586	7.975409	3.02	0.003	8.41435	39.67738
sigma_u	.59454195					
sigma_e	1.2638543					
rho	.18119681	(fraction of variance due to u_i)				

APPENDIX H-Hausman Fxed-Random Specification Tests.

`hausman re re`

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fe	(B) re		
gdpgrowth	1.058241	.8269416	.2312996	.1102879
fd	.0639112	.0488994	.0150118	.032583
to	.0847549	.1207285	-.0359737	.0930576
firmsize	17.81701	16.78254	1.034476	.5462804
urisk	-.1813754	-.1907512	.0093758	.0390811
pg	8.745002	7.93306	.8119415	1.126014
lr	-.0276026	-.028729	.0011264	.0151389

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

Test: Ho: difference in coefficients not systematic

chi2(7) = (b-B)'[(V\_b-V\_B)^(-1)](b-B)  
 = 7.65  
 Prob>chi2 = 0.3647  
 (V\_b-V\_B is not positive definite)

APPENDIX –I Breusch and Pagan Lagrangian multiplier test for random effects

`. xttest0`

Breusch and Pagan Lagrangian multiplier test for random effects

$gwp[code,t] = Xb + u[code] + e[code,t]$

Estimated results:

	Var	sd = sqrt(Var)
gwp	3.404101	1.845021
e	1.597328	1.263854
u	.3534801	.594542

Test:  $Var(u) = 0$

chibar2(01) = 15.33  
 Prob > chibar2 = 0.0000

APPENDIX-J Name of insurance company operating in Ethiopia 2020

No	Name of insurance company	Type	Year
1	Ethiopian insurance corporation	General	1975
2	Africa insurance company S.C	General	1994
3	Awash insurance company S.C	General	1994
4	National Insurance company of Ethiopia S.C	General	1994
5	Nyala insurance company S.C	General	1995
6	Nile insurance S.C	General	1995
7	The united insurance S.C	General	1997
8	Global insurance company S.C	General	1997
9	NIB insurance company	General	2002
10	Lion insurance company S.C	General	2007
11	Ethio life insurance S.C	General	2008
12	Oromia insurance company S.C	General	2009
13	Abay insurance company	General	2010
14	Birhan insurance company S.C	General	2011
15	Tsehay insurance company S.C	General	2012
16	Lucy insurance S.C	General	2012
17	Buna insurance company.	General	2013