ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
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Ethiopian Insurance sector and its Contribution to Economic Growth

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ETHIOPIAN INSURANCE SECTOR AND ITS CONTRIBUTION TO ECONOMIC GROWTH

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Statement of certification

This is to certify that this project work ‘Ethiopian Insurance sector and its contribution to economic growth”, undertaken by Kahase G/Michaele Atsebaha for the partial fulfillment of Arts of Masters of Business Administration degree in Financial Services, is an original work complies with the regulations of the University and meets the accepted standards with respect to originality.

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(The Project Advisor)

Declaration

I, Kahase G/Michaele Atsebaha declare this work entitled “Ethiopian Insurance Sector and Its Contribution to Economic Growth” is outcome of my own effort and that all sources of materials used for the study have been duly acknowledged. I have produced it independently except for the guidance and suggestions of the research advisor.

This study is an original work complies with the regulations of the University and meets the accepted standards with respect to originality.

By Kahase G/Michael Atsebaha

Signatue _____

Date _____

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ACRONYMS:

ADF: Augmented Dickey Fuller

CGFS: Committee of the Global Financial System

ECM: Error Correction Method

EIC: Ethiopian Insurance Corporation

EPRDF: Ethiopian People's Revolutionary Democratic Front

EU: European Union

GDP: Gross Domestic Product

GNP: Gross National Product

GMM: Generalized Momentum Method

GWP: Gross written premium

ICT: Information communication technology

NBE: National bank of Ethiopia

OECD: Organization for Economic Co-Operation and Development

OLS: Ordinary Least Square

PP: Phillep- Perron

R&D: Research and development

SIB: Supervisory of Insurance Business

SSA: Sub-Saharan Africa

TIM: Total Insurance Investment

TIP: Total Insurance Premium

TIR: Total Insurance Return

UNCTAD: United Nations Conference on Trade And Development

US: United States

USD: United States of Dollar

VAR: Vector autoregressive

VECM: Vector Error Correction Model

ABSTRACT

The study examines the contribution of Ethiopian Insurance industry to the economic growth. It analyses both the long run and short run dynamics among important determinants of variables over the period 37 years (1980-2016). Using unit root tests and Johansen Co integration tests are applied to investigate relationship among the variables respecting. Error correction model has been used to analysis the long run and short run movements of variables. A pair wise granger causality test has also used to examine the causal relationship among the variables in the model.

The study observed that there is long run relationship between insurance development and economic growth in Ethiopia. The regression result indicated that insurance premium and insurance claim has significant and negative relationship with economic growth in the long run and short run dynamics. However insurance profit has positive significant and insurance investment has positive but insignificant relation with economic growth. The result of granger causality test indicates that there is unidirectional relationship from economic growth to insurance premium, insurance claim and insurance profit. It also shows bidirectional relationship between economic growth and insurance profit. However insurance investment has no causal relation with any variable in short run. The implication of this finding is that there is a causal relationship between insurance performance and economic growth. The study concludes that the economic growth has positive impacts on the growth of insurance development.

Key Words: Economic Growth, Insurance Premium, Claim Payment, Insurance Profit, and Insurance Investment, Unit Root test, Co-Integration, ECM and Granger Causality.

CHAPTER ONE

1. Introduction

1.1 Background of the Study

Financial markets perform the essential economic function of channeling funds from households, firms, and governments that have save surplus funds by spending less than their income to those that have a shortage of funds because they wish to spend more than their income. Mishkin and Eakins (2012) further is processes of indirect finance using financial intermediaries, is the primary route for moving funds from lenders to borrowers. Financial intermediaries can be classified into three categories:-depository institution (Banks), non-depository or contractual savings institutions (Insurances) and Investment intermediaries.

The activity of insurance (insurance market) has been defined by number of researches. The function of insurance is discussed by Skipper (2001) that insurance market activity, provider of risk transfer and indemnification and as an institutional investor, may contribute to economic growth in the following ways: (a) mobilizing domestic savings;(b) allowing different risks to be managed more efficiently, thereby encouraging the accumulation of new capital; (c) boosting financial stability ; (d) facilitating trade and commerce The most ancient insurance activity) (e) supporting to reduce or mitigate losses; and(f) fostering a more efficient allocation of domestic capital. Arena (2006) also described insurance market activity, both as a financial intermediary and provider of risk transfer and indemnification, may contribute to economic growth by allowing different risks to be managed more efficiently and by mobilizing domestic savings.

Downey (1991) defined insurance as a system which allows people who suffer loss or accident to be paid financial compensation for the effects of that misfortune. These payments come out of a fund which is built up from the contribution of the people who participate in the system of insurance for that particular risk.

The insurance industry is one of the most important industries of the economy. It fulfils various functions which are indispensable for many modern economy and society. Insurers contribute significantly to the financial security of private households and take on risks from companies, laying the foundation for economic activities, innovation and sustainable economic growth Theis (2015). In case of major losses e.g natural disasters the insurance industry quickly provides the affected insured's with financia1 means, thereby contributing to macroeconomic stability. In addition to that, Insurers are the biggest group of institutional investors and their focus on long term investments makes them an anchor of stability in the financial markets. Risks and insecurity are an integral part of our daily lives. Managing these risks in the best possible way is one of the major challenges for each individual, each business as well as society as a whole. Therefore, Insurance financial system is the prerequisite for sustainable economic growth and prosperity.

Haiss and Sumegi (2008) explain the presence of three, schools of thought on the nature of the relationship between insurance and economic growth. The first school of thought postulates that the insurance leads to economic growth while in contrast the second school of thought argues that economic growth leads to the development of insurance sector (Patrick, 1966). The third school of thought suggests bidirectional relationship between insurance development and economic performance. Empirical evidence conducted by Beenstock, Dickinson and Khasuria (1988) applied on both pooled time series and cross sectional analysis is on 1970-1981 data. They found that premiums are correlated to interest rate and GNP; and marginal propensity to ensure (short and long-run) rises with income per capita and is always higher in the long run.

Arena (2006) tests whether there is a causal relationship between insurance market activity (life and non-life) and economic growth. Using the generalized method of moments for the dynamic model of panel data for 56 countries and for the 1976-2004 periods The results of the study are first, robust evidence of a causal relationship of insurance market activity on economic growth. Both life and non-life insurance premium have a positive and significant effect on economic growth.

Gabriel (2015) applied to annual Nigeria data spanning from 1981-2013.The results of study reveals that total insurance investment and total insurance premium has contributed positively and significantly, While total claim payment has a significant, negative correlation to economic growth .This suggested in the study that the national insurance commission (NAICOM) should monitor claims payment of the insurance companies so as to ensure transparency, avoid extortion and incorporate prudency which will in-tern trigger the public confidence in the service rendered by the insurance companies, hence promote economic growth.

Both Haiss and Sumegi (2008) also further Investigated on the relationship between insurance and economic theoretical and empirical, on both the impact of insurance investment and premium on GDP growth, conducted in a cross country panel data analysis from 1992-2005 for 29 in Europe countries. They conclude from their findings that, though there are strong theoretical explanations for positive impact of insurance sector to economic growth, the result of empirical researches carried out up to date are mixed.

To conclude, that financial institutions are relevant industry among them insurance industry is one of the financial system component, fostering economic growth and stability. Therefore, the contributions of insurance sector on economic growth have attracted the interest of policy makers, academicians, practitioners, institutional supervisors and investors. Hence there are important issues to be investigated to support the insurance sectors in achieving the excellence, so that the relevant economic outcomes could be obtained from the help of the sector in Ethiopia by understanding the vital contribution of insurance on the economic growth and development.

1.2 Background of Ethiopian Insurance Industry

Insurance development always follows the changes takes place in the political, technological, legal, economical and social aspects of the society. All changes have significant impact on its development.

World Vision Ethiopia (2014) stipulated the Ethiopian financial sector in the rural area consists of formal, semi formal and informal financial service providers. Formal providers include commercial banks and MFIs while semi formal providers are saving and credit cooperatives. Informal providers consists of social groups that provide savings and lending functions ,private money lenders , friends and relatives as well as trade partners. Modern institutionalized financial service provision in Ethiopia has very short history. For long the people had been getting financial services through informal means, Iqqubs, Iddirs and Mahbers are classic examples of informal financial service providers in which people joined neighborhood or affinity group in order to save and access borrowings through a pool of funds and to cover emergent needs of finance. Even though their role in the urban areas is declining such institutions have pivotal role in the life of rural community.

Axco (2017) reported that insurance in its modern form was first started in Ethiopia as far back as 1905 when the bank of Abyssinia which was owned by the bank of Egypt began to transact insurance as an agent of a foreign insurance company began to underwrite fire and marine insurance policy. In 1923, the Swiss insurer Balois set up a Branch office in Addis Ababa and soon followed by other foreign companies working on an agency basis. During the Italian occupation from 1936 to 1941 only Italian insurance companies operated in the country. When Italians left, insurance companies from other European countries are restarted to operate insurance activities in Ethiopia.

Belay (2001) described that as per the survey conducted in 1954 by the Ministry of Commerce and Industry, Insurance activities was being taking out by 18 foreign insurance companies' branches or agents and one domestic insurance company called Imperial Insurance established in 1951. The insurance market was governed like any commercial goods and a service by Civil Code 1960 from the year1950s up to 1960s insurance companies has increased to 33. The numbers of local companies were established reaching a total of 13 in number. Belay (2001) further, asserts that due to mal practice of the insurance companies, for the second time other study was conducted by the Addis Ababa Chamber of Commerce in 1967. The study found that there were 30

foreign insurance branches and agents and 10 domestic companies in Ethiopia. Still it was administered by the provision of Ethiopian commercial code, 1960 except the marine insurance by marine code of Ethiopia. The minimum capital requirement was 12,500 Ethiopian dollars. In 1970 promulgation of proclamation no 281/1970 was issued to control and regulate the insurance business in Ethiopia. It was peculiar in that it created an Insurance Council and an Insurance Controller's office to ensure the soundness of the sector.

Hailmichael(2011) also disclosed that insurance market in Ethiopia was not regulated until 1960.The first proclamation was enacted in 1970 as a result of which foreign companies were prohibited directly or indirectly fro transacting insurance business in Ethiopia based on this some companies converted to domestic companies in line with the requirement of the law. Surprisingly, some of the nationalized companies were accepting business from other foreign countries, accepted business from Australia and was liable to pay its share of the famous Darwin Claims.

Pursuant to the proclamation of 1970, regulation number 383/1971 was issued by the Ministry of Commerce, Trade and Tourism on matters which help to create conductive insurance market. The controller of insurance license for 15 domestic insurance companies, 36 agents, 7 brokers, 3 actuaries and 11 assessors has been licensed in accordance with the provision of the proclamation immediately in the year after the issuance of the law (Hailu, 2007)

In 1975 all insurers were nationalized by the communist government and the Ethiopian insurance corporation (EIC) was formed and the communist government was overthrown in 1991. In 1994 new monetary and banking proclamation no 83/1994 was issued to supervise banks and insurance but allowed for local insurers only. Axco (2017) described the communist government was overthrown in 1991and in 1994 legislation allows private insurance companies to be formed and compete with state owned Ethiopian Insurance Corporation, but foreign shareholders were barred. The logic behind the prohibition was that the local industry was weak and needed time to build up its capital reserves; rapid

opening of the market would expose Ethiopian companies to domination by financially much stronger foreign insurers.

The most recent legal basis for the insurance industry in Ethiopia is proclamation number 746/2012, which was issued on 22 August, 2012 and directive SIB/34/2013 issued to set up a Supervisory organ for Insurance Business and come in to force affective from 15 April, 2013. Hence minimum paid up capital requirement become to birr 60 million for non life and 15 million for life and 75 million for both Life and Non-life for insurers. And local insurers are required with minimum subscribed capital requirement of birr 2 billion of which 50% of the subscribed is paid up capital. The local Re-insurance establishment directive no SIB/44/2016 issued by the national bank of Ethiopia (Belay, 2001).

In Ethiopia there are 17 insurance companies,9 of them are composite insurance means transacting both general insurance and long term insurance).out of the 17 insurance companies one is state owned and 16 is private owned insurance companies, while eight of them are transacting general insurance business. The total assets reached 11.3 billion, total capital reached 2.97 billion and Gross premium 6.99 billion. The number of branch offices has reached 424 showing a 13% growth over last year same period. Moreover, over 1,950 insurance sales agents, 53 insurance brokers, 97 loss assessors and two surveyors are operating in the market. There are two reinsurance companies in Ethiopia these are Africa-Re and Ethio-Re. Moreover, we are also micro insurance companies established to provide to the low level income societies. Micro insurance service is entitled to provide by insurance companies and by micro finance banks (NBE, 2016).

As can be discussed EIC (2016) Strategic management report, 94.82% of Gross Written premium is contributed from Non life insurance products. The remaining 5.18% is contributed from life insurance products. Out of 45 Non-life insurance products in the market (Annex I) 54.31% GWP is contributed from Motor class of Business only. The remaining 40.51% GWP is contributed from the remaining 44 Non life insurance products. In 2016, 2.61% and 4.21% of GWP is contributed from workmen's

compensation and from Aviation class of Business respectively. Workmen's compensation is the lowest contribution to the production next to aviation .79.44% production are derived from 5 (five) non-life (motor, marine, fire, W.C and aviation) products, 20.55% derived from other 50 (fifty) non-Life products.

As can be articulated in NBE (2016) retention ratio is 76% in Non-life and 87% life this means out of the total premium earned 76% is retained by the primary insurer 24% is ceded (transferred) to reinsurance companies. Regarding life 87% is retained by primary insurer 23% is ceded (transferred) to reinsurance companies. While an average loss ratio is 69% and 51% in Non life and life insurance respectively.

The performance of insurance sector can be universally assessed with reference to two parameters; insurance penetration and insurance density. Insurance penetration explains the growth of premium with the growth of the gross domestic product in the economy. It is measured as ratio of premium to GDP of premium with the growth. Insurance density is known as per capita premium and measured as ratio of premium to total population. As evidence shows that 0.5% is the market penetration; this is very low level as compared with Kenya market 3.5% market penetration, with 45 million populations. Increasing awareness is a condition precedent to penetration of insurance. Distribution is the key development of insurance and achieving penetration. Increasing awareness is a condition precedent to penetration of insurance. Distribution is the key development of insurance and achieving penetration.

According to Africa-Re (2015) Africa's insurance and reinsurance markets, with the exception of South Africa, Namibia and Mauritius are likely to remain relatively underdeveloped for many years to come, although are growing rapidly. Sustainable economic growth has seen poverty reduce, increasing the potential customer base for insurance. Nevertheless, even among Africa's 18 largest countries' economy, poverty is still a major obstacle to a more rapid insurance market development. In eight of these countries more than 10% of the population has to live on less than US$ 1 per day. Currently there are nine African countries that have more registered mobile money accounts than bank accounts according to Africa- re (2015) total premiums from the

seven biggest markets (South Africa, Morocco, Nigeria, Egypt, Kenya, Algeria and Angola) accounted for 90 % of Africa's insurance volume in 2013.In all African countries with the exception of South Africa, Namibia and Mauritius, the non-life market is bigger than the life sector. According to Africa-Re, 2015, in the past five years Nigeria and Kenya were by far the fastest growing insurance markets in Africa with annual average growth rates well above 15%.

Out of the 18 largest African countries Ethiopia, Nigeria and Sudan are equally the lowest insurance penetration level next to DR Congo and Libya that is 0.5%, 0.4% and 0.3% respectively As evidence shown in the above table 41.51% African insurance market penetration share level is accounted to only one country which is South Africa and the remaining 58.49 % insurance penetration share level is accounted to other seventeen largest African countries. Out of the 18 largest African countries, 18% of insurance penetration level is accounted to Eastern African (Tanzania (0.9%, Zambia (1.4%), Sudan (0.5%), Ethiopia (0.5%), Kenya (3.1%) and Uganda (0.6%) countries.

Moreover of the six largest eastern African countries the highest market penetration level is Kenya that is 3.1% of GDP and the lowest penetration level is 0.5% of GDP Ethiopia and Sudan. In other words 51.6% portion of the eastern African region penetration level is accounted to Kenya. The remaining 48.4% portion of the insurance penetration level is to other five largest eastern African countries. The African comparison of penetration level evidenced that the insurance penetration in Ethiopia which stands at 0.5% this is highly below the African average of 1.8 % in 2012. Insurance density in Ethiopia is the least next to DR Congo in the selected African countries (Africa-Re, 2015).

The same discussion on Africa-Re(2015) Ethiopia with GDP (USD 48bn), an average of 89 million population, with GDP/Capita (USD 542), insurance market penetration and insurance density level, 0.5% and 3 in 2013, is positioned at a very low level as, compared with Kenya with GDP (USD$ 45bbn) an average of 44 million populations with GDP/capita (USD 1'016). Insurance market penetration and insurance density level 3.5% and 35 respectively. Besides of this, East African region comparison of insurance

penetration level showed that insurance penetration level in Ethiopia which stands 0.5 % is well lower than the region's average penetration level of 1.08 % .In East African region the lowest insurance penetration level 0.5% are registered in Ethiopia, Sudan, and Eritrea each. The lowest insurance density registered in Uganda, Ethiopia and Eritrea as birr four, three, and three in number respectively.

As it can be observed from the above historical development, after the market liberalization in Ethiopia, the number of insurance companies have been growing, Non-life insurance segment of the market also growing. However the insurance sector contribution to the Ethiopian economy and insurance consumption per capita is very low. This low level of insurance penetration is caused partly because of the insurance sector itself. This low level of the insurance consumption may also be caused due to the lack of understanding by the policy makers, low level of insurance awareness, low level of insurance product savings and investment are among the most critical factors that have affected the market penetration of the insurance market.

1.3. Overview of Insurance Products in Ethiopia

Statutorily, insurance act classified insurance business in to two: Life insurance business and non-life (general insurance) business: Life insurance can be classifies in to the following main ones: 1) whole life 2) term insurance 3) endowment life insurance 4) Annuities. Non-life can be classified in to 1) property insurance 2) liability insurance 3) surety insurance

1.3.1. Life Assurance

a) Whole life, this type of product provides coverage against death of lifetime the sum of the policy to the beneficiary of the life assured.
b) Endowment life assurance, this is comprises both term life and saving element which comprises non-profit endowment is called term and with profit-Endowment. Endowment insurance has a large savings element in that it guaranteed if the insured survives the term to pay the benefits at the end of the

end of the selected term of years and at the same time making the benefits available for his dependents if the assured died.

c) Term life, this type of life insurance product provides insurance coverage against death within the specified period of time, the sum amount specified in the policy to the beneficiary, and nothing being paid in case of survival.

d) An annuity, an annuity is a contract whereby the assured, receives a guaranteed income, usually for the remainder of his life after retirement from his job. The main purpose of life annuity is to provide a lifetime income that cannot be outlived to an individual.

1.3.2. General insurance

i. Fire insurance, this policy is designed to indemnify to the insured's own buildings and their contents (household goods and personal effects) with in this buildings against loss or damage due to fire, lighting, thieves, escape of water from tanks or pipes, oil leakages from fixed heating systems, storm, flood, riot, or malicious acts, explosion, impact by aircraft or vehicles or animals, falling trees, subsidence and earth quake Downey (1991). The main object of fir insurance is to reinstate or replace property damaged or destroyed or to compensate an insured person for such person so that he is placed in the same financial position after a loss as he occupied immodestly before it and the insured can be also compensated for the interruption of business loss of profits due the specified risks if purchased for additional cover by paying additional premium, the additional cover is called consequential loss.

ii. Motor vehicle insurance: This policy has developed into an important form of contract arising from its compulsory nature and increasing public demand for coverage .it provides indemnity against loss of, or damage to or arising out of or in connection with the use of motor vehicle including third party risks. The nature of the protection afforded here, permits development of three different types of the motor insurance market as; third party only policy, third party, fire and theft policy, and comprehensive. Third party covers limited amount only for damages

for third party persons and property only, if the insured is legally liable for that fault Comprehensive, covers for third party damage and indemnified for own vehicle too. If the purpose of the vehicle is uses for commercial purpose the cover can be extended for the cargo, passengers if the motor vehicle is busses.

iii. Marin and aviation insurance: this type of insurance the difference is transport on sea and on air, similar risks are faced both for aviation transport and faced by marine transport. Therefore insurance product is developed to provide coverage for marine and aviation hull, container and cargo against loss or damage due to the risks such as loss of ships, collision, and fire due to internal and external perils specified in the specific policy.

iv. Engineering Insurance: under engineering insurance includes property or business income protection against physical damage by all risks of loss except for those specifically excluded, cover for contractors' plant and equipment of cover are contractors all risk (CAR), Erection all risk (EAR) and machinery break down (MB) and Boilers& pressure plant .Engineering policies can also covers industrial all risks such as a multiline package policy which can include fire, marine and liability.

v. Liability insurance provides coverage for bodily injury or property damage arising out of the insured's ownership, maintenance, or use of the insured himself. There are different types of liability insurance classifies depends on the nature of the business nature such as product liability provides coverage any loss of third party or purchaser of the product due to the inherent risk of the product. Professional liability insurance product can be covered any loss arises due the professional negligence. Public liability insurance coverage to any public damage or injury arises due the insured own property defect.

vi. Surety policy (bond): insurance Bond is not an indemnity insurance it is contact of guarantee. A main object of contract of guarantee is to enable a person to

obtain an employment, or a loan, or some goods or services on credit. Contract of guarantee is to perform the promise, or discharge the liability, of third person in case of default. Bond insurances are mainly given to cover frailer of contractual agreement made between two or more parties. In surety there are three parties the 'surety or guarantor' is the insurer and the 'creditor' is the contractor to whom the guarantee is given and the 'principal debtor' is the principal who will be entitled to be compensated in case of the default of the performance of the project.

1.4 Statements of the Problem

Theis (2015) explained that risk management in society is based on various different mechanisms, including support by the family, precautionary savings and public social security systems. A key role in social risk management is played by private insurance offering the most effective solution for many risks. The basic underlying principle of private insurance is the pooling of risks across the community of insured, complemented by other risk management instruments such as tapping in to international re- insurance markets. Insurers are the biggest group of institutional investors and their focus on long term investments makes them an anchor of stability in the financial markets. Further, risks and insecurity are an integral part of our daily lives. Managing these risks in the best possible way is one of the major challenges for each individual, each business as well as society as a whole. Therefore, Insurance financial system is the prerequisite for sustainable economic growth and prosperity.

There are different schools of thought on the nature of the relationship between insurance and economic growth. According to Haiss and sumegi (2008) insurance leads to economic growth while in contrast Patrick (1966) argues that economic growth leads to the development of insurance sector. Moreover, there is research debate continues today on the interaction between insurance development and economic growth. This is also an issue when it comes to Ethiopian insurance industry and its contribution to Economic growth.

Therefore, this research attempts to fill the gap by empirically investigate the effect of insurance sector on the economic growth of Ethiopia. The result is expected to shade a light on the importance of insurance on the economic development in Ethiopia.

1.5 Research Objective

1.5.1 General Objective

The general objective of this study is to examine the effect of Insurance sector on Economic Growth in Ethiopia.

1.5.2 Specific Objectives

i. To empirically investigate the effect of insurance on economic development.
ii. To evaluate the relationship between insurance investment on economic development in Ethiopia.
iii. To investigate the relationship between insurance profit on economic growth in Ethiopia.
iv. To appraise how the total claim payment by the insurance firm stimulate economic growth in Ethiopia.
v. To identify the causal relationships among variables.

1.6 Research Questions

In light of the research objectives stated in the above section, the research makes an attempt to find out answers to the following basic questions:

i. To what extent does change in insurance premium explain change in economic growth?
ii. To determine the relationship between insurance claims payment change in Economic growth in Ethiopia?
iii. To evaluate whether insurance investment improve in economic growth in Ethiopia?
iv. To examine the contribution of insurance profit to economic growth in Ethiopia?
v. What is the causal relationship between economic growth and insurance development in the case of Ethiopia?

1.7 Research Hypothesis

The following hypothesis will be formulated in the following respective null forms:

H_{01}. There is negative & significant relationship between total insurance premium and economic growth in Ethiopia.

$H_{02:}$ There is negative & significant relationship between total insurance claims and economic growth in Ethiopia.

$H_{03:}$ There is negative & significant relationship between total insurance profit and economic growth in Ethiopia.

H_{04}: There is negative & significant relationship between total insurance investment and economic growth in Ethiopia.

$Ho_{5:}$ There is no causal relationship among the variables.

1.8 Significance of the Study

The findings of this study will be of great importance to policy makers, insurers, investors, regulators, researchers and financial analyst who have vested interest in understanding the importance of insurance contribution and the extent of degree of insurance sector development on economic growth. Therefore the objective of the study is to test this argument with support of empirical findings.

1.9 Scope of the Study

The study uses the insurance industry data from 1980 to 2016. This is because the year 1994 marks the entrance of local insurance companies due to the liberalization of the market for domestic investors. The study is limited to explaining contribution of insurance industry to the country's economic development based on the selected variables. Its contribution to the economy on other parameters such as socio-economic stability, risk transfer mechanism and other elements are not in the scope of the research.

1.10 Organization of the Study

This paper will be organized in to five chapters: Chapter one will contain the introduction, chapter two is the theoretical and empirical literature review, chapter three will be discussed the methodology of the study, chapter four will analyze and present the empirical findings of the study and the final Chapter will have summary, conclusion and recommendation of the study.

CHAPTER TWO

Literature review

2. Theoretical Review

This chapter comprises theoretical and empirical literatures evidences focusing on the insurance sector and its contributions to economic growth are presented. Accordingly the first section 2.1 presents conceptual and theoretical frameworks; While the section 2.2 presents empirical literature reviews.

2.1. Conceptual and theoretical framework.

2.1.1 Theories of Economic Growth

According to Eze and Okoye (2013), the growth theory states that well developed financial intermediation can promote economic growth through marginal productivity of technological innovation.

Webb, et al. (2005) also further revised Solow-Swan model predicts that insurance and banking spur capital stock productivity, in turn driving the level of investment and output and he is asserted that it is generally agreed that productivity gains come from improvements in the quality of investment or capital stock and not just increases in the level of investment.

Patric (1966), the process of economic development over time, is characterized in a market-oriented economy using the price mechanism to allocate resources, is an increase in the number and variety of financial institutions and a substantial rise in the proportion not only of money but also of the total of all financial assets relative to GNP and to tangible wealth. However, Patrick (1966) further asserted that the causal nature of the relationship between financial development and economic growth has not been fully explored either theoretically or empirically.

2.1.2 Financial Intermediaries and Endogenous Growth Theory

Gurly and shaw (1960) argue that, the reduction in transaction costs as the main function of financial intermediaries, have an advantage over direct financing in economics of scale that result from costs shared. Moreover, a large amount of funds enables financial intermediaries to be more easily divested than the individual economic units.

Leland and Pyle (1977) argued for the existence of financial intermediaries is information asymmetry. Financial intermeddles are information collectors of borrowers' financial prospects ex-ante for solving the problem of adverse selection, it can signal their informal status by investing their wealth in assets about which they have special knowledge. Diamond (1984) suggests that financial intermediaries act as delegated monitors to overcome ex-post asymmetric information between potential lenders and a risk neutral entrepreneur who needs to raise capital for a risky project and in that way reduce the problem of moral hazard.

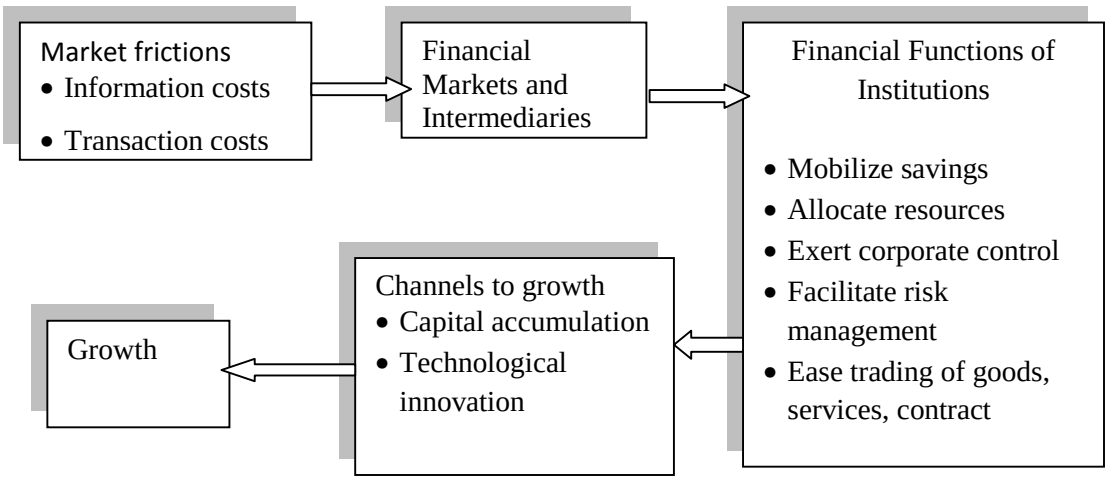
The cause and effect relationship of insurance industry growth and economic growth has been area of debate both in theoretical and empirical literature. One view is on the demand-leading and supply-following side the other view stands on the supply side; Supply-leading and demand-following. Patrick (1966) follows an approach that places emphasis on the demand side for financial services; as the economy grows it generates additional and new demand for these services, which brings about a supply response, and in the growth of the financial system. As per Patrick (1966), the lack of financial institutions in underdeveloped countries is simply an indication of the lack of demand for their services, this can be termed as "demand-following" phenomenon in which the creation of modern institutions, their financial assets and liabilities, and related financial services is in response to the demand for these services by investors and savers in the real economy.

This shows that the development of financial system is a continuing result of the opportunity of the economic environment and by changing the preferences of the

subjective responses such as individual motivation, attitudes, tests and preferences. He further discussed that the more rapid the growth rate of real national income, the greater will be the demand by enterprises for external funds (the saving of others) and therefore financial intermediation, since under most circumstances firms will be less able to finance expansion from internally generated depreciation allowances and retained profits, this demand-following approach is that finance is essentially passive and permissive in the growth process.

The basic functions of financial systems remain constant through time and across the countries. Three are large differences across countries and time, however, in the quality of financial services and in the type of financial instruments, markets, and institutions that arise to provide these services. Financial markets and institutions may arise to ameliorate the problems created by information and transaction frictions. Different types of combinations of information and transaction costs motivate distinct financial contracts, markets and institutions. To organize the vast literature on financial and economic activity, Levine (1997) breaks this primary function into five basic functions, specifically financial systems: 1) facilitate the trading, hedging, diversifying, and pooling of risk, 2) allocate resources 3) monitor managers and exert corporate control 4) Mobilize savings and 5)facilitate the exchange of goods and services. Levine (1997, p. 690-691)) further explains how the particular market frictions motivate the emergence of financial markets and intermediaries that provide these five functions, and explains how they affect economic growth: capital accumulation and technological innovation.

Figure 1:-Theoretical approach to finance and growth (source: Adopted from Levine, 1997, p.691)



Linking of financial intermediaries' functions, and thereby functions of insurance sectors too, and economic growth was enabled by the development of endogenous theory. This can be more supported by Solow-swan model applying Cobb-Douglas production function. The model shows three channels from financial development to economic growth; the marginal productivity of capital, the proportion of saving funneled to investment, and the saving rate.

The other view of the theory of the endogenous growth is Schumpeterian growth models are focused on technological innovation as channel through which the growth could be affected. Since the insurance sectors act as financial intermediaries, the same channels connect their functions with economic growth.

Arena (2006) explained further about the Skipper(1997) issues and stated that there are likely to be different effects on economic growth from life and non –life insurance (property/liability) give that these two types of insurance protect the households and corporations from different type of risks that affect the economic activity in different ways and also because life insurance companies facilitate long-term investments rather than short term investments as it is the case of non- life insurance companies

2.1.3 Insurance development and Economic growth

According to Downey (1991), Insurance can be defined as a system which allows people who suffer loss or accident to be paid financial compensation for the effects of that misfortune. These payments come out of a fund which is built up from the contribution of the people who participate in the system of insurance for that particular risk. Insurance has a long history. There is evidence that a form of marine insurance was in operation at least 3,000 years ago. We can however trace the start of our present day system of marine insurance to northern Italy in about the eleventh or twelfth centuries. It is from the operation of marine insurance that we get the terms 'underwriter' and 'underwriting' these came from the practice of the merchant who was prepared to take on part of the risk that was being insured signing his name at the bottom of the contract , stating the amount he was prepared to accept. The principle of insurance was extended to fire risks sometime in the 17^{th} century. This is ascribed to the losses suffered by property owners in the great

fire of London in 1666. It is believed to have been after this event, certainly the first fire office the phoenix was established in 1680.

In recent years there has been the development of large single risks such as supertankers and wide bodied aircrafts, where one single item can be valued in millions of amounts because of the loss of such large sums of money there has developed big business in re-insurance this means that such large risks are not covered by one single company but are passed on to a number of other companies. There are also various new types of insurance such as kidnap insurance, libel (particularly useful for newspaper), and insurance against pollution, against having twins and against even rain on fete days (pluvial poleis to name but few). Insurance can be divided in to Life insurance and pension, General Insurance, Marine and Aviation Insurance as well as Re-insurance Downey (1991).

2.1. 4 Classification of Insurance Products

Insurance can be classified in many ways, but the following four classifications provide a useful framework: Social versus Private, Life versus Non-life, Retail versus Corporate and Direct insurance versus reinsurance. The insurance business has historically divided itself between companies that sell insurance on the person, known as life insurance (or personal insurance), and those that sell insurance to protect property, referred to as non-life insurance. This classification is not completely satisfactory, as overlaps exist. The non-life branch often referred to as property/causality insurance in united states and general insurance in the United Kingdom-includes insurance that be covers (1) property losses(damage to or destruction of homes, automobiles, business, aircrafts, etc.); liability losses (payments due to professional negligence, product defects, negligent automobile operation, etc.); and, in some countries, workers' compensation (and health insurance payments). The life branch includes insurance that pays benefits on a person's (1) death (usually called life insurance or assurance), (2) living a certain period (endowments, annuities, and pensions), (3) disability (disability insurance), and (4) injury or incurring a disease (health insurance).In many countries ,notably in Europe, health insurance is classified as non-life (Skipper,2001).

2.1.5 The role of Insurance in Economic Development

Skipper (2001) defined insurance is both a risk- shifting and risk- sharing and device, for a consideration (the premium),an individual or organization(the insured) is guaranteed to be made whole financially by the insuring organization(the insurer) if a covered event occurs. The entire scheme functions so long as the insurer is able to insure a sufficient number of similar exposures to keep its overall claims experience reasonably predictable. Generally, the law of large numbers dictates that the greater the number of insured's (policy holders) the more predictable the insurer's experience. He further explores the role of insurance in economic growth development and argues to view insurers that, it is wrong that the role of insurance is considered merely as "pass-through mechanisms for diversifying risks." Under which the unfortunate few who suffer losses are indemnified from the funds collected from the funds from many insured.

Grant (2012) further summed up the contribution of insurance to society and economic growth in the study of the social and economic value of insurance, through the following factors: It allows different risks to be managed more efficiently; it encourages loss mitigation; it enhances peace of mind and promotes financial stability; it helps relieve the burden on governments for providing all services of social protection to citizens via social security systems;, it facilitates trade and commerce, supporting business and economic growth ,it mobilizes domestic savings; and it fosters a more efficient allocation of capital, advancing the development of financial services.

2.1.6 Insurance as Method of Risk Transfer and Economic Growth

Insurance as risk management or risk transfer is measured as proceed total insurance premium (IP) in this study. Insurance uses a concept of risk pooling that allows them to accept responsibility for the economic losses of their insures. Many people are willing to pay a relatively small premium in order to transfer of the risks of much greater potential loss. Insurance issue policies to those individuals, knowing that only a small percentage of the insured actually will become damaged and or disabled while their policies are in effect. By collecting premiums from individuals and business that transfer the risk of disability, the insurer s spread the cost of the relatively few losses that are expected to

occurred among all insured persons, Insurance thus protects against the risk of economic loss by applying a simple principle that 'if the economic losses that actually result from the a given peril, such as disability, can be spread across a large pool (in numbers) of people probability of loss is relatively small'.

Insurance companies serve as financial intermediaries ,that collects funds from one group of people ,business , and government (suppliers) and channels them to another group (users) so that insurers collects premium from policy holders and pay claims to beneficiaries. In the processes of moving funds from suppliers to users, financial intermediaries generate income for themselves .Insurance Company's takes substantial portion of the money that their customers pay for insurance and invest that money in other business need to operate and expand. For example, life insurance companies in United States have been the largest single source of corporate financing since the 1930' at the end of 2007U.S.life insurers held approximately $18 trillion in assets worldwide Jones and Silver (2001).

2.1.7 Insurance Indemnification and Economic Growth

Another characteristic of insurance is indemnification for losses. Indemnification can be defined that the insured cab be restored to his or her approximate financial position prior to the occurrence of the losses. The losses must be accidental and occurs randomly from the pool member based on the law of large numbers. If the insured house burns in a fire, the policy holder of the homeowners will be indemnified or restore for the previous financial position as he was. Indemnification to business firms also permits to remain in business and employees to keep their jobs, suppliers continue to receive address, and customers can still receive the goods and services they desire. Businesses and families who suffer unexpected losses are restored or at least moved closer to their former economic position. The loss produced by the risk must be definite and measurable this means the loss should be definite as to cause, time place and amount. The insurer must be to calculate both the average frequency and the average severity of future losses with some accuracy. This requirement is necessary so that a proper premium can be charged that is sufficient to pay all claims and responses and yield a profit during the policy

period. Adverse selection, moral hazard and insurance fraud and Claim leakage) can reduce the growth Teklegiorgies (2004).

2.1.8 Insurance Profits and Economic Growth

Profitability is one of the most important strategic objectives of financial institutions, because the healthiest financial industry is reflected by the maximization of owners' wealth and profitability. According to Swiss Re (2008) insurance profits are determined first by underwriting results (total premium collected minus total claims paid) which is the performance of underwriting performance is the effectives of product pricing, risk management, risk assessment and risk measurement, claim management ,marketing management, reinsurance management and operation cost management. This is a good indicator of insurance performance measurement. Second, by investment performance; this is a function of asset allocation and asset management as well as asst maximization. Insurance profit is the main source of capital accumulation and investment and stimulates to the economic growth.

2.1.9 Insurance Investment and Economic Growth

Insurance fosters investment and innovation by creating an environment of greater security so as to economic growth. Availability of funds could result from creating pooling and transferring risk through developing kinds of insurance products by which insurance companies provide protection from credit risk to other financial intermediaries in that way financial intermediaries are more willing to lend funds for financing real investments that encourage economic growth. The function of providing insurance coverage could affect economic growth through saving rate channels in mixed way. By offering life insurance products that combine risk protection and saving benefits, insurance companies encourage long term savings and invest in corporate bonds, equities, stocks as well as in real estate's this helps to resource accumulation and allocation efficiently with managing various financial risks that affect positively on the economic growth. Further insurance investment explains that insurance companies contribute to more efficient and allocation of capital on the process of accumulation and allocation of resources, insurance companies lower transaction costs, achieve diversification and lower non-systematic risks provide limited liquidity and lower information asymmetry, by

which they contribute to economic growth through channels of marginal productivity of capital, saving rate and technological innovations Curak, et al. (2009).

2.2 Empirical Literature Review

Resource mobilization, allocation, maximization and capital accumulation by the method of risk transfer and indemnification through the channel drives from the function of insurance as the financial intermediary in the national economic growth. The relationship between insurance development and economic growth is not a new discovery. However research debate continues today and marked with mixed results and conflicting conclusions depends on countries, regions and different time- periods. The different is not due to the differences in theoretical perspectives but rather in Empirical perspectives.

According to Haise and sumegi (2008) further discussed and give emphasis on the main objective of insurance companies is the transfer of risk and to be one of major investors in the economy, and increasingly so: aggregate investment by insurance companies grew by 20% relative to GDP in Europe within the time span 1993-2004 while investment by life insurance companies nearly doubled over the same period. Among the main recipients of households financial asset's institutional investors are insurance companies and pension funds. Life insurers sell traditional life assurance, annuities and disability insurance contracts while property causality insurers sell insurers contracts that indemnify the policy holders for property and liability losses. In both cases, the insurer collects premiums from consumers when selling contracts, and invests the proceeds with a view to meeting the contractual incurred. For long term institutional investors, liability structures are key factors influencing asset allocation decisions. Asset held by a company usually reflects the maturity of it's liability at the same time; the growth of institutional investors may be accompanied by an increase in the overall level of savings CGFS (2007).

Phutkaradze (2014), attempts to verify whether the insurance-growth market is linked to economic growth using a cross-country panel data set for the 10 Post-transition countries

over the period 2000-2013 period, applying a fixed effect model to test the hypothesis that this linkage is demonstrably positive, multiple regression analysis is used to estimate the insurance-growth relationship.

Haiss and Sumegi (2006) investigate the link between insurance sector development and economic growth; by adopt endogenous growth model with a modified Cobb-Douglas production function which is vary from the standard approach(OLS regression or Granger causality test and mainly test for the determinants of insurance demand) and adopted a framework mainly used in other financial-growth nexus analysis.

Webb, et al. (2002) uses Solow-Swan model to analyses the roles of Banking and Insurance to economic growth by facilitating the efficient allocation of capital by apply a cross-country of 55 countries for the 1980-1996 period, after controlling the exogenous components, they find that the exogenous variables of banking and life insurance penetration are robustly predictive of increased productivity across the sampled countries this leads that the higher level of banking and insurance jointly produce a greater effect on growth than would be indicated by the sum of their individual contributions.

Haise and shumegi (2008) investigate the impact of insurance investment and premiums on GDP growth; apply cross- section panel data analysis from 1992 to 2005 for 29 European countries. Using premium income (to test the effects of insurance sector as a provider of risk transfer) and investment (to test the effect of insurance sector as an institutional investor), by developed a modified production function .They find that a positive impact of life insurance on GDP growth in the EU-15 Countries, Switzerland, Norway and Iceland, and larger impact for liability insurance for the new EU member states from central and Eastern Europe.

Further research conducted by Beenstock, et.al (1998) investigate empirically the relationship between income and spending on property-liability insurance apply cross-section pooled data for 12 industrialized countries observed over 1970-1981, used to

measure the short and long run marginal propensity to insure across the sampled data. The study concludes with a wider cross-sectional analysis of 45 countries in 1981 in which used to measure by per capita GNP and property-liability insurance premium is investigated, in the simple model of the relationship between the income and the demand for the property-liability, they obtain a demand function for property-liability insurance, they adopted a two-period framework and assumed an individual possesses insurable assets with a value of his or her total wealth.

In supporting the above idea they could generate and assumed that it loss occurs, at the end of the period the total wealth will be reduced by the lost amount with no insurance purchased. Conversely, if insurance cover has been purchased, no accident occurred, at the end of the period the total wealth will be reduced by the premium amount paid (plus interest), and if an insured loss takes place at the end period, wealth is reduced by the loss amount(plus the interest rate and the opportunity).

According to Beenstoch, et al. (1998) the effects of the higher the supplies of underwriting capital just about dominate the effects of the fall in the demand for insurance when interest rates rise. However they conclude that marginal propensity to insure differ between countries and premiums vary directly with real rates of interest.
Kugler and Ofoghi (2005) explain that the importance of insurance and reinsurance markets to the development economic growth is acknowledged in the first conference of UNCTAD in 1964. The work of Ward and Zurbruegg (2000) evidence from co-integration analysis that there was no long run relationship between growth in the insurance industry and economic growth for some OECD countries, including the UK and the US, by using the aggregate value of written insurance premium.

In contrast Kugler and Ofaghi (2005) used Johansen's co-integration test for the components of insurance premium and find a long run relationship between insurance market size development and economic growth in 284 countries. Millkugler (2005), argue that this result implies there is a possibility that the Ward and Zurbrueg's (2000) results were affected by the aggregation problem, evidence that co-integration analysis

does not provide information about the possible patterns of (demand- following and supply-leading) and because of this Kugler and Ofoghi (2005) used causality tests in their study.

A research conducted by Arena (2008) as opposed to that of Ward and Zurbruegg (2000), used an estimation generalized method of moments (GMM), to test whether there is a causal relationship between insurance market activity not only data on total insurance premiums but also their aggregation in to life and non life insurance premium in order to assesses their potential different effects on economic growth.

Further studies also conducted by Njegomir and Stojic (2010) examine the impact of insurance on economic growth and interaction of insurance and banking in promoting economic growth by applying linear country specific fixed effects model for panel data encompass 5 countries of the ex-Yugoslavia region for the period of 2004-2008.
Another researcher supported the above empirical test by Outreville (1990) investigate empirically the importance of the relationship between insurance premiums written the developing countries and financial development. The insurance data on the 65 developing countries used in this study was used from the statistical survey published by UNCTAD in 1983; a model is specified for property-liability insurance demand for testing with a cross-section of 55 countries due to data availability, the influence of the insurance industry on economic activity analysis.

Gabriel (2015) empirically investigates the effect of insurance sector development on the growth of Nigeria economy, apply Augmented Dickey Fuller test, Ordinary least square method, Descriptive statistics, Co- integration and Granger causality test is used to annual data spanning from 1981-2013.Analysis used multiple regression model regressed based on the identified dependent and explanatory variables as: GDP of the country is an dependent variable, Total claim Payment (TCP), Total insurance Investment (TIN), Total Insurance premium (TIP) and total Insurance Return (TIR) expressed in terms of profit are identifies as explanatory variable for this study. The results show that insurance investment and insurance premium are positively and significantly correlated to

economic growth. However, causality flows from GDP to some insurance sector development indicator (TIP, TIN, and TIR). Further, Insurance claims has a negative association to economic growth, and recommended that law makers, authority and the independent regulatory bodies should look into the claim payment policy of the insurance companies so as to ensure transparency, avoid extortion of claim process and ensure fair dealing in order to realize the sectors objective and hence, promote economic growth in Nigeria economy.

Arena(2006) posited that insurance market activity both as financial intermediary and as provider risk transfer and indemnification may promote economic growth by allowing different risks to be managed more efficiently encouraging the accumulation of new capital ,and by mobilizing domestic savings in to productive investments.

Ward and Zurbruegg(2000) employed Granger causality to test between total insurance premiums and read GDP for nine OECD countries over the 1961-1996 periods. For the two countries (Canada,Japan) found that the insurance market leading GDP and for Italy found that a bidirectional relationship. The results for the other countries showed no connection.

Richard and Victo (2013) examined that the impact of insurance premium, insurance investment and insurance income on economic growth in Nigerai, finding of this study revealed that insurance industry would contributes meaningful to the economic growth of the country in the long run .This is achieved through the effective and efficient risk transfer and risk management which is the function of insurance industry through various channels of marginal productivity of capital and innovation.

Yinusa and Akinlo 92013) analyzed long run and short run relationship between insurance development and economic growth in Nigeria over the period 1986-2010.using error correction model. The study finding showed that there was long run relationship between insurance development and economic growth in Nigeria, besides, physical capital and inflation had negative long run relationship with economic growth.

Apanisile and Akinlo (2014), examine empirically the relationship insurance and economic growth in Sub-Saharan African (SSA) countries in the period 1986-2011, uses three forms of functional estimation methods to determine the relationship between insurance and economic growth; the three forms are: The pooled ordinary least square, the fixed effect model and generalized moment (GMM) estimation method. The dependent variable used in this study is the percentage growth of real GDP (real GDP is measured in current US dollars across the sample).

Haise and Sumegi (2008) further identified risk transfer (that is bearing risk for other economic agents which might stabilize their income streams, dampen volatility and enhance economic activity) and investment, through increasing over-all investment volumes, by Deeping capital markets and by broadening the investment rang as the major channels through which the insurance sector may aid economic growth and furthermore they argue that the insurance sector should be given extra attention in financial sector analysis and economic policy.

Most of the research papers conducted in Ethiopia focus on performance measurements of insurance such as Daniel &Tilahun (2013) study over the period 2005-2010 and Meaza (2015) over the period of 2008-2013, they found that loss ratio (risk) had significant and negative relationship with insurers profitability. Abate & Sambasivam (2013) over the study period 2003-2011 & Hanna (2015) from 2005-2014 have found tangibility assets are not significantly related with insurers profitability in Ethiopia. However as to the best of my knowledge related with my study very few studies had been conducted in Ethiopia and revived accordingly as follows:

Aderaw (2012) examined empirically the relationship between insurance and economic growth in Ethiopia using time-series data from 1981-2010, using the 2000 as base year for the GDP. The results of this study revealed that development of insurance and economic growth in Ethiopia are not casually related. Therefore Aderaw (2012),

concludes that insurance is not an important prerequisite to stimulate economic growth as the same time economic growth do not bring insurance development.

In addition, ,Mezgebe (2010) examine whether there is strong correlation between the growth of the insurance industry and the growth of the economy in Ethiopia and analyzed the effects of cross boarder re-insurance business on the growth of local insurance industry and hence to economic growth, over the period 2000-2009 period for the variables; Gross written premium, net retention premium, claimed incurred, cession premium, and cession claimed over the period. The results of the study revealed that, the insurance industry in Ethiopia contributes little to the growth of the economy and to the financial sector too, as well as the cross border (re-insurance) does have a negative influence over the growth of insurance industry and the economy, due to the existence of unbalanced outflow and inflow of the premium cede and claim recovered respectively.

To conclude, given the multiple potential benefits of a vibrant insurance sector, there are strong theoretical explanations for positive impact of insurance sector to economic growth. However, most of the literature in this field deals with the role of banking, in respect of the field of insurance, except few studies concentrated on developed countries. The role of insurance is often neglected in developing countries as well as in Sub-Saharan African (SSA) countries. Very limited research have been published on the insurance market growth nexus in developing countries and a little published study has been conducted to investigate the impact of insurance development on economic growth in Ethiopia.

In view of the importance or the role of insurance in the economic growth, there is a theoretical explanation for the positive correlation between insurance industry and GDP growth of a country, however, no consensus has emerged on empirical studies. The research differs across countries and regions in different time-periods. For example, studies such as Haiss and Sumegi (2008), Arena (2008), Curak et.al (2009) found that insurance had positive impact on economic growth. Patrick (1966) showed that economic growth leads to insurance growth. However, studies by Webb, et al. (2002), Gabriel

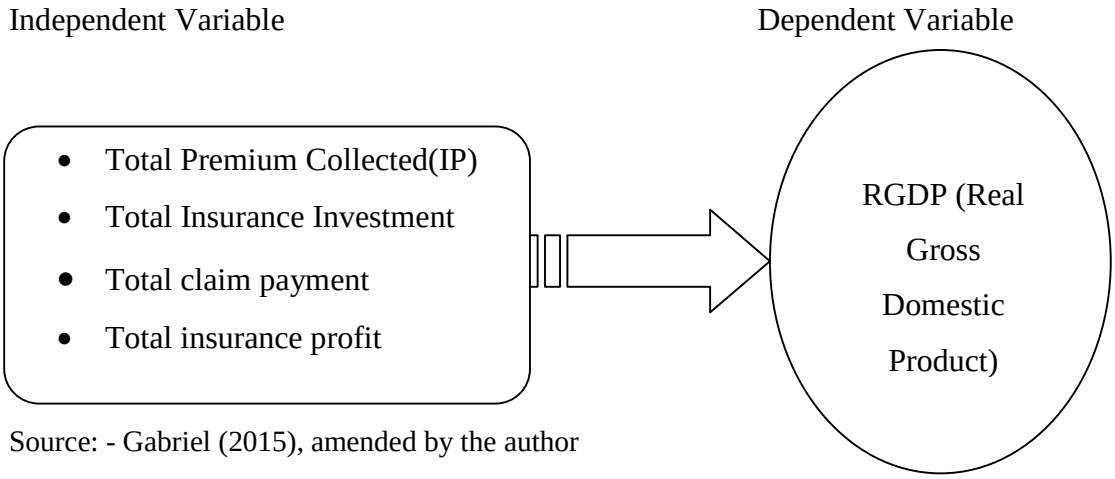
(2015) showed no impact on the economic development. While Mezegebe (2010) in Ethiopia found that insurance has little contribution to economic growth. However Aderaw (2012) showed that insurance had no relationship between insurance and economic growth in Ethiopia.

Finally, as per the researchers knowledge there is no research that has been conducted in this are to provide empirical evidence on the Ethiopian insurance sector and its contribution to economic growth in Ethiopia. Given this lack of empirical studies, it is hoped that, this study fills the gap and helps for further understanding the insurance sector and its contribution on economic growth given their primary of insurance functions and macroeconomic variables. Accordingly the following is formulated the conceptual model of the study, is used to for the analysis of the data.

2.3 Conceptual Model of the Study

After the careful study of literature review, a conceptual model is formulated to illustrate the effect of insurance industry in economic development. The model shows Total premium collected, Total insurance investment, Total insurance payment and insurance profit as independent variables and GDP as dependent variable.

Figure 2:-Conceptual frame work



Source: - Gabriel (2015), amended by the author

Chapter Three

Methodology

This chapter highlights methodology of the research, research design, nature and sources of data, model specification, definition and description of variables as well as techniques of data analysis.

3.1 Research Methodology

Quantitative research is one of research paradigms; it is the scientific research methods which can includes; The generation of models, theories and hypothesis, collection of empirical data modeling and analysis of data evaluation of results. It also uses deductive scientific method, primarily for description, explanation, and prediction. It is based on quantitative data particularly in the analysis of variables. A quantitative research approach is one in which the investigatory primarily uses postpositive for developing knowledge reduction in specific variables, hypothesis questions and test of theory (Bhattacherjee, 2012)

3.2 Research design

The main objective of this research is to investigate the insurance sector and its contribution to economic growth in the case of Ethiopia and the study adopted an explanatory quantitative approach by using time series data of 37 spanning from 1980-2016 years to realize a stated objectives time series studies are more likely to investigate the relationship and to estimate and analyses the contribution of insurance industry on the growth of Ethiopian Economy by Linear Multiple regression Econometrics method using Johansen Co-integration estimation technique and error correction models(ECM) and based on with data spanning from 1980-2016 as well as to identify the causal relationships between the level of economic growth and four explanatory variables representing insurance premium, insurance claim, insurance profit and insurance investment.

3.3 Nature and Sources of Data

The research was employing quantitative approach by using secondary data only. Data for the study was obtained from secondary sources published by the National Bank of Ethiopia (NBE) and Ethiopian Insurance Corporation (EIC).

3.4 Model Specification

A model is derived on the basis of previous studies of Richard and Victor (2013) and Gabriel (2015) is a mathematical expression of reality. The model for this study is specified in line with the works of Ward and Zurbruegg (2000) and Hussels, et.al (2005) with some modifications.

To capture the contribution of insurance practice on the growth of Ethiopian economy, insurance practice is proxied as insurance premium (IP), Insurance investment (INV), and insurance claim (ICL) and Insurance profit (IPR), which as well serve as the independent variables. Real GDP is used as a proxy for economic Growth. Considering the functional notation, the models are specified as:

RGDP=f (IP, INV, ICL, IPR)…….. .(1)

Thus, the following null hypothesis;

Ho1: States that there is no positive and significant relationship between total insurance premium and economic growth in Ethiopia.

Ho2: States that, there is negative and significant relationship between total insurance investment and economic growth in Ethiopia.

(Ho3: States that there is negative and significant relationship between total insurance claims and economic growth in Ethiopia.

Ho4: States that there is negative and significant relationship between insurance returns here is expressed in terms of profit and economic growth in Ethiopia.

Ho5: States that there is no causal relationship among the variables.

The relevant linear function of the above notation is stated as:

$RGDP=\beta1+\beta2IP+\beta3INV+\beta4ICL+\beta5PR+\varepsilon$……(2)

While the log specification of the above model is:

$LogRGDP=\beta1+\beta2LogIP+\beta3LogINV+\beta4LogICL+\beta5LogPR+\varepsilon$ ……. (3)

Where,

B1= constant of the equation

B2, B3, B4, B5 =Coefficient of the explanatory variables

ε =Error term of the equation

3.5 Definition of variables

- RGDP=measures operationally conceptualized as the total monetary value of goods and services at a constant price over a particular period of time.
- IP=Total insurance premium is the rate or insurance price paid by the insured for various insurance policy contract purchased.
- INV=Total insurance investment is conceptualized as the economic activities designs to increase, improve and maintain the productive quality of the existing stock of the capital in an economy
- ICL=total Insurance claim payment is a payment from the insurance company to the insured for cover losses in other to restore the insured to the financial position
- IPR=Total Insurance profit is the return or incentive that is value added to the company's capital resulted from the insurance activities during the year.

3.6 Description of Variables

3.6.1 Dependent Variables

Real Gross domestic product (RGDP)

Economic performance will be estimated using the Real GDP. This variable will be measured Gross domestic product value added at constant basic prices. This study adopted the Ethiopian real Gross domestic product as the dependent variable to measure economic growth.

3.6.2 Independent Variables

A) Insurance Premium (IP)(also called expense insurance premium)

A premium can be defined as the selling price of insurance policy that is the exchange amount paid by the insured party to the insurer due to the transfer of his risks to the seller of the insurance policy risk. Gross Insurance premium is made up of the pure premium and loading premium. Pure premium or net premium corresponds to the average cost of claim multiplied by the probability of that the event being covered will occur during the risk covered policy period. The loadings to the pure premiums are policy acquisition cost, premium collection cost, claims handling cost, administration and general expenses. The sum of the pure premium and the loading for claim cost is called risk premium. The sum of the pure premium and the all loading constitutes called insurance office premium or total insurance premium (OECD, 1999). For the purpose of this study we considered total insurance premium as explanatory variable.

B) Insurance Investment (INV)

Insurance companies mobilize financial resources in the form of premiums on insurance policies and investing in income earning assets to maximize profits. Invested money with the objective of profits at the rate of return greater than that to be paid out as benefits under its policies. Insurance companies invest part of their premium that is not immediately needed for claims and administrative expenses. These earrings are critical to insurance companies to balance underwriting losses for property and causality products and to help build policy cash value for life products. Funds in excess of minimum capitalization and reserve requirements can be invested and earning by insurance

companies from dividend, on its equity portfolios, rent from real estate and other property it's owns interest in bank deposits and from its bond holdings. The insurance investment on profitable ventures are used as explanatory variable

C) Insurance claims payment (ICL)

Claims are defined as compensation of loss request by an insured for indemnification by an insurance company for loss incurred from an insured peril during the risk covered period. This is an explanatory variable for the study.

D) Insurance profit

Total Insurance Returns or Insurance profits (IPR) is measured the difference between sum of total premium and investment income the total claims & related costs paid out each year. In other words total Insurance profit is the return or incentive that is value added to the company's capital resulted from the insurance activities during the year.
The summary of variables are depicted below

Table 1:-Variable indicators List

Variables	Proxy	Indicators	results
Dependent Variable Economic growth	Real Gross Domestic product	Log Real(GDP)	Null hypothesis result
Independent Variables			Expected null result
Risk Transfer(Risk Management)	Total Insurance premium	Log (IP)	negative & significant
Indemnification	Total insurance claims	Log (ICL)	negative & significant
Return of Insurance Business	Insurance profit	Log (IPR)	negative & significant
Institutional Investors	Insurance Investment	Log (INV)	negative & significant

(Source researcher own computation)

3.7 Techniques of Analysis

Description Statistics, Correlation Matrix are used to describe characteristic of the data, and regression analysis is also used in modeling and analyzing to estimate several variables. Unit root tests by ADF test and PP test, Johannes Co-integration by trace & max eigenvalue tests, Vector Error correction Model (Long run and short run) dynamics and Granger causality tests analysis are used in the analysis.

Chapter Four

Presentation of Data and Empirical Analysis

4.1. Introduction

The chapter analyses the contribution level of insurance practice on economic growth in Ethiopia. Before employing the direct estimation of models, descriptive statistics and correlation analysis are established to understand the nature of the data. Unit root tests using ADF and PP have been used to check whether the time-serious data is stationary or not. Optimal lag selection also carried out based on the selection criteria. In addition, the presence of co-integration vector is tested by using Johansen procedure. Further, the long run and short run dynamics among the variables are also computed. Furthermore, the granger causality test is employed to find the direction causality among variables. Finally Diagnosis and stability tests have been performed to ensure the fitness of model specification of the study.

The following summary descriptive statistics of all dependent and independent variable s gives us the general distribution of the data set and used to get insight the trend of the real gross domestic product in Ethiopia and for those insurance activity explanatory variables in this study during the study period. In order to understand the behavior of the data series included in the study, mean, median standard deviation, Skewness , kurtosis and Jacque-bera, are measured and present in table 6 it is found that all variables have positive mean value and all statistic tests values are positive except investment is negatively skewed.

4.2. Descriptive Statistics

Table 2:-Descriptive statistics

	RGDP	IPR	IP	INV	ICL
Mean	8.311892	5.013784	5.672162	4.851081	5.395405
Median	8.230000	4.900000	5.580000	5.170000	5.320000
Maximum	8.870000	6.050000	6.810000	6.260000	6.640000
Minimum	8.010000	4.300000	4.970000	3.700000	4.480000
Std. Dev.	0.261702	0.447607	0.560447	0.817900	0.651518
Skewness	0.779297	1.024846	0.652006	-0.144089	0.389096
Kurtosis	2.321463	3.322791	2.266454	1.622126	2.034826
Jarque-Bera	4.454839	6.637537	3.451075	3.054940	2.369763
Probability	0.107806	0.036197	0.178077	0.217084	0.305782
Sum	307.5400	185.5100	209.8077	179.4900	199.6300
Sum Sq. Dev.	2.465568	7.212670	11.30763	24.082556	15.28112
Observation	37	37	37	37	37

(Source: researcher own computation by running Eviews9.0)

The above table 2 shows descriptive statistics values of the study variables for the study period 1980-2016. The study has used five key variables for the analysis. Those are Real gross domestic product (RGDP) as dependent variable and Insurance premium (IP), Insurance claim (ICL), Insurance Investment (INV) and Insurance profit (IPR) are as independent variables ; As indicated in the above table, the average growth rate of real gross domestic product, Insurance profit, Insurance Premium, Insurance Investment and Insurance claims are 8.31 %, 5.01% , 5.67% , 4.85% and 5.39% respectively. All the values are found within the minimum and maximum values and more closely tied with

the median value. The standard deviation of real gross domestic product accounts 0.26. The minimum and maximum of the growth Rate Real gross domestic product over the sample period is 8.01 % and 8.87% respectively.

Correspondingly, the average growth rate of insurance premium is 5.67%, the minimum is 4.97% and the maximum is 5.58% shows less than the average growth rate of 8.3% real gross domestic product. The standard deviation of insurance premium is 0.56 which varies from the mean. The average growth rate of Insurance profit is 5.01% which is also less than the average growth rate of 8.31% in RGDP. However the standard deviation of insurance profit is also 0.44.This deviation shows that insurance profit is fluctuates by this amount from the mean. The minimum and the maximum value of the insurance profit growth rate are 4.30% and 6.05%.

The other explanatory variables are Insurance claim and insurance investment. Annual average growth rate of insurance claim and insurance investment are recorded as 5.39% and 4.85 % respectively both are less than the average growth rate of real GDP. This shows that the growth rate of insurance market in Ethiopia is very slow and the gap between the minimum and the maximum is very narrow as well as the dispersion from the mean is very small, this shows that the growth rate is stagnant increasing very slowly and sluggish.

Regarding normality distribution, according to Brooks (2008), if the residuals are normally distributed, the histogram should be bell shaped; a normal distribution assumption states that it should not be skewed. That means the skewness is zero, coefficient of kurtosis is close 3, and the Jarque- Bera statistics would not be significant.
The normality characteristics showed in the above table 6 unlikely consistent with the assumption. So it is tested by other alternatives and the result has been shown in table 14 Diagnosis test.

4.3 Correlation Matrix

Table 3:-Correlation Matrix

VARIABLES	RGDP	IPR	IP	RNV	ICL
RGDP	1.000000				
IPR	0.920704	1.000000			
IP	0.991747	0.927875	1.000000		
INV	0.908478	0.785503	0.926700	1.000000	
ICL	0.975268	0.870913	0.978211	0.948395	1.000000

(Source: researcher own computation by running Eviews9.0)

The above table 3 provides the correlation matrix for independent variables used in the analysis. As can be seen from the results of correlation between the independent variables showed positive and strong correlation insurance premium with insurance claim which is 0.97.This implies that when insurance premium increases it will have a positive and strong increases on the insurance claim. Insurance claim has also shown positive and strong correlation with insurance investment it is 0.94. Besides, when insurance claim increases implies that it has a strong impact on the growth of insurance investment. Furthermore the results revealed that when one variable goes up the other variable also goes up to the same direction and when one variable negatively affects the other independent variables will also been affected negatively.

This correlation indicates that multicolinearity be a problems. When there is a multicolinearity problem it indicates the parameter estimation become inefficient. Therefore in this result of description correlation analysis above indicates that there is a high positive correlation between insurance premium and insurance claim and insurance claim with insurance investment. Hence further an alternative method should be employed to check the existence of multicolinearity among the independent variables.VAR Serial correlation LM test is one of the tools used to measure the degree of collinearity in the time series variables. According Breusch-Godfrey test shows, F-

statistic is 1.518 and Prob. F-statistics is also 0.2417.This is insignificant at 0.05 levels. The diagnostic tests result is shown in (table 4 and Annexed M). Therefore, the Breusch-Godfreay tests result suggested that fail to reject the null hypothesis that there is no serial correlation problem. Therefore, there is no evidence that the presence of multicollinearity problem because of f-statistic and the p-value are greater than 0.05 significant levels.

4.4 Diagnostic Tests

To ensure that models are not miss-specified, tests have been performed. The tests of Breusch Godfrey, Jacque-Bera and White of the diagnostic test reveal that all the models are well specified, indicating that the error correction model performs well.

Table 4:-Results of diagnostic tests

VAR diagnostic test		Results	Conclusion
serial correlation LM test (Breusch Godfrey)	F-stat.,	1.519	No serial correlation
	Prob.F-stat.,	0.2417	
Multivariate Normality (Jacque- Bera test)	Value.	1.237202	Residuals are normally distributed
	P-value:	0.538698	
Heteroskedasticity test (white)	F-statistic,	1.7394	residuals are not hetroskedasticity
	Prob,F- stat,	0.1188	
	Obs*R-squared,	19.43	
	Prob.chi-squared,	0.1489	

(Source: researcher own computation by runningEviews9.0)

4.5 Unit Root Test (Test for stationary)

A unit root test is a feature of processes that evolve through time that cause problems in Statistical inferences involving time serious models. A linear stochastic process has a unit root, if 1 is a root of the processes characteristic equations such as processes is non-stationary. If the other equation lies inside the unit circle that is, an absolute value less than one –then the first difference of the processes will be stationary. The non-stationary data can lead to "spurious regressions".

The early pioneering work on testing for unit root in time series was done by Dickey and Fuller (1976, 1979).The basic objective of the test is to examine the null hypothesis that a1=1 in yt=a1yt-1+ut against the one sided alternative a1<1.

According to Engle and Granger (1987), the direction application of ordinary least square (OLS) to non-stationary data produces regressions that are mis-speciefied or spurious in nature. Unit root test is conducted in order to investigate the stationary properties of the data. Augmented Dickey fuller (ADF) and Phillips and Perron (PP) tests are applied to all variables in levels and are found non-stationary, then by the same way tests have been applied to first difference at trend and intercept in order to formally establish their order on integration. Thus, the null hypothesis of the interest is:

H0: Series contains unit root

H1: series is stationary.

The null hypothesis is rejected in favor of the stationary alternative in each case if the t-statistics is more negative than the critical values. In order examine the sensitivity of the outcome of the test optimal lag length criteria information has been chosen. The study used the p-value comparing with 5% critical values for unit root decisions. The value of the test statistics and the critical values given the type of test equations at trend and intercept at level are annexed with this study. While the results of tests of unit root for all variables at first difference is processed and presented in table 8&9 below.

(a) Unit root estimation by ADF tests

All variables are tested by ADF at level show non-stationary. The absolute value of ADF tests of unit roots are less than the absolute value of critical value. This implies rejection of hypothesis unit roots. In other wards the null hypothesis of having unit root is fail to reject at level and we would be differenced at order one or I(1) at trend and intercept to make them stationary.

H0: the variables have unit root (non-stationary) and

H1: The variables have not unit root (stationary).

Table 5:-Unit root estimation by ADF test (at first difference) with trend &intercept)

Series	ADF test statistics	5% critical values	10% critical values	Prob.	order	Remarks
RGDP	-5.550364	-3.544284	-3.204699	0.0003	I(1)	Stationary
IP	-4.7717	-3.544284	-3.204699	0.0026	I(1)	Stationary
INV	-4.579713	-3.544284	-3.204699	0.0043	I(1)	Stationary
ICL	-5.186353	-3.557759	-3.212361	0.0010	I(1)	Stationary
IPR	-7.2923	-3.544428	-3.204699	0.0000	I(1)	Stationary

(Source: researcher own computation by runningEviews9.0)

The results on the first difference at trend and intercept by ADF test are shown in the above table 5. The absolute value of ADF test statistic for RGDP, IP, INV, ICL, and IPR are greater than the critical value at 5% and 10% with trend and intercept. This indicate that the null hypothesis is rejected at first difference, this means that all variables are stationary at order one I(1). More over the results of the P-value of the RGDP, IP,INV,ICL, and IPR are less than 5% first difference and at trend and intercept at I(1) this shows that statistical significant to reject the null hypothesis or the non stationary.

This confirms that the results of ADF test confirmed that all variables are stationary at order one I(1). Thus the stationary suggested that the model 4 can be estimated, using the differenced variables. The model is specified as the follows:

D(RGDP)=B1+B2D(IP)+B3D(ICL)+B4D(INV)+B5D(IPR)+ μ ……. 4

Where, D is difference at first order I(1)

(b) Unit root estimation by Phillips-Perron (PP) test

This test has developed a more comprehensive theory of unit root non-stationary. This test is similar to ADF tests, but it is incorporating an automatic correction to the DF procedures to allow for auto -correlated residuals. To make more confidence on the existence of stationary and to correct autocorrelation and hetroskedasticity problems Phillips-Perron test has been applied. The PP test results are presented as in table 6 below.

Table 6:-Unit root test estimation by PP at first difference with (trend and Intercept)

Series	PP test statistics	5% critical values	10% critical values	Prob.	order	Remarks
RGDP	-6.108650	-3.544284	-3.204699	0.0001	I(1)	Stationary
IP	-4.676139	-3.544284	-3.204699	0.0034	I(1)	Stationary
INV	-4.479837	-3.544284	-3.204699	0.0056	I(1)	Stationary
ICL	-26.42966	-3.544284	-3.204699	0.0000	I(1)	Stationary
IPR	-7.292329	-3.544284	-3.204699	0.0000	I(1)	Stationary

(Source: researcher own computation by runningEviews9.0)

As can be seen from table 6, the absolute values of all variables are greater than 5% and 10% at critical values and the P-values of all variables are less than 5% first order.

This shows that the null hypothesis is rejected, this means stationary and statistically significant at order one. It is therefore, worth to conclude that all the variables are stationary and are integrated of order one. Hence, optimal lag length can be selected and

the unit root tests confirmed stationary at first difference of order one. Hence it is suggested to proceed for Co-integration test.

4.6 Lag Selection Criteria

After the results suggested that all the variables are integrated of order one that is stationary after first difference statistics. Selection of adequate optimal lag length requirement is important to identify the long run relationship among the explanatory variables and also used to remove any serial correlations. The result shows in table 10 suggests that an option of lag s 1 or lags 3 can be used. The optimal lag length is usually selected based on Akaike information criteria (AIC) test. Based on, lags 3 by AIC has been selected.

Table 7:-Lag Selection criteria output

Lag	LogL	LR	FPE	AIC	SC	HQ
0	83.04301	NA	6.98e-09	-4.590765	-4.366301	-4.514217
1	234.3388	249.1931	4.22e-12	-12.01993	**-10.67314***	**-11.56064***
2	249.0482	19.90100	8.56e-12	-11.41460	-8.945489	-10.57256
3	292.4931	**46.00044***	**3.84e-12***	**-12.49959***	-8.908158	-11.27481

* indicates lag order selected by the criterion

(Source: researcher own computation by runningEviews9.0)

LR: sequential modified LR test statistic (each test at 5%level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

4.7 Analysis of Johansson Co- integration tests

In order to evaluate the Vector Autoregressive (VAR) models is the next step to test for the existence of long run relationship among the variables. The absences of Co-integration among the variables suggest that there is no co-integration. This means there is no long run relationship between the variables of the study. Therefore, the trace and maximum Eigen value statistics are computed to test for the existence of co-integrating vectors under the Johansen approach. The trace statistics (λ –trace) tests the null hypothesis that there are at most r co-integrating vectors against the alternative of r or more co-integrating vectors (Brooks, 2008).

The λ trace statistics for the null hypothesis of at most r co-integrating vectors is;

λtrace (r)=-T∑ λln(1-λ)…….5

The maximum Eigen value statistics (λ-max) for the null hypothesis of r co-integrating vectors is;

λmax (r, r+1)= -Tln(1-λr+) …… 6

Where, r, is the number of co-integrating vectors under the null hypothesis.

r+1,is the number of co-integrating vectors under the alternative.

λ, is the estimated value of the characteristics roots obtained from Ⅱ matrix.

T, is the number of usable observations is applied.

ʎ,is the estimated value for the ith ordered eigenvalue.

ʎtrace, is a joint test where the null is that that the number of co-integrating

ʎmax, is conducts separate tests on each eigenvalue

ln (1-λr), the larger and negative t-statistic.

The Johansen co-integration test provides whether there is existence of co-integration or not at order of first integrated I (1).If the t-statistics is greater than the critical values , the null hypothesis that there exists r co-integrating vectors against the alternative hypothesis that there are r+1 (for trace) or more than r (for λmax is rejected. This leads to the conclusion that there is a long run relationship among the variables.

(a) Analysis of Johansson's co-integration test by trace statistics

The hypothesis of co-integration tests are: In order to analysis the unit root tests and to create fully understand, it better start with unit root hypothesis.

Null hypothesis: Ho: The series are not statistically significant co-integration between the variables to each other.

Alternative hypothesis: H1: the series are statistically significant integrated between the variables to each other.

Table 8:-Johansen Co-integration test result at (trace)

Hypothesized no of CE(s)	Maximum Eigen value	Trace Statistics	5%critical value	Prob.**
None*	0.830375	131.4746	69.81889	0.0000
At most 1*	0.713825	72.92727	47.85613	0.0001
At most 2*	0.480224	31.63925	29.79707	0.0303
At most 3	0.242709	10.04545	15.49471	0.2772
At most 4	0.026054	0.871175	3.841466	0.3506

*denotes rejection of hypothesis at 5% level.

** Mackinnon-Hauge-Michelis (1999) p-values

(Source: researcher own computation by runningEviews9.0)

The Johannes co-integration trace statistic test results shown in the above table 8, indicates that there are at most 3 co- integrating variables at 5% critical value. This means that the value of the test at first difference for the three variables are greater than critical value at 5% and the p- value is less than 5% critical level .This shows that the null hypothesis of co- integration test that there is no co-integration between the variables are rejected. This means there is co-integrating relationship among the variables in the long run. We hereby conclude that the variable in the model has a long run equilibrium relationship.

(b) Analysis of Johansson's co-integration test by maxin Eigen value statistics

The test will check whether there is existence of co-integration or not by using Eigen-value statistics.

The hypothesis of co-integration tests are:

Ho: The series are not statistically significant and no co-integrated among the variables to each other.

H1: the series are statistically significant and integrated among the variables to each other.

This test is used to know the powers of integration among the variables are strong or weak and used to determine estimating co integrating vector.

Table 9:-Johansen Co-integration test result at (Maximum Eigen value)

Hypothesized no of CE(s)	*Eigen-value*	*Maxim Eigen-value statistics*	*5%critical value*	*Prob.***
None*	0.830375	58.54737	33.87687	0.0000
At most 1*	0.713825	41.28802	27.58434	0.0005
At most 2*	0.480224	21.59380	21.13162	0.0430
At most 3	0.242709	9.174271	14.26460	0.2719
At most 4	0.026054	0.871175	3.841466	0.3506

Maximum Eginvalue indicate 3 co-integration equa(s) at 5% level

*denotes rejection of hypothesis at 5% level

** Mackinnon-Hauge-Michelis (1999) p-values

(Source: researcher own computation by runningEviews9.0)

As per the Johannes co-integration Eigen statistic result in table 9 indicates that there are at most 3 co- integrating variables at 5% critical level. This means that the value of Johannes co-integration maxim Eigen value at first difference for the three variables is greater than the critical value at 5%. This shows that there is no co-integration between

the variables are significantly rejected at 5% significant level. Hence there is relationship among the variables.

The results of trace and maximum Eigen statistical test of Johansen co-integration are not contradicted to each other. This implies that there is strong and powerful relationship among the variables in the study. We can conclude that, if the series are stationary at first difference at integrated order one with the trend and intercept model, then the variables are co-integrated and has long run equilibrium.

To conclude from the above co-integration test results are that, the result of testing the number of co-integrating vectors is shown above in table 8 that the unrestricted co-integration rank test (trace) shows three co-integrating vectors at 5%critical values in the system. The result in table 9 also shown the unrestricted co-integrating rank test (maximum Eigenvalue) shows three co-integrating vectors at 5% critical values in the system. This leads to reject the null hypothesis at trace and at maximum Eigenvalue.
Therefore Trace statistics and maximum Eigen value results suggest that there exists meaningful long run r+ relationship among the variables under the study; this implies that there is a significant long run relationship among the real GDP, insurance premium, insurance claim, and insurance profit as well as insurance investment. Since the study gets a long run co-integration relationship at most in three variables. Therefore, the result of co-integration tests can conclude to apply the vector error correction model (VECM) to estimate the contribution level of insurance practice on the economic growth, so that to answer the research questions and test the hypothesis of the study.

4.8 Vector Error Correction Model (VECM)

According to Asteriou (2007) Error Correction Model (ECM) is important and popular for the following reasons;1) it is convenient model to correct from the disequilibrium of the previous period; 2) if the variables are co-integrated and confirmed as stationary at first difference it has the power to resolve the problem of spurious regression; 3) this is fits for the time series given data sets;4) it is used to measure the speed of adjustment and prevents the errors in the long run relationship from the disequilibrium of prior period if

and only if the variables are co-integrated and stationary at first order. Besides, Yinuusa and Akinlo(2013) explained that ECM is used to estimate the co-integration relationship among the variables, and this is the model that combines both short run properties of the economic relationship in the first difference and form as well as the long run information provided by the data in level form.

The vector error correction model provides important information in the short run relationship among any co integrated variables. The main point of the VECM analysis is the error correction term from the above estimated co-integrating equations of the short run deviations from the long run equilibrium. Therefore the main focuses of the paper is to see the long run co-integrating relationship and short run dynamics between real GDP and the independent variables. ECM consists of two parts: The long run co-integrating, coefficients (used to drive the long run co-integrating relationship), and the short run coefficients (for the short run analysis).

After determining optimal lag length using the Akaike Information Criteria (AIC) and establishing the number of Co- integrating vectors, the Error Correction Model (ECM) is set up as follows.

(a) ECM Co-integration series: $= \Delta Yt = \beta o + \sum \beta i \Delta Yt\text{-}1 + \sum \rho \Delta Xt\text{-}1 + \phi Zt\text{-}1 + \mu \ldots\ldots.7$

(b) Long run co-integration regression: $= Yt = \beta o + \beta 1 Xt + \varepsilon t \ldots\ldots\ldots\ldots\ldots\ldots\ldots 8$

(c) Error correction term = (ECT=Z):$Zt\text{-}t = ECTt\text{-}1 = Yt\text{-}1 - \beta o - \beta 1 Xt, \ldots\ldots\ldots\ldots\ldots$ 9

Where,

β0:intercept of the model

Yt: is described to changes between t-1 and t as a result of changes in the values of the explanatory variables.

Xt: is described the values between t-1 and t1 and also the parts to correct for disequilibrium that existed during the previous period.

ϕ: defines the long run relationship between x and y,

β; describes ,the short run relationship ship between the changes in x and changes in y.

Zt-1: is error correction term describes the speed of adjustment back to equilibrium

ΔYt: is the change of the dependent variable at previous lags.

μ: sum of error tem of the long and short run model

This error term relates to the fact that last period deviation from the long run equilibrium (the error) that influences the short run dynamics of the dependent variable. This further implies by co-integration with the short run dynamics and adjustment mechanisms that describe how the two series react when they move out of long-run equilibrium. Thus the coefficient of ϕx (ECT) is the speed of adjustment, because it measures the speed of at which y returns to equilibrium.

Therefore, based on the ECM model, results of this study revealed that there are at most three co-integrated variables in the model. Vector Error Correction Model (VECM) or vector autoregressive (VAR) is used to investigate the long run and short run relationship. According to Asteriou (2007), one of the good features of VAR is used to test the direction of causality and statistically detect the cause and effect relationship among variables that means the ability of one variable to predict (and therefore cause) the other variable. Granger causality (1969) developed a relatively simple test that defined causality as: if a variable Yt is said to granger cause Xt, this implies that Xt can be predicted with greater accuracy by using past values of the Yt variable with all factors remains unchanged.

(a) Long- runs Dynamics of the Model

The estimated long run equilibrium for economic growth (Rgdp) derived from the normalized vectors, with standard errors in brackets and the t-statistics in parenthesis is depicted in table 10 below.

Table 10:-Long run regression equations and estimations

LRGDP=-5.470650-0.663416LIP+0.0138244LINV -0.187161LICL+0.253240LIPR				
Stan. Err =	*(0.10874)*	*(0.01206)*	*(0.06091)*	*(0.04722)*
t- statistics =	*[-6.10115]*	*[11.4591]*	*[-3.07289]*	*[5.36252]*

(Source: researcher own computation by runningEviews9.0)

Table 11:-Summary of Hypothesis results in long run dynamics

Hypothesis	Variable	Expected versus RGDP		Study Result	
		Sign	Significance level	Sign	Significant level
HO 1	IP	negative	Significant	Negative	Significant
HO 2	IPR	negative	Significant	Positive	significant
HO 3	ICL	negative	Significant	Negative	significant
HO 4	INV	negative	Significant	Positive	Insignificant

This regression result indicates significant variables namely insurance premium, insurance claim and insurance profit are important insurance determinants for economic growth in the long run. However, contrary to the theoretical expectations, the coefficients of insurance premium and insurance claim have shown negative direction.

The above result in table 10 showed that, other thing remains constant, total Insurance premium is negatively affects the economic growth in long run; the result is consistent with null hypothesis of the study in respect of direction, but not significant. The coefficient of -0.663416 in insurance premium indicates that a 1% increase in insurance premium decreases growth level in real GDP in the long run by 0.663% all other things being equal. This is inconsistent with the classical view that insurance activity mobilizes financial resources and used as distributed by means of risk transfer and risk sharing system Skipper (2001). The reason may be that most of the source of insurance premiums seems derived from limited government projects and public enterprises as well as from affiliated shareholders. This means subsidized or captive insurance characteristics. This doesn't add value to the economic development due to inefficient of resource mobilization and allocation. So according to theories efficient, integrated and developed financial system has great contribution to economic growth, through the channel of resource mobilization and maximization.

The positive and statistically insignificant results of total insurance investment to real GDP revealed that total insurance investment contributes to real GDP positively but statistically insignificant, this supports alternative hypothesis. This is also consistent with

the prediction of endogenous growth theory which supports Levin (1997) that financial development affects economic growth through investment. The role of insurance consistent to endogenous theorists mobilizes savings by risk transfer mechanism based on the law of large numbers and promotes investment by using innovation, speeding technology progress, efficient income allocation. Therefore, insurance sector promotes long run economic growth by expanding volume of investments. The coefficient of insurance investment variable implies that 1% increase in insurance investment increase Real GDP by 0.02% in long run.

The insurance claim result showed a negative and significant relationship with real GDP which is inconsistent with the null and alternative of this study and with theories. Theoretically claim payment is the indemnified the financial compensation and bring back to the same position as before. In other words repairs or restore the damaged economic to the normal course economic activities and contributes its part to the growth of the economy and creates confidence for entrepreneurs to innovate new and expand investment without worry about the risks that can be affected the normal flow of production. According to results in table 10 if the indemnification processes delayed and inefficient, volume of claim payment is exaggerated beyond the actual indemnity which is affected by claim leakage. Further the negative effect on the economic development is also reflected by excessive re-insurance premium outflow from the country as supported by Mezegeb(2010).

The long run dynamic test result showed that total insurance profit has positive and significant relationship with real economic growth. It indicated that 1% increase in total insurance premium resulted by 0.2532 increase in real gross domestic product. This indicates that the insurance sector is contributing little to economic growth through insurance profit this is also consistent with the result of Mezgebe(2010).

The findings of this model in the study indicate that there is inefficiency in risk transfer and risk management performance of insurance. This manifested by poor resource

mobilization, utilization and maximization through the channel of risk transfer. Since insurance is one of the key player in financial intermediary.

(b) Short -run Dynamics of the Model

The dynamic model as stated in model specification test is as:

$\Delta RGDP=\beta 1\Delta IP+\beta 2\Delta INV+\beta 3\,\Delta ICL+\beta 4\Delta IPR+\Delta u$……10

The empirical investigation regarding the short run dynamics are important for policy makers because the sign and magnitude of the short run dynamics provide the direction and movements of variables .Thus, short run dynamics are estimated through Error Correction Model (ECM). The magnitude of the error correction term is measures the speed of the adjustment of the long run equilibrium following the short run shock in the previous period. The error correction term in this study is negative as well as significant at 1% level, this indicates that (-0.6386) reflecting 63.86% speed of adjustment of the long run causality effect for the long run equilibrium from previous periods shock .In other words 63.86% of the long run disequilibrium is corrected in the short run period. This further supports the co-integration results obtained by using trace and maximum Eigen value, by ADF and PP tests. The coefficients of the short run model is presented is presented in table 12 shown below.

Table 12:-Short run regression estimations

Variable	Coefficient	std. Error	t-statistics	prob.
ECT	-0.638647	0.175386	-3.641387	0.0022
L (RGDP)	0.503018	0.156245	3.219413	0.0054
L IP	-0.378360	0.117025	-3.233159	0.0052
L INV	0.019080	0.028222	0.676080	0.5086
L ICL	-0.083770	0.035351	-2.166543	0.0307
LIPR	0.126747	0.54566	2.322808	0.0337
C	0.040873	0.011501	3.553965	0.0026
R2-squared		0.780712		
F-statistics		0.008		

(Source: researcher own computation by runningEviews9.0)

(The result revealed that the model of the for our study is well fitted (F-statistics=0) and the coefficient of determination (R-square), which measures the goodness of fit of the model, indicates that 78.07% of the variations observed in the dependent variable were explained by the independent variables. Moreover one Real GDP and three independent variables IP, ICL and IPR are statistically significant, at 1% level, while one independent variable Insurance investment (INV) is not statistically significant. In addition analysis of hypothesis testing and the impact of insurance practice in the economic growth in short run dynamics is described below.

The regression coefficient of IP carries negative and is statically significant at 5% level. This implies that Insurance premium affects RGDP negatively. It is estimated from the result that 1% increase in IP on the average, will lead to 0.378% decrease in RGDP. This result is consistent with the study results of Yinusa and Akinlo(2013). As explained before this may indicate that most of the collected premium are from government and public affiliated companies which is subsidized from the national budget. Claim payment, is the liability of the insurance, affects negatively the re-insurance cost that means ceding the risk that having less probability of loss exposure and retain high probability of risk exposure .This shows there is inefficient risk management methods in the system and leads to asset- liability mismatches problems. This result contradict with the expectation of financial expectation theory

The regression coefficient of INV carries positive and not significant at 5% level. This implies that Insurance investment determinants affects the RGDP but no significant significantly.

The regression coefficient of ICL carries negative sign and significant at 5% level. This implies that Insurance claim payment (indemnity) is affects the RGDP significantly. It is estimated from the result that 1% increase in ICL on the average, will lead to 0.0837% decrease in RGDP.

The regression coefficient of IPR carries positive sign and significant at 5% level. This implies that Insurance profit affects the RGDP significantly. It is estimated from the result in table 15 is that 1% increase in IPR on the average, will lead to 0.1267% increase in Domestic product RGDP is accounted to for the explanatory variable IPR.

Table 13:-Summary of Hypothesis results in short run dynamics

Hypothesis	Variable	Expected versus RGDP		Study Result	
		Sign	Significance level	Sign	Significant level
HO 1	IP	negative	Significant	Negative	Significant
HO 2	IPR	negative	Significant	Positive	significant
HO 3	ICL	negative	Significant	Negative	significant
HO 4	INV	negative	Significant	Positive	Insignificant

(Source: researcher own computation)

4.9 Pair-Wise Granger Causality tests

In related to our research objective, however, the question of causality is not yet answered. So to know the directional influence of the variables, the series under the study are tested by the granger causality (1969) and the analysis is shown below. As can be seen in table 14 the short run causality among variables, there is unidirectional causality from real gross domestic product to insurance premium, insurance profit and insurance claim to economic growth in the short run. And there is bidirectional granger causality between the real gross domestic product RGDP and insurance Profit IPR in the short run. Similarly there is also bidirectional granger causality exists between explanatory variables. Insurance premium IP and insurance profit IPR can cause to each other. However there is no granger causality from insurance investment (INV) to any of the variables in the short run.

Table 14:-Results of Pair-wise Granger causality tests

Null Hypothesis:	Obs	F-Statistic	Prob.
IPR does not Granger Cause RGDP	34	3.48513	0.0294
RGDP does not Granger Cause IPR		3.66583	0.0245
IP does not Granger Cause RGDP	34	1.10302	0.3650
RGDP does not Granger Cause IP		5.06960	0.0065
INV does not Granger Cause RGDP	34	0.73972	0.5376
RGDP does not Granger Cause INV		0.83142	0.4883
ICL does not Granger Cause RGDP	34	0.78911	0.5105
RGDP does not Granger Cause ICL		3.04061	0.0460
IP does not Granger Cause IPR	34	5.75608	0.0035
IPR does not Granger Cause IP		4.62896	0.0097
INV does not Granger Cause IPR	34	1.05475	0.3846
IPR does not Granger Cause INV		1.37692	0.2710

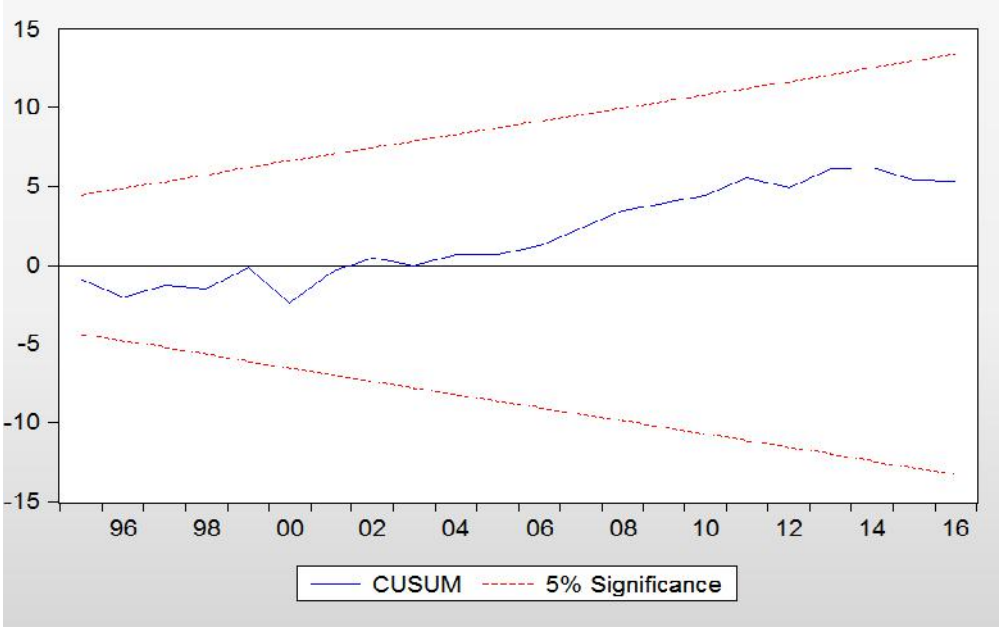
(Source: researcher own computation by runningEviews9.0)

Accordingly, the estimation result is that RDGP granger cause to IP, IPR and ICL, with a direction of causality flow from RGDP to IP, IPR and ICL at 5% level of significant. It is growth of real growth has positive and significant impact on the growth of insurance premium, profit as well as claim. However there is no cause relationship between insurance investment and RGDP at 5 % level. The result is showing that insurance investment has no impact on the growth of level in short run.

4.10 Stability Test

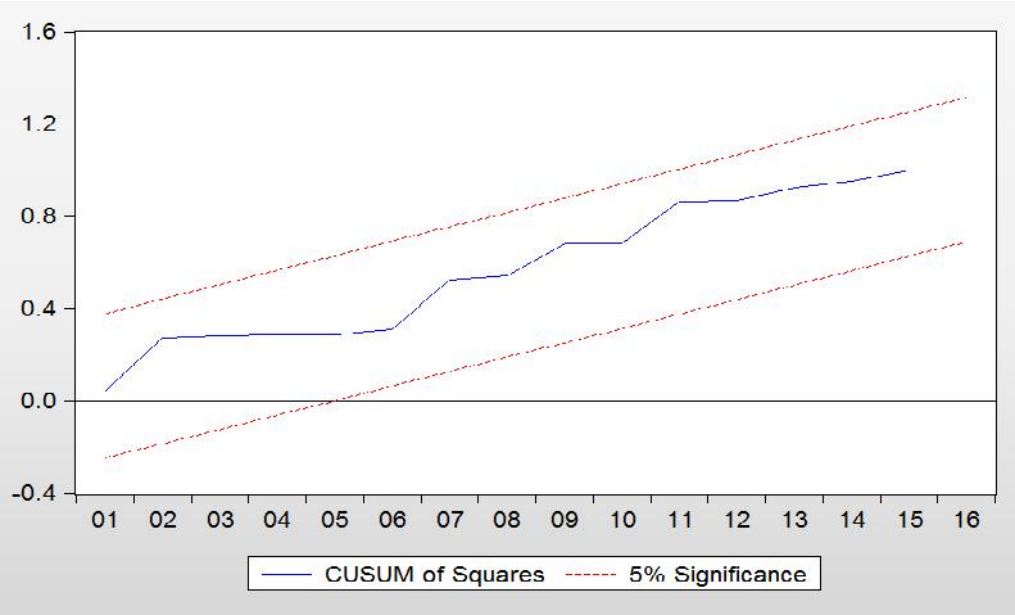
The short-run and long-run stability of models are tested by cumulative sum (CUSUM) and cumulative sum squared (CUSUMSQ) matches as described by (Brown et.al.,(1975).If the cumulative sum crosses the 5% critical lines, the parameters are not stable. CUSUM test justifies that the significance of deviation from, the mean value is checked by parallel critical lines around the mean value. If the lines pass outside of the critical boundary, there is instability of the modes. Further more if the plots of the tests statistics are within the 5% critical bound, the null hypothesis of all coefficients of the regression cannot be rejected and thus stable. Therefore the coefficients of the error correction model are stable Bekhet & Meter (2013).the result is depicted in figure (3a) and (4b) below.

Figure 3:-CUSUM (a) Stability results



Source: researcher own computation by running Eviews(9.0)

Figure 4:-CUSUM of squared (b) stability results



(Source: researcher own computation by runningEviews9.0)

Chapter summary

The empirical evidence from the VECM reveals that insurance profit and insurance investment have positive relationship where as insurance premium and insurance claim have negative relationship with economic growth in the long run. The short run results from error correction model (ECM) also showed the error correction term of economy is negative and significant at 1% level. The coefficient of error correction term measures the speed of adjustment of real GDP to long run equilibrium due to changes in the insurance premium, insurance investment, insurance profit and insurance claim.

The results of the granger causality test indicates that a unidirectional relationship exist among economic growth and insurance premium, insurance profit and insurance claim. That is, insurance premium used as a measure of risk transfer insurance claim is used as measure of loss indemnifier and economic growth. Therefore economic growth is granger causality to insurance industry that means unidirectional relationship exists from economic growth to insurance sector (risk transfer activity and to claim payment), with the exception insurance investment. Granger causality result of this study is inconsistent

with the finding of Aderaw(2012). He found that insurance is not an important prerequisite for stimulating economic growth and at the same time economic growth does not bring insurance development.

Chapter Five

Summary, Conclusion and Recommendation of the Study

5.1 Introduction

The purpose of this chapter is to present the summary, conclusion and recommendation of the study. Whereas the summary presents a brief overview of the research problem objective, methods and findings, the conclusion capture the overall results of the findings of the study. Recommendations part, opinions, suggested issues to address related in the study.

5.2. Summary

This study is supported by related theoretical and empirical literature reviews; descriptive statistics was computed of the sample, significant correlation was then found between the independent variables. This indicates with the aim of finding, the contribution of insurance sector on economic growth in Ethiopian economy. The study has tried to establish a short run and long run dynamics, causal relationship among the series of economic growth, insurance premium, insurance investment, insurance claim and insurance profit for the period of 1980-2016.

The data is checked for its stationary. And this found that the first difference become stationary. That means the variables are integrated of first order I(1) confirmed by augmented Dickey Fuller (ADF) and Phillio-Perreon (PP). After all those have been confirmed vector autoregressive (VAR) estimation equation is applied. The co-integration analysis revealed that the presence of long run equilibrium relationship among the variables. The estimation of long run coefficients in respect of regression analysis also shows that all the coefficients of the variables affect economic growth in the long run. . The results indicate that insurance premium, insurance claim, and the insurance profit are co- integrated significantly. Insurance investment also has long run co-integrated with economic growth but insignificantly. That means the economic growth and all insurance activities have long run equilibrium relationship.

Regarding error correction model analyses, the results of long run and short run coefficients show that the aspects of insurance activity (insurance profit and insurance investment) significant economic growth in the long run. In the short run economic growth is caused by the insurance profit and economic growth is granger cause to insurance premium, insurance claim, and insurance profit. However, there is no short run causality from insurance investment to any of the variables.

The results of granger causality confirm that unidirectional relationship is exhibited from real economic growth to insurance premium, insurance claim and insurance profit among the variables. Moreover, bidirectional cause is found between economic growth and insurance profit. However insurance investment does not have any cause and effect relationship with any variable in this study.

Finally, the stability test using “CUSUM” and “CUSUMSQ” also established to rely on the quality of models. Accordingly, the coefficient of the regression are stable and confirmed by the plots of tests at 5% significant level

5.3. Conclusion

Theoretical explanation showed that a well developed financial system increases the efficiency of financial decisions, improves the allocation of resources in the economy. This means that developed insurance sector influences positively on economic growth. The empirical results of previous studies are mixed, depends on the countries strategic focus and financial and economical developments. However empirical evidence from developed countries show that insurers are the major investors, thus improves financial resource mobilization through channeling risk transfer, enhances the percentage of savings directed towards investment

Keeping in mind the above literature results, this study has used descriptive statistics analysis to examine the trend and the distribution of the chosen variables over the sample

period .The time series data are also tested its stationary used by ADF and PP. In order to address the research objectives of the relationship regression analysis has been made between the real GDP and insurance industry variables, in Ethiopia. Finally the study findings are discussed in the following. Using ECM and VECM models analysis have been made. According to the study,

1)The error correction model (ECM) indicate that insurance premium and total insurance claim have negative and significant impact on real GDP, at 5% significant level, in the long run.

2) The error correction model (ECM) estimate also indicates the insurance profit and insurance investment have shown positive sign in the long run. Further it shows that insurance profit has more significant than other determinants. Even though insurance investment has positive sign, but it is found insignificant impact on the economic growth.

3) The VECM result indicates that there is short run relationship between real GDP and independent variables. In the short run, there is positive and significant relationship between insurance profit and economic growth. And insurance investment has positive and insignificant impact with economic growth. However insurance premium and insurance claim have negative and significant impact at 5% significant level.

4) The estimated result of error correction term of this model is (-0.638467) indicates that 63.85% of the deviation of economic growth from its long run equilibrium would require a period of one and half years of adjustment (A 100% represent a 1 year duration of adjustment). This means it is fast pace dynamic adjustment of disequilibrium of real economic growth from their long run equilibrium. This is strong correction of variation to long run equilibrium.

5) Moreover according to the estimation of the of the model, real GDP has uni-directional causality with insurance premium, insurance claim and insurance profit, that runs from

economic growth to insurance premium, insurance claim, and to insurance profit. On the other hand, insurance investment has no causal relationship (in the short run) with any variable of this study. However, there is bi-directional causality between real GDP and insurance profit, this indicates that insurance has a little contribution to economic growth and consistent with findings of Megebe(2010). Hence economic growth can predict the growth insurance premium, insurance claim and insurance profit in Ethiopia. The result can conclude that macroeconomic economic movements could have strong positive impact on the short run and long run dynamics of the insurance sector in Ethiopia.

Finally, the findings of this study suggest that there is inefficiency of financial systems in insurance activity in respect of risk transfer, risk management, insurance indemnification and insurance investment in Ethiopia. This manifested by poor financial intermediation of resource mobilization, utilization, allocation and maximization through the channel of risk transfer and risk management, since insurance is as one part of financial intermediary in financial institutions. This result may also reflected the lack of market developmental financial strategy by market integrating among the financial institutions (commercial and microfinance banks with insurance companies).This is supported by the findings Webb,et al(2007) that the exogenous variables of banking and life insurance penetration are robustly predictive of increased productivity

5.4 Recommendations

Based on the study findings, the following are recommended:

1) Based on this study, there is long run relationship between insurance performance and economic growth in Ethiopia. Hence there is a need for more efforts to increase transparency and efficiency in insurance industry through legislation and risk management product innovations and education in insurance industry.
2) Lack of public confidence in insurance service can be reduced by solving the suspicion that claims would not be paid on time which is constraint to growth of insurance penetration in Ethiopia. Therefore to improve their business, insurers have to use prompt,

fast and flexible claim payment system, develop customized and diversified products develop respective blue ocean strategies and promoting continuous public awareness creation. This task is mainly forwarded to insurance association and individual insurance companies.

3) On the part of policy makers, attention should be given on the result of negative impact of insurance on economic growth. And need for developmental policies that will reverse this significant negative impact on economic growth. Enhancement of insurance skills in vocational and technical education is essential in order to increase mobilizing, utilizing and allocating resources efficiently through channeling, distributing, and transfer of risks from large number of independent to large group of people. Therefore, the investment policy should concentrate on the mobilization of the main source of investment insurance products that enhance the investment volume and investment by identifying insurance products.

4) Having well developed insurance sector must be one of the crucial primary targets of the Government; it requires financial developmental strategic focus. This can lead the sector ultimately to occupy its right place in economics development system in the country. This outcome can be achieved by providing conducive and competitive environment like adequate investment on the area of R&D, developing saving and investment element of products, such as compulsory group life products for communities (professionals, academicians & students), private, and public & government employees tax incentive for life premium paid by policy holder. Compulsory market integration within the financial institutions also very important to promote saving rates through effective risk management like Banc-assurance and credit life related with real estate and mortgages loans. Since, the higher levels of banking and insurance jointly produce greater effect on economic development than would be indicated by the sum of their individual contribution.

Hence the respective bodies should employ all possible measures to reverse the structural problem of the insurance direction which can foster continuous & sustainable

development of the insurance sector. This would contribute meaningful in financial stability and economic growth in the long run and the short run as well.

5.5. Contribution to knowledge

The study is performed to contribute and provide development additional knowledge in to how insurance sector development and economic growth are linked to each other by geographically testing insurance market activity on economic growth contribution in the case of Ethiopia. It has also modified the model of the previous works of Ward and Zerrburg (2000), works of Gabriel (2015), Richard and Victor (2013) and Hussels et.al.(2005).

5.6. Future Research

Since there is no causal relationship between economic growth and insurance investment in further research can be undertaken to find out the reason behind.

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ANNEXES

Annex A: Gross Written premium by class of business

CLASS OF BUSINESS	Motor	Marine	Fire	W.C	Aviation	Others	Sub-total	Life	G. Total
2006	350,323	137,977	62,735	25,436	64,279	156,117	796,867	45,911	842,778
2007	449,120	143,279	70,775	30,632	61,400	216,307	971,514	61,698	1,033,211
2008	507,567	212,336	78,711	37,884	16,524	334,010	1,187,030	81,180	1,268,210
2009	579,146	223,229	91,464	41,719	69,262	374,508	1,379,328	100,324	1,479,652
2010	770,778	284,459	108,772	49,603	103,521	611,281	1,928,414	114,739	2,043,153
2011	1,082,113	390,581	136,018	57,262	188,637	567,805	2,422,415	160,596	2,583,011
2012	1,861,172	577,344	197,422	65,409	237,746	785,667	3,724,760	266,170	3,990,930
2013	2,101,661	531,724	229,701	53,175	231,630	1,349,778	4,497,666	299,514	4,797,180
2014	2,421,725	536,721	280,738	222,077	245,484	980,912	4,687,957	273,871	4,961,528
2015	2,830,635	490,450	308,990	189,801	220,740	1,201,469	5,242,085	315,044	5,557,129
2016	3,489,111	472,050	372,137	167,654	270,325	1,320,384	6,091,661	333,008	6,424,669
% Contribution of each products in 2016	54.31%	7.35%	5.79%	2.61%	4.21%	20.55%	94.82%	5.18%	100%

(Source: EIC, 2016Strategic management report)

Annex B:Insurance penetration and density

Country	Insurance penetration (2012)	Insurance density (2012)	Poverty gap ratio at $1 a day (ppp)3	Financial inclusion: 2011
South Africa	13.7	1,006	2.3%(2009)	54%
Nigeria	0.5	7	33.7%(2010)	30%
Egypt	0.6	20	0.4%(2008)	10%
Algeria	0.7	39	1.4%(1995)	33%
Angola	0.8	48	16.5%(2009)	39%
Morroco	3.2	94	0.5%(2007)	39%
Sudan	0.5	9	46.5%(2009)	7%
Libya	0.4	48	NA	NA
Ethiopia	0.5	3	8.2%(2011)	NA
Tunisia	1.8	76	0.4%(2010)	32%
Kenya	3.1	30	16.9%(2005)	42%
Ghana	1.1	18	9.9%(2006)	29%
Tanzania	0.9	6	28.1%(2007)	17%
DR Congo	0.3	1	52.8%(2006)	4%
Cote d'ivoire	1.7	18	7.5%(2008)	NA
Cameroon	1.2	14	1.2%(2007)	15%
Uganda	0.6	4	12.2%(2009)	20%
Zambia	1.4	20	41.9%(2010)	21%

(Source: Africa-re, 2015)

Annex C:Macro level data in respect of east Africa region

Country	Population(million), in,2013	GDP(Gross domestic product,in$ in Billions,2013)	GDP (USD Billion in,2013	Insurers &Re(number),in2013	Insurance penetration (%), in 2013	Insurance density(Ratio) in,2013
Kenya	44	45 bn	45bn	51	3.5	35
Sudan	34	70bn	70bn	20	0.5	9
Ethiopia	89	45bn	48bn	18	0.5	3
Uganda	37	23bn	23bn	23	0.6	4
Tanzania	46	33bn	33bn	28	0.9	6
Eritrea	6	3bn	3bn	1	0.5	3
Rwanda	11	7bn	7bn		0.8	6
Djibouti	0.9	1bn	1bn	2	1.1	17
Zambia	15	22bn	22bn	59	1.4	20

(Source: Africa-Re, 2015,(compiled by the Author)

Annex D. Raw source of data

YEAR	RGDP	IP	ICL	INV	IPR	RGDP	IP	ICL	INV	IPR
1980	108023000	96,645	40,819	7,755	30,222	8.03	4.99	4.61	3.89	4.48
1981	108920000	93,638	30,159	6,343	40,878	8.04	4.97	4.48	3.80	4.61
1982	109170000	102,756	33,342	6,538	47,680	8.04	5.01	4.52	3.82	4.68
1983	120202000	112,755	42,631	5,795	46,519	8.08	5.05	4.63	3.76	4.67
1984	111616000	137,571	38,128	5,091	58,663	8.05	5.14	4.58	3.71	4.77
1985	101803000	133,699	45,251	5,065	62,971	8.01	5.13	4.66	3.70	4.80
1986	111910000	149,885	45,789	5,062	64,981	8.05	5.18	4.66	3.70	4.81
1987	126611000	161,736	48,648	5,216	48,982	8.10	5.21	4.69	3.72	4.69
1988	125936000	177,857	49,752	5,483	78,777	8.10	5.25	4.70	3.74	4.90
1989	126868000	159,470	117,576	13,000	71,412	8.10	5.20	5.07	4.11	4.85
1990	132336000	148,010	81,807	15,437	42,274	8.12	5.17	4.91	4.19	4.63
1991	128347000	144,468	87,412	15,493	73,396	8.11	5.16	4.94	4.19	4.87
1992	125406000	128,585	152,494	14,366	20,058	8.10	5.11	5.18	4.16	4.30
1993	139412000	204,497	88,105	21,115	26,486	8.14	5.31	4.95	4.32	4.42
1994	139480000	253,968	111,723	25,178	70,819	8.14	5.40	5.05	4.40	4.85
1995	147455000	300,492	118,295	74,675	56,900	8.17	5.48	5.07	4.87	4.76
1996	162373000	319,355	178,301	144,051	43,606	8.21	5.50	5.25	5.16	4.64
1997	169247000	357,167	446,889	152,025	59,805	8.23	5.55	5.65	5.18	4.78
1998	167917000	377,695	181,984	137,732	102,758	8.23	5.58	5.26	5.14	5.01
1999	178513000	397,603	209,194	149,225	105,404	8.25	5.60	5.32	5.17	5.02
2000	184881000	439,541	219,163	207,926	108,347	8.27	5.64	5.34	5.32	5.03
2001	198595000	469,651	278,093	199,302	111,104	8.30	5.67	5.44	5.30	5.05
2002	201840000	577,557	327834	181,970	110,060	8.31	5.76	5.52	5.26	5.04
2003	197604000	581,179	352036	185,217	95,277	8.30	5.76	5.55	5.27	4.98
2004	220782000	597,499	354573	194,789	59,220	8.34	5.78	5.55	5.29	4.77
2005	248698000	676,316	402542	210,257	91,172	8.40	5.83	5.60	5.32	4.96
2006	277396000	842,778	562070	185,514	106,459	8.44	5.93	5.75	5.27	5.03
2007	310115000	1,033,210	698568	223,484	121,706	8.49	6.01	5.84	5.35	5.09
2008	344775000	1,261,142	839802	383,475	137,059	8.54	6.10	5.92	5.58	5.14
2009	379362000	1,479,314	1048901	319,975	157,568	8.58	6.17	6.02	5.51	5.20
2010	419218000	1,939,632	1,211,531	384,839	306,626	8.62	6.29	6.08	5.59	5.49
2011	475648000	2,583,011	1,865,209	479,993	312,114	8.68	6.41	6.27	5.68	5.49
2012	517027000	3,996,155	2,560,727	722,089	534,416	8.71	6.60	6.41	5.86	5.73
2013	568432000	4,797,180	3,022,321	816,395	852,321	8.75	6.68	6.48	5.91	5.93
2014	626977000	4,961,528	3,156,525	799,012	954,628	8.80	6.70	6.50	5.90	5.98
2015	692222000	5,557,129	3,478,937	1,237,570	1,121,408	8.84	6.74	6.54	6.09	6.05
2016	745743000	6,426,685	4,374,471	1,830,842	1,016,399	8.87	6.81	6.64	6.26	6.01

Source: National Bank of Ethiopia (NBE) and Ethiopian Insurance Corporation (EIC)

Note: (IP, ICl, INV and IPR, expressed In terms of, 000 and the last four columns in log forms)

Annex E: Descriptive statistics based on original data(without log)

	RGDP	IPR	IP	INV	ICL
Mean	2.50E+08	198607.4	1139929.	253440.4	727070.3
Median	1.69E+08	78777.00	377695.0	149225.0	209194.0
Maximum	7.46E+08	1121408.	6426685.	1830842.	4374471.
Minimum	1.02E+08	20058.00	93638.00	5062.000	30159.00
Std. Dev.	1.80E+08	295749.9	1720498.	386258.7	1129721.
Skewness	1.428852	2.194775	1.918863	2.497197	1.916028
Kurtosis	3.878577	6.361278	5.352849	9.521599	5.493595
Jarque-Bera	13.77998	47.12310	31.24040	104.0243	32.22495
Probability	0.001018	0.000000	0.000000	0.000000	0.000000
Sum	9.25E+09	7348475.	42177359	9377294.	26901602
Sum Sq. Dev.	1.17E+18	3.15E+12	1.07E+14	5.37E+12	4.59E+13
Observations	37	37	37	37	37

Annex F: Unit root test Result

Unit Root Test at Level (ADF)

Null Hypothesis: RGDP has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		3.374854	1.0000
Test critical values:	1% level	-3.626784	
	5% level	-2.945842	
	10% level	-2.611531	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: IP has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		2.200609	0.9999
Test critical values:	1% level	-3.626784	
	5% level	-2.945842	
	10% level	-2.611531	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: ICL has a unit root

Exogenous: Constant

Lag Length: 4 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		1.891306	0.9997
Test critical values:	1% level	-3.653730	
	5% level	-2.957110	
	10% level	-2.617434	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: INV has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		0.453401	0.9826
Test critical values:	1% level	-3.626784	
	5% level	-2.945842	
	10% level	-2.611531	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: IPR has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.363864	0.9049
Test critical values:	1% level	-3.626784	
	5% level	-2.945842	
	10% level	-2.611531	

*MacKinnon (1996) one-sided p-values.

Annex G: Unit Root Test at Level (PP)

Null Hypothesis: RGDP has a unit root

Exogenous: Constant

Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		4.074970	1.0000
Test critical values:	1% level	-3.626784	
	5% level	-2.945842	
	10% level	-2.611531	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: IP has a unit root

Exogenous: Constant

Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		2.135337	0.9999
Test critical values:	1% level	-3.626784	
	5% level	-2.945842	
	10% level	-2.611531	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: INV has a unit root

Exogenous: Constant

Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		0.317088	0.9760
Test critical values:	1% level	-3.626784	
	5% level	-2.945842	
	10% level	-2.611531	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: ICL has a unit root

Exogenous: Constant

Bandwidth: 5 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		1.335435	0.9984
Test critical values:	1% level	-3.626784	
	5% level	-2.945842	
	10% level	-2.611531	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: IPR has a unit root

Exogenous: Constant

Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-0.020946	0.9504
Test critical values:	1% level	-3.626784	
	5% level	-2.945842	
	10% level	-2.611531	

*MacKinnon (1996) one-sided p-values.

Annex H: Unit root test first difference ADF (Intercept and trend)

Null Hypothesis: D(RGDP) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.550364	0.0003
Test critical values:	1% level	-4.243644	
	5% level	-3.544284	
	10% level	-3.204699	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(IP) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.771727	0.0026
Test critical values:	1% level	-4.243644	
	5% level	-3.544284	
	10% level	-3.204699	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(ICL) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 3 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.186353	0.0010
Test critical values:	1% level	-4.273277	
	5% level	-3.557759	
	10% level	-3.212361	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(INV) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.579713	0.0043
Test critical values:	1% level	-4.243644	
	5% level	-3.544284	
	10% level	-3.204699	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(IPR) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.292329	0.0000
Test critical values:	1% level	-4.243644	
	5% level	-3.544284	
	10% level	-3.204699	

*MacKinnon (1996) one-sided p-values.

Annex I: Unit root test first difference PP (Intercept and trend)

Null Hypothesis: D(RGDP) has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 8 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.108650	0.0001
Test critical values:	1% level	-4.243644	
	5% level	-3.544284	
	10% level	-3.204699	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(IP) has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 5 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-4.676139	0.0034
Test critical values:	1% level	-4.243644	
	5% level	-3.544284	
	10% level	-3.204699	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(ICL) has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 34 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-26.42966	0.0000
Test critical values:	1% level	-4.243644	
	5% level	-3.544284	
	10% level	-3.204699	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(INV) has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 7 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-4.479837	0.0056
Test critical values:	1% level	-4.243644	
	5% level	-3.544284	
	10% level	-3.204699	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(IPR) has a unit root

Exogenous: Constant, Linear Trend

Bandwidth: 0 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.292329	0.0000
Test critical values:	1% level	-4.243644	
	5% level	-3.544284	
	10% level	-3.204699	

*MacKinnon (1996) one-sided p-values.

Annex J**:** Johansson Co-integration Test for the Series RGDP, IP, ICL, INV and IPR

Date: 12/22/17 Time: 10:21

Sample (adjusted): 1984 2016

Included observations: 33 after adjustments

Trend assumption: Linear deterministic trend

Series: RGDP IPR IP INV ICL

Lags interval (in first differences): 1 to 3

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.830375	131.4746	69.81889	0.0000
At most 1 *	0.713825	72.92727	47.85613	0.0001
At most 2 *	0.480224	31.63925	29.79707	0.0303
At most 3	0.242709	10.04545	15.49471	0.2772
At most 4	0.026054	0.871175	3.841466	0.3506

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.830375	58.54737	33.87687	0.0000

At most 1 *	0.713825	41.28802	27.58434	0.0005
At most 2 *	0.480224	21.59380	21.13162	0.0430
At most 3	0.242709	9.174271	14.26460	0.2719
At most 4	0.026054	0.871175	3.841466	0.3506

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

RGDP	IPR	IP	INV	ICL
59.68969	15.11582	-39.59909	8.251730	-11.17157
36.17413	-3.980800	-11.32641	2.164619	-1.767187
21.99334	-18.89583	43.81619	0.679799	-32.12703
26.95373	-4.359898	-7.196150	-3.028532	1.651798
9.577381	-2.876053	-20.36107	0.790989	11.74568

Unrestricted Adjustment Coefficients (alpha):

D(RGDP)	-0.010699	0.006950	0.003695	-0.000914	-0.000629
D(IPR)	-0.030828	-0.008942	-0.006526	0.009922	0.015411
D(IP)	-0.005633	0.019459	0.004929	0.010354	0.001505
D(INV)	-0.033937	-0.029849	-0.027056	0.031979	-0.003024
D(ICL)	0.006021	-0.018735	0.044064	0.011662	-0.008236

1	CointegratingLog		
Equation(s):		likelihood	290.7740

Normalized cointegrating coefficients (standard error in parentheses)

RGDP	IPR	IP	INV	ICL
1.000000	0.253240	-0.663416	0.138244	-0.187161

	(0.04722)	(0.10874)	(0.01206)	(0.06091)

Adjustment coefficients (standard error in parentheses)

D(RGDP)	-0.638647
	(0.17539)
D(IPR)	-1.840131
	(1.48596)
D(IP)	-0.336254
	(0.49856)
D(INV)	-2.025691
	(1.29853)
D(ICL)	0.359374
	(1.30998)

Annex K: *VECTOR ERROR CORRECTION MODEL RESULTS*

Dependent Variable: D(RGDP)

Method: Least Squares (Gauss-Newton / Marquardt steps)

Date: 12/31/17 Time: 17:59

Sample (adjusted): 1984 2016

Included observations: 33 after adjustments

D(RGDP)=C(1)*(RGDP(-1)-0.663415995816*IP(-1)+ 0.138243823167 *INV(-1) - 0.187160747998*ICL(-1) + 0.253240021281*IPR(-1) - 5.47065000547) + C(2)*D(RGDP(-1)) + C(3)*D(RGDP(-2)) + C(4) *D(RGDP(-3)) + C(5)*D(IP(-1)) + C(6)*D(IP(-2)) + C(7)*D(IP(-3)) + C(8) *D(INV(-1)) + C(9)*D(INV(-2)) + C(10)*D(INV(-3)) + C(11)*D(ICL(-1)) + C(12)*D(ICL(-2)) + C(13)*D(ICL(-3)) + C(14)*D(IPR(-1)) + C(15)*D(IPR(-2)) + C(16)*D(IPR(-3)) + C(17)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.638647	0.175386	-3.641387	0.0022
C(2)	0.503018	0.156245	3.219413	0.0054
C(3)	-0.135105	0.164281	-0.822402	0.4229
C(4)	0.335567	0.187631	1.788438	0.0927
C(5)	-0.378360	0.117025	-3.233159	0.0052
C(6)	-0.120615	0.139524	-0.864472	0.4001
C(7)	-0.084442	0.118633	-0.711791	0.4868
C(8)	0.019080	0.028222	0.676080	0.5086
C(9)	0.001546	0.035062	0.044089	0.9654
C(10)	-0.005985	0.034123	-0.175397	0.8630
C(11)	-0.083770	0.035351	-2.369656	0.0307
C(12)	-0.082862	0.038246	-2.166543	0.0457
C(13)	-0.061933	0.031822	-1.946208	0.0694

C(14)	0.126747	0.054566	2.322808	0.0337
C(15)	0.069939	0.049581	1.410605	0.1775
C(16)	0.037433	0.039540	0.946722	0.3579
C(17)	0.040873	0.011501	3.553965	0.0026

R-squared	0.780712	Mean dependent var	0.023939
Adjusted R-squared	0.561425	S.D. dependent var	0.025488
S.E. of regression	0.016879	Akaike info criterion	-5.019084
Sum squared resid	0.004559	Schwarz criterion	-4.248156
Log likelihood	99.81489	Hannan-Quinn criter.	-4.759690
F-statistic	3.560223	Durbin-Watson stat	1.995253
Prob(F-statistic)	0.007667		

Annex L: Var lag order selection criteria results

VAR Lag Order Selection Criteria

Endogenous variables: RGDP IP ICL INV IPR

Exogenous variables: C

Date: 12/22/17 Time: 09:53

Sample: 1980 2016

Included observations: 34

Lag	LogL	LR	FPE	AIC	SC	HQ
0	83.04301	NA	6.98e-09	-4.590765	-4.366301	-4.514217
1	234.3388	249.1931	4.22e-12	-12.01993	**-10.67314***	**-11.56064***
2	249.0482	19.90100	8.56e-12	-11.41460	-8.945489	-10.57256
3	292.4931	**46.00044***	**3.84e-12***	**-12.49959***	-8.908158	-11.27481

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Annex M: Diagnosis test result

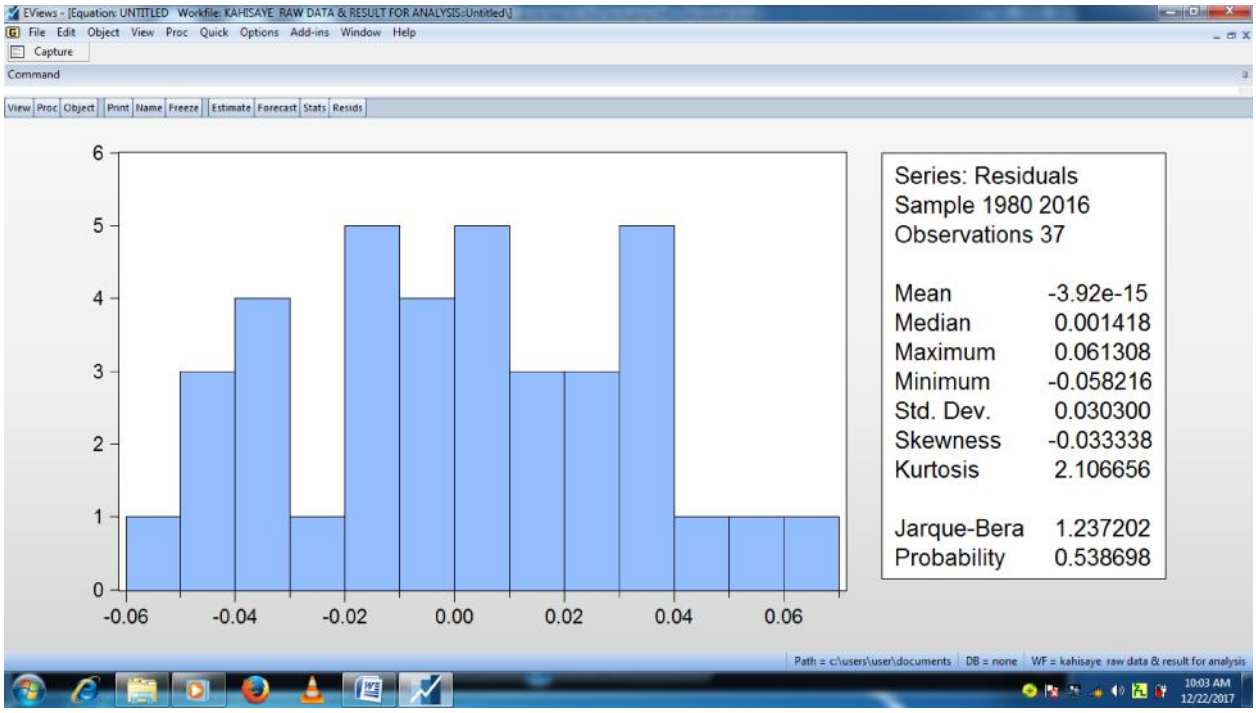
Heteroskedasticity Test: White

F-statistic	1.739425	Prob. F(14,22)	0.1188
Obs*R-squared	19.43871	Prob. Chi-Square(14)	0.1489
Scaled explained SS	8.045380	Prob. Chi-Square(14)	0.8869

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.519702	Prob. F(3,19)	0.2417
Obs*R-squared	6.579606	Prob. Chi-Square(3)	0.0866

Normality Test: Jarque -Bera test result



Annex N: Pairwise granger causality test

Pair-wise Granger Causality Tests

Date: 12/22/17 Time: 10:31

Sample: 1980 2016

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
IPR does not Granger Cause RGDP	35	0.60616	0.5520
RGDP does not Granger Cause IPR		7.46621	0.0023
IP does not Granger Cause RGDP	35	1.84174	0.1760
RGDP does not Granger Cause IP		3.65940	0.0378
INV does not Granger Cause RGDP	35	0.66332	0.5225
RGDP does not Granger Cause INV		0.99649	0.3811

ICL does not Granger Cause RGDP	35	0.66136	0.5235
RGDP does not Granger Cause ICL		3.42286	0.0458
IP does not Granger Cause IPR	35	8.86362	0.0009
IPR does not Granger Cause IP		5.67471	0.0081
INV does not Granger Cause IPR	35	1.56147	0.2264
IPR does not Granger Cause INV		0.72097	0.4945
ICL does not Granger Cause IPR	35	3.89210	0.0314
IPR does not Granger Cause ICL		0.96003	0.3943
INV does not Granger Cause IP	35	0.70449	0.5024
IP does not Granger Cause INV		1.25217	0.3004
ICL does not Granger Cause IP	35	2.55441	0.0945
IP does not Granger Cause ICL		4.28974	0.0230
ICL does not Granger Cause INV	35	1.00374	0.3785
INV does not Granger Cause ICL		1.87906	0.1703

Pairwise Granger Causality Tests

Date: 12/22/17 Time: 10:32

Sample: 1980 2016

Lags: 3

Null Hypothesis:	Obs	F-Statistic	Prob.
IPR does not Granger Cause RGDP	34	3.48513	0.0294
RGDP does not Granger Cause IPR		3.66583	0.0245
IP does not Granger Cause RGDP	34	1.10302	0.3650
RGDP does not Granger Cause IP		5.06960	0.0065
INV does not Granger Cause RGDP	34	0.73972	0.5376

RGDP does not Granger Cause INV		0.83142	0.4883
ICL does not Granger Cause RGDP	34	0.78911	0.5105
RGDP does not Granger Cause ICL		3.04061	0.0460
IP does not Granger Cause IPR	34	5.75608	0.0035
IPR does not Granger Cause IP		4.62896	0.0097
INV does not Granger Cause IPR	34	1.05475	0.3846
IPR does not Granger Cause INV		1.37692	0.2710
ICL does not Granger Cause IPR	34	2.47708	0.0828
IPR does not Granger Cause ICL		0.54523	0.6556
INV does not Granger Cause IP	34	0.47298	0.7037
IP does not Granger Cause INV		1.96261	0.1434
ICL does not Granger Cause IP	34	2.19026	0.1123
IP does not Granger Cause ICL		2.01955	0.1349
ICL does not Granger Cause INV	34	1.91742	0.1506
INV does not Granger Cause ICL		1.87312	0.1580