



**ST.MARY'S UNIVERSITY
SCHOOL OF BUSINESS**

**DETERMINANTS OF DEMAND FOR LIFE INSURANCE
IN ETHIOPIA**

BY

KEDIR AHMED AMAN

NOVEMBER, 2016

SMU

ADDIS ABABA

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**A THESIS SUBMITTED TO ST. MARY'S UNIVERSITY
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Advisor: Maru Shete (Associate Professor)

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APPROVED BY BOARD OF EXAMINERS

As member of the Board of Examiners of the MBA Thesis Open Defense Examination, We certify that we have read, evaluated the Thesis prepared by Kedir Ahemed and examined the candidate. We recommended that the Thesis be accepted as fulfilling the Thesis requirement for the Degree of Master of Business Administration in Accounting & Finance.

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DECLARATION

I, the undersigned, declared that this thesis is my original work, prepared under the guidance of Maru Shete (Associate Professor). All sources of material used for thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

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ENDORSEMENT

This thesis has been submitted to St. Mary's University, School of Business for examination. As a university advisor, I hereby certify that I have read and evaluated this thesis prepared by Kedir Ahmed and I recommend that it be submitted as fulfilling the thesis requirement.

Advisor's Name

Maru Shete (Associate Professor)

Signature & Date

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ACRONYMS & ABBREVIATIONS

ANOVA: Analysis of Variance

EIC: Ethiopian Insurance Corporation

CLRM: Classical Linear regression Model

CPI: Consumer Price Index

CSA: Central Statistics Agency

DF: Degree of Freedom

DR: Dependency Ratio

GDP: Gross Domestic Product

LEXP: Life Expectancy

LID: Life Insurance Demand

NBE: National Bank of Ethiopia

OLS: Ordinary Least Square

RIR: Real Interest Rate

SPSS: Statistical Package for Social Science

VIF: Variance Inflation Factor

ABSTRACT

The study is intended to identify the major determinants of demand for life insurance in Ethiopia. It focuses on identifying the crucial relationship between demand for life insurance and five selected independent variables such as (GDP per capita, inflation, real interest rate, life expectancy and dependency ratio. A quantitative research approach and an explanatory research design were adopted for the study. The researcher used secondary sources of data with time series type for periods from 1980-2015. Multiple linear regression models were used to analyze data. The result indicated that about 95 percent of demand for life insurance in Ethiopia was explained by the five independent variables included in the model. GDP per capita is the most important factor that influenced demand for life insurance followed by dependency ratio. Real interest rate and inflation are the least important factor in influencing demand for life insurance. Among findings of this research paper, the most determining factors of demand for life insurance in Ethiopia are GDP per capita, life expectancy, and dependency ratio and the least ones are inflation and which are removed from the model due to multicollinearity problem. Based on this finding, the researcher recommended that the government tries to give much emphasis in increasing real income of the people which in turn increases life expectancy and dependency ratio.

Key Words: *Life Insurance, Demand, Determinants and Ethiopia*

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

Risk exists whenever there is uncertainty about the future. Individuals and businesses experience two kinds of risk-speculative risk and pure risk. Speculative risk involves three possible outcomes: loss, gain, or no change. Speculative risks cannot be insured. Pure risk involves no possibility of gain, either a loss occurs or no loss occurs. Pure risk-the risk of loss without the possibility of gain-is the only type of risk that can be insured (Jones and Silver, 2011).

Insurance is the most widely used risk management technique for both individuals and businesses. Insurance is a method for transferring from an individual or entity to an insurer the risk of financial loss from events such as accident, illness, or death, and the loss of property. The purpose of insurance is to compensate for financial loss, not to provide an opportunity for financial gain. Pure risk is the only kind of risk that can be insured; speculative risk cannot be insured (Jones and Silver, 2011).

Mohamed (2011), issued in Birr, stated that life insurance is a contract between the policy owner and the insurer, whereby the insurer agrees to pay to a designated beneficiary a sum of money upon the occurrence of certain events, such as death, terminal illness, or critical illness or maturity benefit depending on the form of the contract.

The Commercial Code of Ethiopia, issued in (1960), stated that a life insurance is a contract whereby the insurer undertakes against the payment of one or more premiums to pay to the subscriber or to the beneficiary a specified sum on certain conditions dependent upon the life or death of the subscriber or third party insured.

As Jones and Silver, (2011) stated that because of the effects of an unexpected financial loss severity, individuals and businesses usually want to minimize their level of risk whenever possible. Risk management is the process by which individuals and businesses

identify and assess the risks they face and take measures to eliminate or reduce their exposure to those risks. Insurance is the most widely used risk management technique for both individuals and businesses. Insurance is a method for transferring from an individual or entity to an insurer the risk of financial loss from events such as accident, illness, or death, and the loss of property.

According to Jones and Silver, (2011) life insurance provides for the payment of a benefit following the death of the insured. That benefit can be used for a range of purposes, including meeting some needs that do not arise until a person's death. Individuals and businesses both have needs life insurance can meet. All life insurance policies provide for the payment of a benefit upon the death of the insured while the policy is in force.

As Jones and Silver, (2011) stated that the most important function of life insurance is to provide financial protection to individuals and families. The loss of income following the premature death of the main source of income of a family may result in difficulties in financial consequences to the surviving family members. Life insurance allows potential financial loss resulting from the death of the insured to be reduced through the payment of specified benefits. Thus, life insurance plays an important role in the financial planning of an individual and family since it can be used as a hedge against financial uncertainty resulting from the mortality risks faced by individuals.

Allen *et al.*, (2003) stated that the gross domestic product (GDP) of a country is a good general indicator of the population's likelihood of needing and ability to afford an insurance product. GDP is defined as the total output of goods and services produced by labor and property located within a country, valued at adjusted market prices. The higher the per capita GDP for a country, the more likely its citizens are to have well-paying jobs. The higher the incomes of citizens, the more discretionary income they have and the more likely they are to use that income to purchase insurance products. Thus, as a country's wealth and productivity increase, per capita insurance premiums also potentially increase.

Allen *et al.*, (2003) discussed about the concept of penetration which indicates the percentage of GDP that represents insurance premiums. They also discussed about the concept of density which is the amount of insurance premiums per capita. Companies use the penetration and density figures to determine how important the insurance market is to a country's economy and how the amount spent on insurance compares with amounts spent in other countries. A relatively high penetration and density would indicate that a country's citizens generally understand, value, and purchase insurance. A relatively low penetration and density would indicate that the population might be using its funds to provide for more basic needs, such as food and housing.

1.2 Life Insurance in Ethiopia

As Zeleke (2007) discussed that there were only three companies that were undertaking life insurance business in 1972: Ethiopian-American Life Insurance Company, Ethiopian Life Insurance Company, and Lion Insurance Company. The Ethiopian Life Insurance Company was initially set up in mid 1958 as the life department of the Imperial Insurance Company. It was incorporated in 1967 as an independent company under the name "Life & Pension Society of Ethiopia Ltd". Following the insurance proclamation of 1970, it changed its name to "Ethiopian Life Insurance Company". Lion Insurance Company was operating both life and non-life insurance.

According to Zeleke (2007), analysis of the life insurance business during the years 1967-1972 indicates that the share of life insurance in the total gross premium income of the industry declined from 15.1% in 1967 to 7.9% in 1972. But the current data collected from National Bank of Ethiopia shows persistent increase in gross premium for the years 1996 to 2005 as can be seen from the table below.

Table 1.1 Life Insurance in Total Gross Premium (1996-2006) in Ethiopia

Year	Gross Premium (Eth. Birr)
1996	9,288,503.00
1997	10,717,838.00
1998	11,322,272.00
1999	10,454,012.00
2000	14,342,728.00
2001	17,487,438.00
2002	18,794,759.00
2003	23,277,997.00
2004	26,052,178.00
2006	32,082,275.00

Source: NBE

As can be observed from the table above, the life insurance premium was persistently increasing from time to time for ten years. This time also shows the end of one Insurance Company domination, that is, Ethiopian Insurance Corporation rather opening of the financial sector to the Ethiopian private investors. Until fiscal year June 2015, there are 17 Insurance Companies were licensed to operate on either one on general insurance business or on both general and long term (Life Insurance) business. So far there are about nine companies which are operating both general and life insurance business in the country.

Table 1.2 Gross Premium of Life Business (2006-2015) Fiscal Year

Year	Gross Premium (Eth. Birr)
2006	39,627,164.00
2007	52,181,897.00
2008	74,112,459.21
2009	91,797,963.87
2010	110,293,217.33
2011	160,303,821.44
2012	255,895,872.00
2013	299,882,135.63
2014	277,830,182.38
2015	312,486,281.00

Source: Source: NBE

As can be seen from the table above, the life insurance gross premium for another ten years also was persistently increasing from time to time for ten years. From the above two tables, one can easily identify that how life insurance business increases.

1.3 Statement of the Problem

Risk exists whenever there is uncertainty about the future. Individuals and businesses experience two kinds of risk-speculative risk and pure risk. Speculative risk involves three possible outcomes: loss, gain, or no change. Speculative risks cannot be insured. Pure risk involves no possibility of gain, either a loss occurs or no loss occurs. Pure risk-the risk of loss without the possibility of gain-is the only type of risk that can be insured (Jones and Silver, 2011).

Insurance is the most widely used risk management technique for both individuals and businesses. Insurance is a method for transferring from an individual or entity to an

insurer the risk of financial loss from events such as accident, illness, or death, and the loss of property. The purpose of insurance is to compensate for financial loss, not to provide an opportunity for financial gain. Pure risk is the only kind of risk that can be insured; speculative risk cannot be insured (Jones and Silver, 2011).

According to Mohamed (2011), the Ethiopian insurance market is relatively underdeveloped in general and life insurance in particular. On average, only 6% of the total premium portfolio is generated from life insurance sector. This low level of development is attributed, among others, to lack of awareness among the public about life assurance, low level of attention given by most insurers for life insurance, lack of government support, low level income of the society, culture, religion, unfair competition in the market (under pricing), underdeveloped domestic financial markets, lack of experience in insurance technique and absence of domestic actuarial service provider (Birritu 2011).

To the best of the researcher's knowledge, there are only three previous research works in Ethiopia concerning the demand for life insurance. The first research was conducted by Mekonnen (2010) on "buyers' attitude towards life insurance purchase" which did not intended to analyze the determinants of demand for life insurance, Gebreyes (2011), who identified only general economic factors that determine demand for life insurance. Since there are also socio-demographic factors that determine demand for life insurance, this study would fill this gap by including other demographic variables omitted by the researcher. In addition, the time period considered by this study will extend the time period to the present time. Gashayie (2013) examined the determinants of life insurance using time series data for the period 1991-2010. His work was focused on the relationship of life insurance on only some selected independent variables (income, real interest rate, dependency ratios and life expectancy for males). Generally, this research work would fill existing gap of previous studies by including omitted variables (like socio demographic variables) and by using more recent data.

Therefore, the main purpose of this research is to identify and analyze the most significant determinants of demand for life insurance in Ethiopian context. Therefore, understanding of the factors that determine demand for life insurance in Ethiopia is important for the participants in the industry to exert more effort on working on these factors to expand their knowledge.

1.4 Objectives of the study

1.4.1 General Objective

The general objective of this research is to identify factors that determine demand for life insurance in Ethiopia.

1.4.2 Specific Objectives

Specific objectives of the study are to:

1. identify if across national income affects demand for life insurance;
2. find out if inflation affects demand for life insurance;
3. identify if real interest rate affects demand for life insurance;
4. investigate the effect of life expectancy on demand for life insurance; and
5. determine how dependency ratio affects demand for life insurance.

1.5. Research Hypotheses

Based on existing literature, we determine five social and economic variables which may affect demand for life insurance.

H₁: There is positive and statistically significant relationship between income level and demand for life insurance policy.

H₂: There is negative and statistically significant relationship between inflation and demand for life insurance policy.

H₃: There is positive and statistically significant relationship between real interest rate and demand for life insurance policy.

H₄: There is positive and statistically significant relationship between life expectancy and demand for life insurance.

H₅: There is positive and statistically significant relationship between Dependency ratio and demand life insurance.

1.6 Significance of the study

Since this study analyzes the effect of socioeconomic and demographic factors at national level, the findings of the study would help to influence some policies at national level. It may also be used as a reference to other researchers who want to study on the subject in the future, and to all insurance companies to adjust their focus area accordingly. In addition, to fill this knowledge gap, it provides important information to those who want to do similar studies at a larger scale. Therefore the result of this paper would have great contribution to the body of knowledge.

1.7 Scope of the Study

Different studies suggested that several factors like GDP per Capita (income), inflation, real interest rate, pension/employee provident fund, price of insurance, life expectancy; dependency ratio, level of education, urbanization and age are important factors that determine demand for life insurance. Although including all these variables would help to explain demand for life insurance better, due to constraints of data; the researcher has limited the analysis only on five selected determinants of demand for life insurance such as income, inflation, real interest rate, life expectancy, and dependency ratio. The study used a time series data for the periods from 1980 to 2015.

1.8 Limitation of the Study

One of the limitations of this study is using small number of variables due to lack of data with regard to some variables (like level of education-at tertiary level, urbanization, and age-below and above working force), Due to lack of sufficient studies previously conducted on similar topic in Ethiopian context, lack of accessibility of sufficient current literature on the subject of demand for life insurance in Ethiopian context, due to lack of latest empirical studies made on the subject, despite an effort to search the Internet for latest materials, and due to subscription requirement of journals, the researcher is obliged to use old literatures.

1.9 Definition of Terms

1.9.1 Operational Definition

- Σ **Actuary:** - An expert in financial risk management and the mathematics and modeling of insurance, annuities, and financial instruments.
- Σ **Beneficiaries:** - The person or party the policy owner names to receive the life insurance policy benefit.
- Σ **Insurance Policy:** - A written document that contains the terms of the agreement between the insurer and the owner of the policy.
- Σ **Insured:** - The person whose life, health, or property is insured under the policy.
- Σ **Insurer:** - A company that accepts risk and makes a promise to pay a policy benefit if a loss does occur- insurance company.
- Σ **Life Insurance:** - Insurance that pays a benefit upon the death of a named person.
- Σ **Mortality Rate:** - The rate at which death occurs among a specified group of people during a specified period, typically one year.
- Σ **Personal Risk:** - The risk of economic loss associated with death, poor health, injury, and outliving one's economic resources.
- Σ **Policy Benefit:** - A specific amount of money an insurer agrees to pay under an insurance policy when a specific loss occurs.

- Σ **Premium:** - A specified amount of money an insurer charges in exchange for agreeing to pay a policy benefit when a specified loss occurs.
- Σ **Premium Rate:** - The amount an insurer charges per unit of insurance coverage.
- Σ **Life insurance penetration** - the ratio of premium volume to GDP- measures insurance activity relative to the size of the economy. It is a relative measure of life insurance sector contribution to the total economy.
- Σ **Life insurance density** - is the ratio of gross premium volume to total population in a country. This measure shows how much each citizen of a country penetration measures life insurance consumption relative to the size of the economy, whereas life insurance density compares life insurance consumption across countries without adjusting for income.

1.10 Organization of the Paper

The research is organized into five chapters. Chapter one contains background of the study, statement of the problem, objectives of the study, significance of the study, scope of the study and delimitation of the study, definition of terms and organization of the paper.

Chapter two deals with the review of related literature including both theoretical and empirical evidences related to the research.

In the third chapter, the paper presents the research methodology and research design. All the relevant data are collected from National Bank of Ethiopia annual reports, Central Statistics Agency, Ethiopian Insurance Corporation, magazines and websites.

The fourth chapter offers findings and interpretation of the research. Finally, the fifth Chapter presents summary of findings, conclusions, limitations and recommendations.

CHAPTER TWO

RELATED LITERATURE REVIEW

In this section, first the researcher presents a review of selected theoretical studies and highlights the most relevant findings in the field of demand for life insurance. The theoretical frameworks usually are followed by the empirical investigation of the developed models. Finally, conceptual framework of the study is the last for the chapter. So, in the first part of related literature review, the researcher will highlight both the models and the empirical findings where they are present. Then the researcher will proceed to the empirical studies which for the most part evaluates factors influence on demand for life insurance in particular countries.

2.1.Theoretical Review

According to Jones and Silver (2011), life insurance provides for the payment of a benefit following the death of the insured. That benefit can be used for a range of purpose, including meeting some needs that do not arise until a person's death. Both individuals and businesses have needs life insurance can meet. All life insurance policies provide for the payment of a benefit upon the death of the insured while the policy is in force.

2.1.1 Insurance

Insurance is the most widely used risk management technique for both individuals and businesses. Insurance is a method for transferring from an individual or entity to an insurer the risk of financial loss from events such as accident, illness, or death, and the loss of property. The purpose of insurance is to compensate for financial loss, not to provide an opportunity for financial gain. Pure risk is the only kind of risk that can be insured; speculative risk cannot be insured (Jones and Silver, 2011). In general, individuals and businesses can purchase insurance policies to cover three types of risk: personal risk,

property damage risk, and liability risk. Personal risk is the risk of economic loss associated with death, poor health, injury, and outliving one's economic resources. Life and health insurance companies issue and sell products that insure against financial losses that result from personal risks such as death, disability, illness, accident, and outliving one's savings .

2.1.2 Life Insurance

Life insurance is a contract between the policy owner and the insurer, whereby the insurer agrees to pay to a designated beneficiary a sum of money upon the occurrence of certain events, such as death, terminal illness, or critical illness or maturity benefit depending on the form of the contract (Birritu, 2011).

A life insurance is a contract whereby the insurer undertakes against the payment of one or more premiums to pay to the subscriber or to the beneficiary a specified sum on certain conditions dependent upon the life or death of the subscriber or third party insured (Commercial Code of Ethiopia, 1960).

Jones and Silver, (2011) declared that many products - including life insurance – can meet different needs for different people. People buy life insurance to meet a variety of financial needs, and several types of life insurance products are available to meet these various financial needs.

Madura (2010) on his book of financial markets and institutions stated that life insurance companies compensate the beneficiary of a policy upon the policyholder's death. They charge policyholders a premium that should reflect the probability of making a payment to the beneficiary as well as the size and timing of the payment. Life insurance companies also commonly offer employees of a corporation a group life policy.

2.1.3 Types of Life Insurance

From a traditional or historical perspective, life insurance can be classified into three categories: Term life insurance, Whole life, and Endowment life insurance policy. However, today numerous variations and combinations of these basic types of life insurance are available (Jones and Silver 2011).

Term Life Insurance

Jones and Silver (2011) wrote term life insurance is life insurance that provides a death benefit only if the insured dies during the period specified in the policy; that specified period is known as the policy term. The policy benefit is payable only if (1) the insured dies during the policy term and (2) the policy is in force when the insured dies. If the insured lives until the end of the specified term, the policy may give the policy-owner the right to continue some form of life insurance coverage. If the policy-owner does not continue the coverage, then the coverage expires and the insurer has no obligation to provide further insurance coverage.

Whole Life Insurance

According to Jones and Silver (2011), Whole life insurance is a type of cash value life insurance that provides lifetime insurance coverage usually at a level premium rate that does not increase as the insured ages. The size of whole life insurance policy's cash value at any given time depends on a number of factors, such as the face amount of the policy, the length of time the policy has been in force, and the length of the policy's premium payment period.

Endowment Insurance

According to Jones and Silver (2011) endowment insurance provides a policy benefit payable either when the insured dies or on a stated date if the insured is still alive on that date. Each endowment policy specifies a maturity date, which is the date on which the insurer will pay the policy's face amount to the policy-owner if the insured is still living. The maturity date is reached either (1) at the end of a stated term, such as 20 years, 30

years, and the like, or (2) when the insured reaches a specified age. If the insured dies before the maturity date, then the insurer pays the policy's face amount to the designated beneficiary. Thus, an endowment insurance policy pays a fixed benefit whether the insured *survives* to the policy's maturity date or *dies* before that maturity date.

Theoretical models for the demand for life insurance have been established by Yaari (1965), Fischer (1973), Pissarides (1980), Campbell (1980), Karni and Zilcha (1985, 1986), Lewis (1989), and Bernheim (1991) where the view of life insurance was the way by which risk in the household's income, linked to the expected premature death of a household's primary wage earner, was decreased. However, the issue of demand for life insurance is not new for researchers and was brought to light beginning from Yaari (1965) who was the first to develop a theoretical framework to explain the demand for life insurance. Within Yaari (1965) framework, the demand for life insurance is attributed to a person's desire to give funds to dependents and provide income for retirement. This framework puts forward the demand for life insurance to be a function of wealth, expected income over an individual's lifetime, the level of interest rates, the cost of life insurance policies (administrative costs), and the assumed subjective discount rate for current over future consumption.

Simple models of insurance demand were proposed by Mossin (1968) and Smith (1968) considering averse to a risk decision maker provided with an initial wealth level. The results indicate that demand for life insurance varies inversely with the amount of wealth an individual possesses. Hakansson (1969) examined bequest motive in considerable detail using a discrete-time model of demand for financial assets in general and life insurance purchase in particular. Pissarides (1980) extended Yaari's work to prove that life insurance was theoretically capable of absorbing all fluctuations in lifetime income.

Karni and Zilcha (1985) developed a methodology towards measuring individual's risk perceptions (risk averse or otherwise) and how such perceptions affect insurance demand. An important observation made by Mossin (1968) was regarding insurance coverage as an inferior good. However, Hoy and Robson (1981) presented a theoretical

explanation and later Briys et al. (1989) generalized the results showing insurance to be a Giffen good.

Lewis (1989) extended this framework by explicitly incorporating the preferences of the dependents and beneficiaries into the model. Specifically, he derives the demand for life insurance as a maximization problem of the beneficiaries, the spouse and the offspring of the life insurance policyholder. Deriving utility maximization by both spouse and offspring separately and assuming no bequest by the policyholder and an isoelastic utility function.

In short, the theoretical review yields variables like income, rate of interest, current consumption and accumulated savings in wealth form as variables influencing insurance consumption. Demographic and social variables were also incorporated in theoretical models and their potential impact on an individual's life insurance consumption decision was investigated. Demand for life insurance increases with the breadwinner's probability of death, the present level of family's consumption and the degree of risk aversion. In the next section, the researcher will explore selected empirical studies to highlight those variables which were significant in affecting demand for life insurance.

2.2 Empirical Review

2.2.1 Life Insurance Demand

According to Kumar (2014) life insurance demand has been seen there are very few variables, which were used to measure the life insurance demand or consumption in an economy by different researchers, such as life insurance penetration, life insurance density, life insurance in force, life insurance premium volume, life insurance in savings etc. Out of these, life insurance density and penetration are being used internationally by IMF, World Bank etc to measure the global insurance consumption.

Life Insurance Penetration (LIP): Life insurance penetration is defined as the ratio of premium volume to GDP, measures insurance activity relative to the size of the economy. It is a relative measure of life insurance sector's contribution to the total economy. Researchers such as Outerville (1996), Beck and Web (2003), and Hwang and Greenford (2005) used it as a measure of life insurance consumption (demand).

Life Insurance Density (LID): Life insurance density is defined as premiums per capita. It is the ratio of gross premium volume to total population in a country. This measure shows how much each citizen of a country spends on insurance on average, expressed in currency terms. Although, both life insurance penetration and life insurance density use gross premiums, important differences remain between the two measures: life insurance penetration measures life insurance consumption relative to the size of the economy, whereas life insurance density compares life insurance consumption across countries without adjusting for income. It is being used by researcher like Truett and Truett (1990), Browne and Kim (1993), Outerville (1996), and Beck and Web (2003) to represent the consumption of life insurance in an economy.

2.2.2 Socio-economic and Demographic Factors

- **Socio-economic Factors**

Based on the empirical reviews, the researcher identified five main economic determinants of life insurance demand. These include income, inflation, real interest rate, pension and price of insurance.

Income: As stated on the work of Beck and Webb (2003), Nesterova (2008), Li et.al (2007) Çelik and Kayali (2009), Redzuan (2011), Loke and Goh (2012), and Aderaw (2013) income is the key determinant of demand for life insurance both in the long-run and short-run. Life insurance demand should rise with the level of income, for several reasons and income has a significant influence on family take a full consumption in the long-run, but its effect is less obvious in the short-run. First, an individual's consumption and human

capital typically increase along with income, creating a greater demand for insurance (mortality coverage) to safeguard the income potential of the insured and the expected consumption of his/her dependents. Second, life insurance may be a luxury good, in as much as increasing income may explain an increasing ability to direct a higher share of income towards retirement and investment-related life insurance products. Further the study Dickinson, Khajuria (1986), Truett and Truett (1990), Browne and Kim (1993), and Outreville (1996), Çelik and Kayali (2009), Aderaw (2013) have all shown that demand for life insurance is positively related to income.

On the other hand, Beenstock et.al (1986) argued that wealthy sections of the population do not need insurance protection while poorer sections have a limited demand because they operate under income budget constraints. A more equal income distribution with a larger middle class might therefore result in a higher demand for life insurance.

Inflation: Beck and Webb (2003), Li et.al (2007), Nesterova (2008), Çelik and Kayali (2009), Ibiwoye et.al (2010) have all concluded that inflation reduces the demand for life insurance. As life insurance savings products typically provide monetary benefits over the long term, monetary uncertainty has a substantial negative impact on these products' expected returns.

Real interest rate: Beck and Webb (2003) and Aderaw (2013) concluded that life insurance demand is positively influenced by real interest rate.

• **Demographics Factors**

Based on the empirical reviews, the researcher identified three main socio-demographic determinants of life insurance demand. These include life expectance, dependency ratio and age.

Life Expectancy: Nesterova (2008), Redzuan (2011), and Aderaw (2013) identified that life expectance have a significant impact on the demand for life insurance. And previous authors such as Beenstock et.al (1986) and Outreville (1996) have also found

life expectancy to be positively related to *Life Insurance Penetration*. Societies with longer *life expectancies* should have higher savings through life insurance vehicles and more demand for annuities. This would imply life expectancy have a positive correlation with the demand for life insurance products.

Dependency Ratio: The dependency ratio is described as the demographic structure of the average household in terms of the number of family members dependent on the main source of income (Lenten & Rulli, 2006). Empirical studies have shown that the dependency ratio is positively related to the demand for life insurance (Brown & Kim, 1993); (Curak & Gaspic 2011). It has been investigated that the dependency ratio has a positive impact on foreign life insurance participation (Ye et.al 2009). The increasing number of dependents shows that the person needs to buy more life insurance.

Findings of past studies have indicated that young dependency ratio is negatively related to life insurance demand Beck & Webb (2003); Sen & Madheswaran (2007). It is expected that a young dependency ratio will increase the demand for mortality coverage and decrease the demand for savings through life insurance and annuities Beck & Webb (2003). Whereas, an old dependency ratio is found to be positively related to the demand for life insurance (Beck & Webb 2003); (Sen 2008). This can be explained as the older population grows, there will be a higher demand for savings (Nesterova 2008 and Beck & Webb, 2003).

Yaari (1965) Cited in Gebreyes (2011) was the first to develop a theoretical model to explain the demand for life insurance. This model speculates the demand for life insurance to be a function of wealth, expected income over an individual's lifetime, the level of interest rates, the cost of life insurance policies (administrative costs), and the assumed subjective discount rate for current over future consumption.

Low level of income, low level of education, lack of insurance awareness, high inflation rate, lack of reliable Actuarial data for research and underdeveloped financial market had affected savings for life insurance consumption (Chukwulozie, 2006).

Beck and Webb (2003) cited in Gebreyes (2011), reflecting on institutional determinants (political stability, rule of law, military regime, and control of corruption), argued that a well developed life insurance market depends on a sound legal institutional framework and political stability of a country. In the absence of these, claims may be difficult and this may reduce life insurance consumption. Three different indicators were used to measure the institutional and political factors to measure the degree to which citizens of a country are able to use the legal system to mediate dispute and enforce contracts, the average number of revolutions and coups in a year serving as proxy for the political stability of a country, and institutional development, measured by political stability, rule of law, military regime and control of corruption.

Beck and Webb (2003) cited in Gebreyes (2011), argued that life insurance savings products typically provide monetary benefits over the long term; monetary uncertainty has a substantial negative effect on the expected returns on these products. Inflation can also have a troublemaking effect on the life insurance industry. They further explains that life insurance may be a luxury good, since increasing income may enable people to direct a larger share of their income to retirement and investment-related life insurance products.

Beck and Webb (2003) cited in Gebreyes (2011), conducted a comprehensive research over 68 countries of the world, paying attention to the question what causes the variance in life insurance consumption between different countries. Four different measures of life insurance consumption and incorporate various economic, demographic and institutional factors used in their research. As a result, they found that countries with higher income per capita level, more developed banking sector and lower inflation tend to consume larger amounts of life insurance. In addition, life insurance consumption is observed to be positively influenced by private savings rate and real interest rate. Such demographic factors as level of education, life expectancy, young dependency ratio does not have any strong influence on the life insurance consumption.

On the effect of demography, Browne and Kim (1993), and Truett and Truett (1990) explained that higher young dependency ratio (the ratio of young dependents to the working-age population) is assumed to increase the demand for mortality (death) coverage and decrease the demand for savings through life insurance and annuities. A higher old dependency ratio (the ratio of old dependents to the working-age population) is assumed to increase the demand for the savings and annuity components and decrease the demand for the mortality risk component of life insurance.

Truett and Truett (1990) on their comparative study on the demand for life insurance in Mexico and the United States identified that age, education, and level of income affect the demand for life insurance and that the income elasticity of demand for life insurance is much higher in Mexico than in the United States.

Lim and Haberman (2003) on their work identified that the savings deposits rate and price change in insurance are two important macroeconomic variables associated with the demand for life insurance in Malaysia. However, the finding on the savings deposits rate fails to show the expected negative sign. They recommended as further research is needed in this respect in order to confirm the relationship between these two variables. A change in the price of insurance has a significant negative relationship with the demand for life insurance.

Li et.al (2007) analyzed that the determinants of aggregate demand for life insurance on a cross- section of developed economies. They found that income plays a major role in the demand for of life insurance products. An increase of 1 percent in aggregate income can be expected to cause at least a 0.6 percent increase in aggregate demand for life insurance. In particular, the demand for life insurance decreases with the average life expectancy (lower probability of death) and increases with the dependency ratio (number of dependents). Education level is positively related to demand for life insurance. On the other hand, inflation significantly decreases the demand for life insurance. High real interest rates do not persuade households to purchase more insurance, but actually stimulate them to reduce their purchase either because of higher expected benefits for the

same invested amount or because of higher preference for immediate consumption relative to deferred consumption.

Celik and Kayali (2009) investigated that the determinants of demand for life insurance in cross-section of 31 European countries. They found that income is the central variable which affects life insurance consumption. In addition, while the impact of population and income on demand for life insurance is positive, education level and inflation affect life insurance consumption in negative way.

Kakar and Shukla (2010), on their research on determinants of demand for life insurance in an emerging economy of India using logistic regression has confirmed that insured households tend to be more prosperous, more educated and more optimistic about future security than non-insured households. Both the level of education and occupation of the chief earner of a household are major determinants of life insurance participation, apart from asset -ownership. Further, households that are more optimistic about the adequacy of future income and savings show higher levels of participation.

Ibiwoye et.al (2010), on their study examined that the determinant of life insurance consumption in Nigeria during the period 1970 – 2005 within an error correction framework. They found that real gross domestic product and structural adjustment policy positively and significantly influence Life Insurance consumption in Nigeria while indigenization policy and domestic interest rate are statistically significant but inversely related to Life Insurance consumption. On the other hand, they discovered that return on investment, inflation rate, openness of the economy and political instability are insignificant predictors of Life Insurance consumption in Nigeria.

Redzuan (2011), identified that income is the key determinant in the consumption of life insurance both in the long-run and short-run. Evidence also suggests that income has a significant influence on family tactful consumption in the long-run, but its effect is less obvious in the short-run. The number of dependents, level of education, savings in the Employees' Provident Fund (EPF), life expectancy and price of insurance are among the

other factors that have a significant impact on the demand for life insurance and family tactful.

Loke and Goh (2011), on their study on demand for life insurance in Malaysia identified that socio-economic factors such as age, income, education, occupation, marital status and risk aversion play significant roles in the demand for life insurance. However, gender and number of dependents are found to have no significant influence on the demand for life insurance.

Gustina and Abdullah (2012), found that three variables that significantly influence the demand for life insurance, namely GDP per capita, saving and religion. The study reveals that there are two factors that negatively influence the demand for family tactful i.e. Customer Price Index and Saving. Meanwhile, age, saving and religion are the three factors which give negative influence on life insurance.

Kjosevski (2012) found that GDP per capita, inflation, health expenditure, level of education and rule of law are the strongest predictors of the use of life insurance. Real interest rates, ratio of quasi-money, young dependency ratio, and old dependency ratio control of corruption and government effectiveness do not appear to be strongly associated with life insurance demand.

Munir and Khan (2012) on their study on impacts of macroeconomic & demographic variables on the demand for life insurance in Pakistan identified that financial development, gross savings, income level are directly linked to life insurance demand while price of insurance are inversely linked with life insurance demand and the demographic variables of crude birth rate, crude death rate, old age dependency ratio, urbanization are positively related with life insurance demand for Pakistan.

Curak et.al (2013) on their study on the effect of social and demographic factors on life insurance demand in Croatia identified that age, education and employment impact life insurance demand of household in Croatia while gender, marital status and number of family members do not have statistically significant influence.

Mahdzan & Victorian (2013) investigated that the determinants of life insurance demand among life insurance policyholders of five major life insurance companies in Kuala Lumpur, Malaysia their results reveals that demographic variables and saving motives were significantly related to life insurance demand. Financial literacy, however, was found to be insignificant in determining life insurance demand. They showed that education level is significantly related to life insurance demand, where individuals with higher levels of education have higher life insurance demand.

Gebreyes (2011) on her empirical test found out that the long run and short run relationship among the variables under consideration by applying co-integration and error correction model. Both the long run and short run dynamics regression result confirm that financial development (FD) and inflation are the two important variables that have a positive and negative significant impact on life insurance demand respectively. The short run dynamic regression shows price, real interest rate and gross domestic saving per capita are negatively correlated and significant predictors of demand for life insurance. Negative impact of real interest rate on the demand for life insurance in Ethiopia confirms the preferences of population towards alternative financial assets.

Gashayie (2013) found that GDP per capita, inflation, real interest rate, and life expectancy are the most predictors of the use of life insurance in Ethiopia. The study revealed that there are two variables that negatively influence demand for life insurance namely, inflation and real interest rate whereas GDP per capita (income) and life expectancy are the two variables that positively influence demand for life insurance in Ethiopia.

2.3 Conceptual framework of the study

The conceptual framework of this study is developed based on the two main determinants of demand for life insurance which are stated in most studies. These are economic and socio- demographic determinants that affect demand for life insurance in general. Different studies suggested that several factors like, GDP per capita (income),

inflation, real interest rate, banking sector development, savings deposits rate, pension/employee provident fund, price of insurance, level of education, life expectancy, dependency ratio and age are considered important factors that determine demand for life insurance. However due to constraints of data, shortage of time, the researcher selected only five main determinants to test empirically in Ethiopian context. These are income/ GDP per capita, inflation, real interest rate, life expectancy and dependency ratio. So, by taking this work and clusters as a base, and to test in the Ethiopian context, the researcher developed the following conceptual framework.

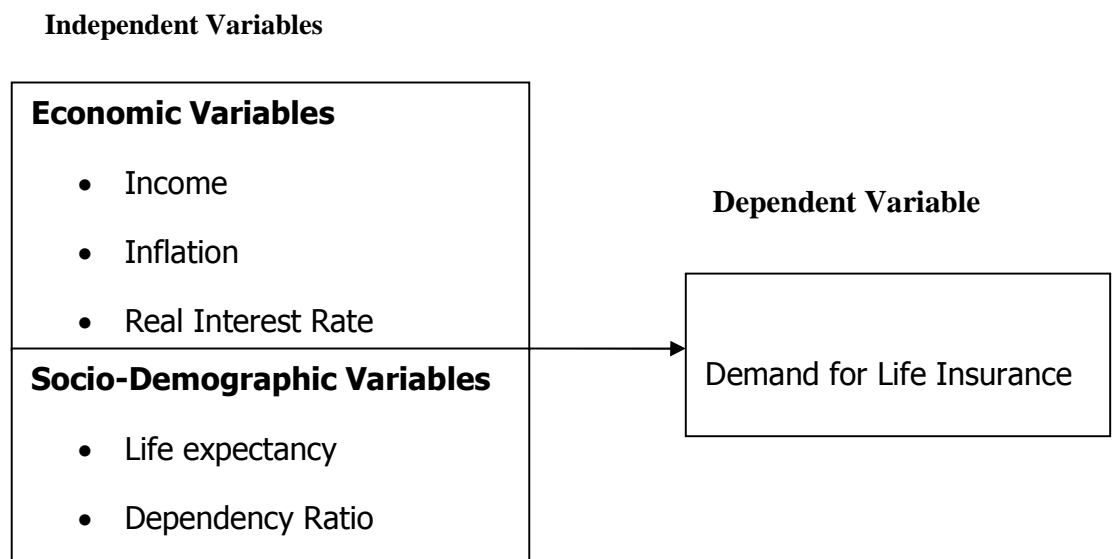


Figure 1.1 Conceptual frameworks for the study

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Research Approach and Design

The researcher adopted a quantitative research approach with casual research design because the main purpose of this study is to identify the determinants for the demand for life insurance. Since both the dependent and independent variables identified as relevant for this study are best measured quantitatively, a quantitative research approach is relevant. Further, given the objectives of this study that intends to identify the factors that determine demand for life insurance, causal/explanatory research design is the most relevant one, and hence adopted for this study.

3.2 Data Type and Sources

All the data series are annual aggregate data for the periods starting from 1980 to 2015 and secondary in nature. The data were collected from National Bank of Ethiopia (NBE), Central Statistics Agency (CSA), and Ethiopian Insurance Corporation (EIC).

The sources of secondary data collected and examined are used to identify the determinants of demand for life insurance in Ethiopia using a time series data for the periods 1980 to 2015 and evaluate the relationship between the response variable.

Table 3.1 Data Sources

CSA	Total Number of Population, Life Expectancy, Dependency Ratio
EIC	Life Insurance Premium from 1980-1993
NBE	Annual life insurance premium from 1994-2015, GDP per Capita, Inflation, Real Interest Rate,

3.3 Variables and Their Measurement

3.3.1 Dependent Variable: (Demand for Life Insurance)

The dependent variable in this study is demand for life insurance. The variable used in examining the determinants of the demand for life insurance is life insurance density or insurance penetration. It is measured by dividing total premium underwritten in a given year in life insurance to the total population (per capita premium) i.e. how much money per capita is annually spent on life insurance.

3.3.2 Independent Variables

The independent variables were divided into two main components which are socio-economic and demographic variables.

The socio-economic variables included in the study are income, inflation, and real interest rate.

Income per capita is used as a substitute for permanent income and it is measured as the GDP at market price divided by the number of population that represents disposable personal income. In line with this, this study uses the ratio of GDP to the population to represent income per capita.

Inflation is measured by change in consumer price index (CPI) and real interest rate is expressed by deposit interest rate minus inflation.

The demographic variables included in this study are life expectancy and dependency ratio.

Life expectancy is measured by the number of years the average individual in a country is expected to live.

Dependency ratio is measured by the Number of family members dependent on the main source of income.

Table 3.2 Independent variables, their measurement and expected sign

No.	Variables	Notations	Measurement	Expected Signs
1	Income	GDP	Income per Capita, (GDP per Capita, in current ETB)	+
2	Inflation	CPI	Consumer price Index	-
3	Real Interest Rate	RIR	Deposit Interest Rate Minus Inflation	+
4	Life Expectancy	LIE	The number of years the average individual in a country is expected to live	+
5	Dependency Ratio	DR	The percentage of family members dependent on the main source of income	+

3.4 Data Analysis Technique

To analyze the data, the researcher adopted the following multiple linear regression model. According to Field (2006) multiple regressions seeks to predict an outcome from several predictors. This is an incredibly useful tool because it allows us to establish a causal inference between the dependent and independent variables.

Regression analysis is one of the most commonly used statistical methods in practice. The purposes of regression analysis are:

- (1) Establish a casual relationship between response variable (y) and regressors (x_1, x_2, \dots, x_n).
- (2) Predict y (dependent variable) based on a set of values of x_1, x_2, \dots, x_n (independent variables).
- (3) Screen/test variables x_1, x_2, \dots, x_n to identify which variables are more important than others to explain the response variable.
- (4) So that the casual relationship can be determined more efficiently and accurately (Xin and Xiaogang Su, 2009).

Therefore, the following regression model is used in estimating the parameters for the variables in this study.

$$LID_{it} = \beta_0 + \beta_1(GDP)_{it} + \beta_2(CPI)_{it} + \beta_3(RIR)_{it} + \beta_4(LEXP)_{it} + \beta_5(DR)_{it} + e$$

Where:

β_0 = Constant term for the independent variables

LID=Demand for Life Insurance

GDP = Income Per capita

CPI= Inflation [consumer price Index]

RIR = Real Interest rate

LEXP= Life Expectancy

DR = Dependency ratio

e = the standard error term

β_1 - β_5 = Coefficients of regression model

3.5 Tests for Linear Regression Model

Different tests were run to make the data ready for analysis and to get reliable output from the research. The tests are intended to check whether classical linear regression model (CLRM) assumptions, i.e. the ordinary least squares (OLS) assumptions are fulfilled or not when the independent variables are regressed against the dependent variables. The implication of the test, decision rules, test results and their discussion are discussed in the following sub sections.

3.5.1 Test of R Square

Table 3.3 Model Summary for R-Square

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.979a	0.959	0.952	0.252

a. Predictors: (constant), GDP per capita, CPI, RIR, LEXP and DR.

b. Dependent Variable: LID

Source: Own result (2016)

The model fit based on the value of R^2 indicates that, GDP per capita, inflation, real interest rate, life expectancy and dependency ratio explained 95.2% of the variation in Demand for Life Insurance which can be accepted very good.

3.5.2 Test of Analysis of Variance (ANOVA)

In testing ANOVA, if p-value is greater than alpha value ($\alpha=0.05$ or 5%), there is a problem of significance. In our model as can be seen from the table 3.3 below, p-value is less than 5% ($0.000 < 0.05$), which shows that the overall model is significant.

Table 3.4 Testing of overall significance of the model

ANOVA^a

Model		Sum of Squares	Df	Mean Square	F	Sig. (p-value)
1	Regression	35.284	5	7.067	71.940	.000b
	Residual	2.943	30	0.098		
	Total	38.227	35			

A. Dependent variable: LID

B. Predictors: (constant), GDP per capita, CPI, RIR, LEXP, and DR.

Source: Own result (2016)

3.5.3 Test of Multicollinearity

One problem that confronts in performing analysis is the existence of multicollinearity. Multicollinearity refers to the situation in which the independent variables are highly correlated with dependent variable or multicollinearity occurs when the independent variable are not independent from dependent variable and each other.

When independent variables are multicollinear, there is overlapping or sharing of predictive powers among themselves which may lead to the self contradictory effect whereby the regression model fits the data well but none of the explanatory variables (individually) have a significant impact in predicting the dependent variable (Gujarati 2004). This is because when predictor variables are highly correlated with one another, they share essentially the same information. Thus, together they may explain a great deal of the dependent variable, but may not individually contribute significantly to the model. Therefore, the impact of multicollinearity is to reduce any individual explanatory variable's predictive power by the extent to which it is associated with the other explanatory variables. That is, none of the predictor variables may contribute uniquely and significantly to the prediction model after the other independent variable is included. One of the standard statistical methods for testing data for multicollinearity is analyzing the control variables' correlation coefficients.

Table 3.5 Test of Multicollinearity

Model	Coefficients ^a						
	Unstandardized Coefficients		Standardized Coefficient	t-statistics	Significance (P-value)	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(constant)	-2.989	2.358		-1.268	0.215		
GDP per capita	0.001	0.000	0.810	9.045	0.000	0.320	3.122
CPI	0.036	0.003	0.353	1.236	0.023	0.031	31.798
RIR	0.031	0.003	0.319	1.106	0.028	0.031	32.411
LEXP	0.039	0.002	0.159	1.643	0.011	0.274	3.646
DR	0.006	0.002	0.027	0.331	0.074	0.390	2.567

A. Dependent variable: LID

Source: Own result (2016)

If a value of tolerance is less than 0.2 (tolerance < 0.2) and the value of variance inflation factor is greater than 10 (VIF > 10), there is a multicollinearity problem. Therefore, as can be seen from the table 3.4 above, there is multicollinearity among CPI and RIR with dependent variable. If there is multicollinearity among variables, there may be a chance of omitting that specific variable from the model. Therefore, CPI and RIR have a multicollinearity problem with demand for life insurance (dependent variable).

$$LID_{it} = \beta_0 + \beta_1(GDP)_{it} + \beta_2(CPI)_{it} + \beta_3(RIR)_{it} + \beta_4(LEXP)_{it} + \beta_5(DR)_{it} + e$$

From this, the original linear regression model now shown above can be adjusted into the following equation and also multicollinearity table.

$$LID_{it} = \beta_0 + \beta_1 (GDP)_{it} + \beta_4(LEXP)_{it} + \beta_5(DR)_{it} + e$$

Table 3.6 Adjusted Test of Multicollinearity

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficient	t-statistics	Significance (P-value)	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(constant)	-2.989	2.358		-1.268	0.215	-	-
GDP per capita	0.001	0.000	0.810	9.045	0.000	0.320	3.122
LEXP	0.039	0.002	0.159	1.643	0.011	0.274	3.646
DR	0.006	0.002	0.027	0.331	0.074	0.390	2.567

A. Dependent variable: LID

Source: Own result (2016)

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents the results of the analysis done using descriptive as well as multiple linear regression methods and discusses the findings on the basis of available literature. The Chapter also presents the results of the tests made on basic ordinary least square (OLS) assumptions.

4.2 Descriptive Statistics

The following summary of descriptive statistics of all variables give the general distribution of the data set that were used to examine the determinants of demand for life insurance in Ethiopia from 1980 to 2015. The table reports the mean, standard deviation, and the number of observations for life insurance per capita and five explanatory variables for 36 observations.

Table 4.1 Summary of Descriptive Statistics (n=36)

Statistics	LID	GDP	CPI	RIR	LEXP	DR
Mean	0.690	3809.727	8.780	-3.420	51.070	88.420
Std. Dev.	1.045	1610.384	10.243	10.761	4.277	4.850

Source: Own result (2016)

The dependent variable in this study is life insurance demand. The variable used in examining the determinants of the demand for life insurance is life insurance density or Premium per capita. The table above shows that the average life insurance density is \$0.690. i.e. from the total population each individual on average spends \$0.690, annually on life insurance. The standard deviation of life insurance per capita was 1.045 percent, suggesting that LID was not highly dispersed or not far from the mean value.

GDP per capita is used as a proxy for income and it is measured as the GDP at market price divided by the number of population that represents disposable personal income. The table above shows that the average GDP per capita for 36 years is \$3,809.727, the standard deviation of GDP per capita was 1610.384 percent, suggesting that GDP per capita was highly dispersed or far from the mean.

Demand for Life Insurance spends more on income per capita but lots of variations in the amounts spend. Demand for Life Insurance with real interest rate spends only slightly less on average, than income per capita and there is much less variation in the value.

Since the result of nominal interest rate minus inflation, negative real interest rate shows inflation is greater than nominal interest rate which in turn shows high inflation. When there is high inflation, instead of putting money in bank it is better putting money in financial or fixed assets and paying debts. In this research, negative real interest rate encourages buying life insurance instead of putting money in bank.

4.3 Results of Inferential Statistics

This research is intended to estimate multiple linear regression models and the purpose of investigating about Demand for Life Insurance activity in Ethiopian context. To estimate a multiple linear regression model, we have to check model adequacy using analysis of variance (ANOVA), coefficient of multiple determination, multicollinearity using variance inflation factor (VIF) and tolerance level.

Table 4.2 Fit Statistics and Parameter Estimation

Model	Coefficients ^a						
	Unstandardized Coefficient		Standardized Coefficient	t-statistics	Significance (P-value) or F statistics	Collinearity Statistics	
	B	Std. Err	Beta			Tolerance	VIF
(constant)	-2.998	2.358		-1.268	0.215		
GDP per capita	0.001	0.000	0.810	9.045	0.000	0.320	3.122
CPI	0.036	0.003	0.356	1.236	0.023	0.031	31.798
RIR	0.031	0.003	0.322	1.106	0.028	0.031	32.411
LEXP	0.390	0.002	0.159	1.643	0.011	0.274	3.643
DR	0.006	0.002	0.026	0.331	0.013	0.390	2.567

B. Dependent variable: LID

Source: Own result (2016)

From Table 10 above, the researcher found the following estimated regression equation.

$$LID_{it} = \beta_0 + \beta_1(GDP)_{it} + \beta_2(CPI)_{it} + \beta_3(RIR)_{it} + \beta_4(LEXP)_{it} + \beta_5(DR)_{it} + e$$

$$LID_{it} = -2.989 + 0.001(GDP)_{i1} + 0.036(CPI)_{i2} + 0.031(RIR)_{i3} + 0.039(LEXP)_{i4} + 0.006(DR)_{i5} + e_i$$

$$LID_{it} = -2.989 + 0.001(GDP)_{i1} + 0.036(CPI)_{i2} + 0.031(RIR)_{i3} + 0.390(LEXP)_{i4} + 0.006(DR)_{i5} + e_i$$

The t-statistics and significance (p-values) showed that the explanatory variables, namely GDP per capita, life expectancy, and dependency ratio are statistically significant at 1, 5 and 10 percent significance level respectively. The coefficient for GDP per capita, life expectancy and dependency ratio variables are statistically significant at 0.001, 0.01 and 0.07 significant levels respectively. Therefore, statistically significant variables (GDP, LEXP and DR) can determine demand for life insurance in Ethiopian context. Whereas the coefficients of CPI and RIR variables do not have a statistically significant

relationship with life insurance since their p-values are greater than 10 percent. From this, the original model now can be adjusted (reduced) into the following equation.

$$LID_{it} = \beta_0 + \beta_1(GDP)_{it} + \beta_2(CPI)_{it} + \beta_3(RIR)_{it} + \beta_4(LEXP)_{it} + \beta_5(DR)_{it} + e$$

$$LID_{it} = \beta_0 + \beta_1 (GDP)_{it} + \beta_4(LEXP)_{it} + \beta_5(DR)_{it} + e$$

Table 4.3 Adjusted Fit Statistics and Parameter Estimation

Model	Coefficients ^a						
	Unstandardized Coefficients		Standardized Coefficient	t-statistics	Significance (P-value)	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(constant)	-2.998	2.358		-1.268	0.215	-	-
GDP per capita	0.001	0.000	0.810	9.045	0.000	0.320	3.122
LEXP	0.390	0.002	0.159	1.106	0.011	0.274	3.646
DR	0.006	0.002	0.026	0.331	0.013	0.390	2.567

C. Dependent variable: LID

Source: Own result (2016)

4.4 Hypotheses Testing and Discussion of Results

A. Life Insurance and Level of Income

Research hypothesis 1 predicts a positive relationship between demand for life insurance and level of income. Similar to the hypothesis, the regression output showed positive and statistically significant relationship between demand for life insurance and level of income. So we can not reject H_1 that there is positive and statistically significant relationship between income level and demand for life insurance. This positive relationship implies that as income of the society increases, life insurance becomes more affordable. This result agrees with various previous research findings like Dickinson, Khajuria (1986), Truett and Truett (1990), Browne and Kim (1993), and Outreville (1996), Beck and Webb, (2003) Celik and Kayali (2009), Aderaw (2013).etc. They all

confirmed the significant positive relationship of income and demand for life insurance exists. In this situation, as income increases insurance becomes more affordable.

B. Life Insurance and Life Expectancy

Research hypothesis 4 shows also a positive relationship between demand for life insurance and life expectancy. It is similar to the hypothesis, the regression output showed positive and statistically significant relationship between demand for life insurance and life expectancy. So, we can accept H_4 as there is positive and statistically significant relationship between life expectancy and demand for life insurance. This result is supported by various previous research findings like Nesterova (2008), Redzuan (2011), Aderaw (2013). They also confirmed that there is significant positive relationship between life expectancy and demand for life insurance. Therefore, as life expectancy increases people tend to buy life insurance. Since the insurance companies are encouraged to decrease the price of insurance (premium) as they compensate the decrease by investing the premium in long-term investments by which they generate high return. It means that life expectancy is the most important factor that influence demand for life insurance.

C. Life Insurance and Dependency Ratio

Research hypothesis 5 showed positive relationships between dependency ratio and demand for life insurance, it is also similar to the hypothesis, the regression analysis output showed positive relationship between demand for life insurance and dependency ratio. So we cannot reject H_5 as there is positive relationship between dependency ratio and demand for life insurance. Empirical studies have shown that dependency ratio is positively related to the demand for life insurance (Brown & Kim, 1993; Curak & Gaspic, 2011). This implies that an increase in dependency ratio has an impact on demand for life insurance. Number of dependants in a family increases, the main source of income is persuaded to buy life insurance to protect (hedge) against the loss of income due to disability or death.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The main purpose of this study is to identify and analyze the most significant determinants of demand for life insurance in Ethiopia and the basic aim of this chapter is to present the overall overview of the research by summarizing the main findings of the study, conclusions and recommendations given.

5.1 Summary

The major findings of the study show that:

- 5.1.1 During the running of the regression analysis using SPSS software, the researcher found out that there is a problem of multicollinearity of the variables between inflation and real interest rate. Multicollinearity violates the assumption that no independent variables are highly correlated. High correlation among independent variables will make the model hard to separate the effects of individual variables.
- 5.1.2 The initial model adopted by the researcher is reduced from five independent variables to three independent variables due to multicollinearity problem as mentioned in 5.1.1 above.
- 5.1.3 The regression analysis output showed a positive and statistically significant relationship between demand for life insurance and level of income. So we can not reject hypothesis 1 that there is positive and statistically significant relationship between income level and demand for life insurance.
- 5.1.4 The regression analysis output showed positive and statistically significant relationship between demand for life insurance and life expectancy. So, we can accept hypothesis 4 as there is positive and statistically significant relationship between life expectancy and demand for life insurance.
- 5.1.5 The regression analysis output showed positive relationship between demand for life insurance and dependency ratio. Therefore, we can accept hypothesis 5 as there is positive relationship between dependency ratio and demand for life insurance.

5.2 Conclusions

The study aims to identify and examine the relationship between demand for life insurance and its main determinants and their statistical significance.

On the basis of the major findings of this study and on the analysis made in previous chapters on factors that determine demand for life insurance, the following conclusions are drawn.

- 5.2.1 Multicollinearity problem brings the model either to reduce the number of variables from the original one or require additional time and resources to replace by other variables.
- 5.2.2 In this research the initial model adopted by the researcher is reduced from five independent variables to three independent variables due to multicollinearity problem which brings the model to be analyzed by only three independent variables because of shortage of time instead of replacing by another variable.
- 5.2.3 GDP per capita (income) and demand for life insurance has a positive relationship which means as income increases, buying life insurance becomes affordable. GDP per capita (income) is an important factor that affects demand for life insurance.
- 5.2.4 Life expectancy is an important factor that influences demand for life insurance. They have a positive relationship and which implies that societies with longer life expectancy should have higher savings through life insurance vehicles and more demand for income consequently it leads to higher demand for life insurance.
- 5.2.5 A positive relationship between dependency ratio and demand for life insurance implies that an increase in dependency ratio has an impact on demand for life insurance which means number of dependants in a family

increases, the main source of income is persuaded to buy life insurance to protect (hedge) against the loss of income due to disability or death.

5.3 Recommendations

As we all know, life insurance is the sub-sector under the financial sector that plays an important role to the economy. The growth in life insurance will bring lots of benefits to the economy as well as to the society. On the basis of the summary of the major findings and the conclusions drawn, the following recommendations are offered as possible solutions to the findings of the study.

- 5.3.1 A very important job in regression analysis is to determine which of the independent variable in the original list should be included in the regression model. It is wise for every researcher to decide on an initial list of independent variables that are intended to be influential for explaining the variation of the dependent variable.
- 5.3.2 As can be seen from conclusions drawn, GDP per capita (income) is the determinant factor that explains demand for life insurance. Therefore, the government tries to give much emphasis in increasing GDP per capita (real income) of society through more investment, and job creation. So that GDP per capita (income) increases life expectancy and decreases dependency ratio which in turn promotes demand for life insurance in Ethiopia.
- 5.3.3 In addition to the above, Government bodies, like National Bank of Ethiopia and Ethiopian Insurance Companies Association try to support the sector as a whole and life insurance in particular in providing training to domestic actuarial service providers so that the price of insurance may decrease which in turn promotes life insurance demand.

5.3.4 Finally, different studies suggested that several factors such as income, inflation, real interest rate, banking sector development, savings deposits rate, unemployment, pension/employee provident fund, price of insurance, level of education, life expectancy, dependency ratio, urbanization, age, religion, and marital status are considered to be important factors that determine demand for life insurance. However, on this study the researcher selected only five determinants to test empirically in Ethiopian context although the two variables are omitted due to multicollinearity problem. These are income/ GDP per capita, inflation, real interest rate, life expectancy and dependency ratio due to lack of data with regard to some variables, due to shortage of time and due to resource constraints. Therefore, the researcher would like to recommend for those researchers who want to conduct study on the subject, they try to include other variables as possible as they can.

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APPENDICES

Appendix A

Descriptive

Descriptive Statistics

	N	Mean	Std. Deviation	Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error
GDP	36	3809.7269	1610.38410	1.818	.768
CPI	36	8.78	10.243	1.228	.768
RIR	36	-3.42	10.761	.871	.768
LEXP	36	51.07	4.277	-.232	.768
DR	36	88.42	4.850	2.966	.768
LID	36	.69	1.045	2.587	.768
Valid N (listwise)	36				

Regression

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.979 ^a	.959	.952	.313	.959	71.940	5	30	.000	1.173

a. Predictors: (Constant), GDP, CPI, RIR, LEXP, DR,

c. Dependent Variable: LID

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	35.284	5	7.057	71.940	.000 ^b
	Residual	2.943	30	.098		
	Total	38.227	35			

a. Dependent Variable: LID

b. Predictors: (Constant), GDP, CPI, RIR, LEXP, DR

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t - statistics	Sig. (p-value)	Collinearity Statistics		
	B	Std. Error	Beta			Tolerance	VIF	
1	(Constant)	-2.989	2.358		-1.268	.215		
	GDP	.001	.000	.810	9.045	.000	.320	3.122
	CPI	.036	.003	.353	1.236	.022	.031	31.798
	RIR	.031	.003	.319	1.106	.027	.031	32.411
	LEXP	.039	.002	.159	1.643	.011	.274	3.646
	DR	.006	.0017	.027	.331	.013	.390	2.567

a. Dependent Variable: LID

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-.21	3.52	.69	1.004	36
Residual	-.409	.975	.000	.290	36
Std. Predicted Value	-.902	2.815	.000	1.000	36
Std. Residual	-1.307	3.112	.000	.926	36

a. Dependent Variable: LID

SPSS Results with three Variables

Descriptive

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
GDP	36	2450.62	8398.62	3872.4511	1484.68991	1.600	.768
LEXP	36	45.30	60.20	51.0756	4.27772	-.233	.768
D R	36	75.00	93.20	88.4250	4.85035	2.966	.768
LID	36	.03	3.54	.6943	1.04509	2.587	.768
Valid N (listwise)	36						

Regression

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	Dependency Ratio, GDP per Capita Income, Life Expectancy ^b		Enter

a. Dependent Variable: Life Insurance Demand

b. All requested variables entered.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.936 ^a	.876	.864	.38492	.876	75.337	3	32	.000	.709

a. Predictors: (Constant), Dependency Ratio, GDP per Capita Income, Life Expectancy

b. Dependent Variable: Life Insurance Demand

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	33.486	3	11.162	75.337	.000 ^b
	Residual	4.741	32	.148		
	Total	38.227	35			

a. Dependent Variable: LID

b. Predictors: (Constant), GDP,LEXP,DR

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig. (p-value)	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-1.894	2.556		-.741	.464		
	GDP	.001	.000	.859	7.512	.000	.296	3.374
	LEXP	.017	.003	.068	.542	.059	.245	4.080
	DR	.007	.002	.032	.377	.071	.549	1.820

a. Dependent Variable: LID

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	GDP per Capita Income	Life Expectancy	Dependency Ratio
1	1	3.902	1.000	.00	.00	.00	.00
	2	.095	6.406	.00	.28	.00	.00
	3	.003	38.255	.00	.60	.36	.23
	4	.000	97.864	1.00	.12	.64	.77

a. Dependent Variable: LID

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-.2392	3.6745	.6943	.97813	36
Residual	-.53763	.95901	.000	.36805	36
Std. Predicted Value	-.954	3.047	.000	1.000	36
Std. Residual	-1.397	2.491	.000	.956	36

a. Dependent Variable: LID

**Appendix
B**

Economic and Social Factors that Determine Demand for Life Insurance in Ethiopia

Years	GDP per Capita	Inflation General	Real Interest Rate	Life Expectancy at Birth (Male) from CSA	Age Dependency Ratio from CSA
1980	3,493.20	12.51	(6.51)	45.30	90.10
1981	3,567.25	1.94	4.06	45.30	90.10
1982	3,515.07	7.28	(1.28)	45.30	90.00
1983	2,804.81	3.85	2.15	46.80	90.00
1984	3,003.25	(0.32)	6.32	46.80	90.00
1985	2,738.85	16.36	(10.36)	46.80	90.20
1986	2,525.99	6.50	(0.50)	47.40	90.40
1987	2,877.52	(9.59)	13.59	47.40	90.70
1988	2,792.28	2.30	1.70	47.40	91.00
1989	2,721.47	9.61	(5.61)	47.40	91.50
1990	2,768.96	5.15	(1.15)	48.60	92.00
1991	2,580.96	19.98	(15.98)	48.60	92.60
1992	2,450.62	21.91	(17.91)	48.60	93.20
1993	2,748.32	7.70	2.30	48.60	91.20
1994	2,778.26	3.32	6.68	48.60	90.10
1995	2,891.32	13.35	(3.35)	49.70	89.90
1996	3,135.69	0.92	9.08		89.30

				49.70	
1997	3,207.64	(6.42)	13.42	49.70	89.00
1998	3,068.87	3.90	2.10	49.70	88.10
1999	3,155.10	4.28	1.72	49.70	87.80
2000	3,313.79	5.36	0.64	50.90	87.80
2001	3,495.66	(0.35)	6.35	53.40	87.20
2002	3,458.77	(10.57)	13.57	53.40	86.00
2003	3,300.47	10.92	(7.97)	53.40	86.60
2004	3,652.59	7.35	(4.35)	53.00	85.20
2005	3,976.65	6.13	(3.13)	53.42	84.70
2006	4,300.47	10.58	(7.58)	55.60	84.30
2007	4,634.24	15.82	(11.86)	55.60	84.30
2008	4,962.84	25.30	(21.30)	53.40	93.00
2009	5,266.11	36.40	(32.40)	53.40	93.00
2010	5,776.60	2.80	1.20	53.40	93.00
2011	5,895.00	18.10	(13.10)	58.40	93.00
2012	6,252.00	34.10	(29.10)	53.40	93.00
2013	6,697.00	13.50	(8.50)	60.20	75.00
2014	7,202.00	8.10	(3.10)	60.20	75.00
2015	8,398.62	7.70	(2.70)	60.20	75.00

139,408.25 315.77

3,872.45 8.77

Raw data for Economic and Social Factors that Determine Demand for Life Insurance in Ethiopia

Gross Premium	Population, Total in Millions	Density	Penetration	Inflation General (A)	Nominal Deposit Interest Rate (B)	Real Interest Rate (A-B)	GDP at Constant Market Price (In Mn Birr) (A)	Population, Total in Millions	GDP Per Capita
912,421.00	31.07	0.02937	8.40680	12.51	6.0	(6.51)	108,533.64	31.07	3,493.20
1,001,321.00	31.90	0.03139	8.79933	1.94	6.0	4.06	113,795.19	31.90	3,567.25
1,018,432.00	32.78	0.03107	8.83870	7.28	6.0	(1.28)	115,224.11	32.78	3,515.07
1,611,310.00	41.04	0.03926	13.99793	3.85	6.0	2.15	115,110.58	41.04	2,804.84
1,725,200.00	42.19	0.04089	13.61567	(0.32)	6.0	6.32	126,706.99	42.19	3,003.25
1,830,412.00	43.35	0.04222	15.41670	16.36	6.0	(10.36)	118,729.14	43.35	2,738.85
1,962,415.00	46.65	0.04207	16.65359	6.50	6.0	(0.50)	117,837.33	46.65	2,525.99
2,187,612.00	46.70	0.04684	16.27927	(9.59)	4.0	13.59	134,380.24	46.70	2,877.52
3,012,405.00	48.10	0.06263	22.42895	2.30	4.0	1.70	134,308.81	48.10	2,792.28
3,837,319.00	49.52	0.07749	28.47373	9.61	4.0	(5.61)	134,767.01	49.52	2,721.47
4,662,415.00	5.07	0.92052	33.24416	5.15	4.0	(1.15)	140,247.62	50.65	2,768.96
5,487,337.00	52.37	0.10478	40.59742	19.98	4.0	(15.98)	135,164.66	52.37	2,580.96
6,312,918.00	53.12	0.11884	48.49489	21.91	4.0	(17.91)	130,176.98	53.12	2,450.62
7,137,427.00	53.05	0.13454	48.95403	7.70	10.0	2.30	145,798.55	53.05	2,748.32
7,962,000.00	53.37	0.14918	53.69730	3.32	10.0	6.68	148,275.62	53.37	2,778.26
8,787,000.00	54.04	0.16260	56.23781	13.35	10.0	(3.35)	156,247.20	54.04	2,891.32
9,288,503.00	55.12	0.16851	53.74065	0.92	10.0	9.08	172,839.41	55.12	3,135.69
10,717,838.00	56.40	0.19003	59.24373	(6.42)	7.0	13.42	180,910.93	56.40	3,207.64
11,322,272.00	58.10	0.19488	63.50071	3.90	6.0	2.10	178,301.49	58.10	3,068.87
10,454,012.00	59.90	0.17452	55.31505	4.28	6.0	1.72	188,990.36	59.90	3,155.10
14,342,728.00	60.00	0.23905	72.03703	5.36	6.0	0.64	199,102.15	60.00	3,318.37

17,487,438.00	61.60	0.28389	81.09922	(0.35)	6.0	6.35	215,630.15	61.60	3,500.49
18,794,759.00	63.20	0.29739	85.86917	(10.57)	3.0	13.57	218,876.67	63.20	3,463.24
23,277,997.00	64.80	0.35923	108.69131	10.97	3.0	(7.97)	214,166.13	64.80	3,305.03
26,052,178.00	66.50	0.39176	107.10768	7.35	3.0	(4.35)	243,233.53	66.50	3,657.65
32,082,275.00	68.30	0.46973	117.95781	6.13	3.0	(3.13)	271,980.92	68.30	3,982.15
39,627,164.00	70.00	0.56610	131.45559	10.58	3.0	(7.58)	301,449.05	70.00	4,306.42
52,181,897.00	72.40	0.72074	155.30877	15.86	3.0	(12.86)	335,988.10	72.40	4,640.72
74,112,459.21	74.90	0.98949	199.10350	25.30	4.0	(21.30)	372,230.82	74.90	4,969.70
91,797,963.87	76.80	1.19529	226.66366	36.40	4.0	(32.40)	404,996.39	76.80	5,273.39
110,293,217.33	78.80	1.39967	241.96361	2.80	4.0	1.20	455,825.64	78.80	5,784.59
160,303,821.44	80.70	1.98642	311.22209	18.10	5.0	(13.10)	515,078.54	80.70	6,382.63
255,895,872.00	82.70	3.09427	457.26593	34.10	5.0	(29.10)	559,621.56	82.70	6,766.89
299,882,135.63	84.80	3.53635	484.58577	13.50	5.0	(8.50)	618,842.23	84.80	7,297.67
277,830,182.38	87.00	3.19345	407.10452	8.10	5.0	(3.10)	682,454.18	87.00	7,844.30
312,486,281.00	89.00	3.51108	417.75063	7.70	5.0	(2.70)	748,021.09	89.00	8,404.73