

Factors Affecting Profitability of Insurance Companies in
Ethiopia: Panel Evidence

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A Thesis Submitted to

The Department of Accounting and Finance

Presented in Partial Fulfillment of the Requirements for the
Degree of Masters of Science in Accounting and Finance

Addis Ababa University

Addis Ababa, Ethiopia

June, 2012

Signed Declaration

I declare that the thesis for the M.Sc. degree in accounting and finance at the University of Addis Ababa, hereby submitted by me, is my original work and has not previously been submitted for a degree at this or any other University, and that all references materials contained therein have been duly acknowledged.

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This is to certify that the thesis prepared by Abate Gashaw Ayele entitled: Factors Affecting Profitability of Insurance Companies in Ethiopia: Panel Evidence submitted in partial fulfillments of the requirements for the Degree of Masters of Science in Accounting and Finance complies with the rules and regulations of the university and meets the expected standards with respect of originality and quality. Hence all reference materials contained therein have been duly acknowledged.

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Abstract

Factors Affecting Profitability of Insurance Companies in Ethiopia: Panel Evidence

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Addis Ababa University, 2012

Profitability is one of the most important objectives of financial management because one goal of financial management is to maximize the owner's wealth. This paper examined the effects of firm specific factors (age of company, size of company, volume of capital, leverage ratio, liquidity ratio, growth and tangibility of assets) on profitability proxied by ROA. Profitability is dependent variable while age of company, size of company, volume of capital, leverage liquidity ratio, growth and tangibility of assets) are independent variables. The sample in this study includes nine of the listed insurance companies for nine years (2003-2011). Secondary data obtained from the financial statements (Balance sheet and Profit/Loss account) of insurance companies, financial publications of NBE are analyzed. From the regression results; growth, leverage, volume of capital, size, and liquidity are identified as most important determinant factors of profitability hence growth, size, and volume of capita are positively related. In contrast, liquidity ratio and leverage ratio are negatively but significantly related with profitability. Lastly, age of company and tangibility of assets are not significantly related with profitability.

ACKNOWLEDGEMENTS

I would like to take this opportunity to express my sincere gratitude to Dr. P. Laxmikantham, department of accounting and finance at Addis Ababa University, for his expert guidance, helpful criticism, valuable suggestions and encouragement at every stage during the completion of this work. It was pleasant and inspiring experience for me to work under his guidance.

I also would like to thank Dr. Venkati Ponnala, department of accounting and finance. Addis Ababa University, for his initial guidance, valuable suggestions in doing this paper.

It is my pleasure to thank staff members of all insurance companies under study particularly those staffs working in departments of finance, marketing and corporate planning, who give me the relevant data that are very much valuable for this study.

I add a special note of admiration and gratitude to my families and friends, without their moral support, it would have been impossible for me to go through this piece of work.

At last but not least my deep gratitude goes to Debreworkos University (DMU) and Addis Ababa University (A.A.U) for sponsoring me throughout my work.

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List of Abbreviations

GLS: Generalized Least Square

Lev.: Financial Leverage

NBE: National Bank of Ethiopia

OLS: Ordinary Least Square

ROA: Return on Asset

ROE: Return on Equity

ROIC: Return on Invested Capital

TA: Tangibility of Assets

UAE: United Arab Emirates

UK: United Kingdom

US: United States of America

VOC: Volume of Capital

WACC: Weighted Average Cost of Capital

Chapter One: Introduction

1.1 Background of the study

The background of the study deals with the role of financial institutions in the economy of a country in general and insurance companies in particular and it means their efficient and effective financial system through savings mobilization, risk transfer and intermediation. Therefore, financial institutions, channel funds and transfers risks from one economic unit to another economic units so as to facilitate trade and resources arrangement. Recent research, as surveyed by Naveed et al (2011), shows that the efficiency of financial intermediation and transfer of risk can affect economic growth while at the same time institutional insolvencies can result in systemic crises which have unfavorable consequences for the economy as a whole. Hence, the important role that financial institutions such as insurance companies remain in financing and insuring economic activity and contribute to the stability of the financial system in particular and the stability of the economy of concerned country in general is part of immune and repair system of the economy

According to Hifza Malik (2011) profitability is one of the most important objectives of financial management since one goal of financial management is to maximize the owners' wealth, and, profitability is very important determinant of performance. Therefore, insurance companies have importance both for businesses and individuals as they channel funds and indemnify the losses of other sectors in the economy and put them in the same positions as they were before the occurrence of the loss respectively. In addition, insurance companies provide economic and social benefits in the society by prevention of losses, reduction in anxiousness, fear and increasing employment.

Therefore, from above expression it can be inferred that, the current business world without financial institutions such as insurance companies is unsustainable because in one way, it is a normal practice that some economic units are in surplus while the others remain in deficit and in the other way risky businesses have not a capacity to retain all types of risk in current extremely uncertain environment. Performance of financial institutions can affect economic growth while at the same time institutional insolvencies can result in systemic crises which have unfavorable consequences for the economy as a whole. Therefore it requires empirical investigation so as to sort out what are the important factors affecting profitability of insurance companies and this will help concerned bodies to focus on the relevant factors. Hence the efficient performance of the institutions has become important and investigations by different researchers focus on what factors determine the performance especially the financial performance of the sector.

1.2 Background of insurance company in Ethiopia

For the last decade, the Ethiopian financial institutions in general and insurance companies in particular have shown the impressive progress in terms of number and service which not only creates the employment opportunities but also enhances the business activities in the Ethiopian economy. The work of Hailu Zeleke (2007) explores the historical routes, examines its emergence and indicates the track that the insurance industry in Ethiopia has gone through ever since its inception in early twentieth century. It is indicated that there has hardly ever been any work in insurance business in Ethiopia that went into the historical and factual aspects of the industry.

The history of insurance service is as far back as modern form of banking service in Ethiopia which was introduced in 1905. At the time, an agreement was reached between Emperor Menelik II and a representative of the British owned National Bank of Egypt to open a new bank in Ethiopia. Similarly, modern insurance service, which were introduced in Ethiopia by foreigners, mark out their origin as far back as 1905 when the bank of Abyssinia began to transact fire and marine insurance as an agent of a foreign insurance company. According to a survey made in 1954, there were nine insurance companies that were providing insurance service in the country. With the exception of Imperial Insurance Company that was established in 1951, all the remaining of the insurance companies were either branches or agents of foreign companies. In 1960, the number of insurance companies increased considerably and reached 33. At that time insurance business like any business undertaking was classified as trade and was administered by the provisions of the commercial code.

According to Hailu Zeleke (2007), the first significant event that the Ethiopian insurance market observation was the issuance of proclamation No. 281/1970 and this proclamation was issued to provide for the control & regulation of insurance business in Ethiopia. Consequently, it created an insurance council and an insurance controller's office, its strange impact in the sector. The controller of insurance licensed 15 domestic insurance companies, 36 agents, 7 brokers, 3 actuaries & 11 assessors in accordance with the provisions of the proclamation immediately in the year after the issuance of the law.

Accordingly as stated by the office mentioned above, the law required an insurer to be a domestic company whose share capital (fully subscribed) not to be less than Ethiopian Birr

400,000 for a general insurance business, Birr 600,000 in the case of long-term insurance business and Birr 1,000,000 to do both long-term & general insurance business. The proclamation defined 'domestic company' as a share company having its head office in Ethiopia and in the case of a company transacting a general insurance business at least 51% and in the case of a company transacting life insurance business, at least 30% of the paid-up capital must be held by Ethiopian nationals or national companies.

After four years that is after the enactment of the proclamation, the military government that came to power in 1974 put an end to all private enterprises. Then all insurance companies operating were nationalized and from January 1, 1975 onwards the government took over the ownership and control of these companies & merged them into a single unit called Ethiopian Insurance Corporation. In the years following nationalization, Ethiopian Insurance Corporation became the sole operator.

After the change in the political environment in 1991, the proclamation for the licensing and supervision of insurance business heralded the beginning of a new era. Immediately after the enactment of the proclamation in the 1994, private insurance companies began to increase. Currently, there are 14 insurance companies in operation. Both public owned and private insurance companies which are operating as on January 2012 throughout the country are listed in the following table 1.1

Table 1.1 List of insurance companies operating in Ethiopia as on 2012

S/N	Name	Type	Establishment Year
1	Ethiopian Insurance Corporation	General	1975
2	Africa Insurance company S.C	General	1994
3	Awash insurance company S.C	General	1994
4	National Insurance company of Ethiopia S.C	General	1994
5	Nyala Insurance company S.C	General	1995
6	Nile Insurance company S.C	General	1995
7	The United Insurance S.C	General	1997
8	Global Insurance Company S.C	General	1997
9	NIB insurance company	General	2002
10	Lion Insurance Company S.C	General	2007
11	Ethio-Life Insurance S.C	Life	2008
12	Oromia Insurance Company S.C	General	2009
13	Abay Insurance Company	General	2010
14	Birhan Insurance company S.C	General	2011

Source: <http://www.nbe.gov.et/financial/insurer.htm> accessed January 4, 2012

1.3 Statement of the Problem

The best performance of any industry in general and any firm in particular plays the role of increasing the market value of that specific firm coupled with the role of leading towards the growth of the whole industry which ultimately leads to the overall success of the economy. Measuring the performance of financial institutions has gained the relevance in the

corporate finance literature because as intermediaries, these companies in the sector are not only providing the mechanism of saving money and transferring risk but also helps to channel funds in an appropriate way from surplus economic units to deficit economic units so as to support the investment activities in the economy.

The insurance industry in particular is part of immune and repair system of an economy and successful operation of the industry can set energy for other industries and development of an economy. To do so the insurance industry is expected to be financially solvent and strong through being profitable in operation. Hence, not only measuring the financial performance of insurance companies but also clear insight about factors affecting financial performance in the industry is then the problem to be investigated. Therefore, the determinants of insurance company's performance have attracted the interest of academicians, practitioners and institutional supervisors.

The absence of empirical studies in Ethiopia concerning determinants of insurance companies' profitability is then what motivated the researcher to put his own contribution on what factors affect the financial performance of insurance companies. While taking in to consideration the absence of empirical inquiry into the factors affecting insurance companies' financial performance, the researcher attempts to work on such untouched empirical evidence in the country. Hence, these are important issues to be investigated for the insurance managers, professionals, regulators and policy makers to support the sector in achieving the excellence so that required economic outcomes could be obtained from the help of the sector in Ethiopia by understanding the success and failure factors of profitability.

In other words, the later problem that is what factors affect the financial performance of insurance companies has not been adequately investigated. While taking in to consideration the absence of empirical inquiry into the factors affecting insurance companies' financial performance, the researcher attempts to work on such untouched empirical evidence in the country.

1.4 Objectives: with regard to the objectives of this study, the researcher tried to address one broad general objective and some more specific objectives just derived from the general objective and these are presented below.

1.4.1 General objective

The main objective of the study is to identify and compare the factors determining the financial performance of the Ethiopian insurance companies for the period of 2003 to 2011.

1.4.2 Specific Objectives

Based on the above general objective, the researcher elucidates the following specific objectives:

1. To identify the main determinants of insurance companies' profitability.
2. To measure the extent to which these determinants exert impact on insurance companies' profitability.
3. To rank the factors according to their degree of influence on insurance companies' profitability.
4. To determine the relationship between these factors and profitability in insurance companies.

1.5. Methods Adopted

In achieving the objectives and obtaining answers for research questions, the study adopted quantitative method research approach. The method adopted consists of the survey of

financial statements of individual insurance companies. With regard to the survey, the target population consists of nine insurance companies. The number of total insurance companies under study is nine and observation is also for nine years and then nine times nine, becomes eighty one total observations included.

1.6 Limitation and scope

Even though there are other formal, semiformal and informal financial institutions, the study focus only on the determinants of profitability of insurance companies in Ethiopia. As the researcher tried to point out the scope of the study, the horizon of the study confined merely on the quantitative measure of determinates of insurance companies profitability (financial performance) in Ethiopia without any overall performance measurement tool. It would have also been very useful, if it includes macro-economic factors of profitability. However, due to the constraints, the researcher is forced to limit the study on this small concern.

1.7 Significance and expected outcome of the study

The main reason for this study is that the researchers have not paid enough attention to this subject in Ethiopia. Most of the studies previously focused on banks not on insurance companies as well as some focused on only analysis of financial performance not on factors affecting financial performance

Therefore, this study is expected to provide empirical evidence on the profitability (financial performance) of insurance companies in Ethiopia.

Furthermore, many parties would benefit from the results that will emerge from the results of the study and these parties are:

Management: Administration interested in identifying indicators of success and failure to take the necessary actions to improve the performance of the company and choose the right decisions.

Government: Government interested in knowing which companies operate successfully or failed to take the necessary measures to avoid crises of the bankruptcy in these companies.

Investors: Investors interested in such studies in order to protect their investment, and directing it to the best investment.

Customers: Customers interested in knowing the ability of insurance companies to pay their obligations based on the indicators of success of the companies.

This research does have significant role to play in shading light on how to better understand what determines financial institution's such as insurance companies' profitability (financial performance) in Ethiopia. Furthermore, this study does have a paramount importance in providing a better ground for insurance managers, business professionals, business initiatives and policy makers. Moreover, the researcher also contributes that this study can potentially serve as a stepping stone for further research in the area.

1.8 Structure of the study

The reminder of this paper is organized as follows: Chapter two presents the previous studies by looking at profitability, the factors that determine profitability in insurance companies in Ethiopia in particular and other financial institutions in general so as to revise relevant literature. Chapter three presents the research design, methodology and hypotheses development. Chapter four presents the analysis, findings and results and chapter five presents the conclusions and implications of the results.

Chapter Two: Literature Review

2.1 Introduction

This chapter deals with the concept of insurance, profitability and provides investigations on factors affecting the profitability or financial performance in insurance companies and also other financial institutions. Previous researches with regard to profitability mostly focused on financial institutions. Most of the researches conducted with regard to determinants of banks' profitability could be classified in two as country specific such as Belayneh (2011), Tesfaye (2008), in Ethiopia, Uhomoibhi Toni Aburime (2008), Samy Ben Naceur (2003), where as others such as Sylwester Kozak (2011), Valentina Flamini, Calvin McDonald, and Liliana Schumacher (2009) conducted their research at a cross country level.

In these investigations, determinants are classified as internal factors which are under the control of the management of banks and external factors those are beyond the control of the management. Therefore, it would be possible to presuppose that organizational performance has attracted scholarly attention in corporate finance literature. However, in the context of insurance sector, it has received a little attention Hafiz Malik (2011). Hence it is reasonable to conduct research up on such area. Current study examines the impact of firm level characteristics (size, leverage, tangibility, risk, growth, liquidity and age) on performance of listed life insurance companies of Pakistan over seven years from 2001 to 2007.

The results of Ordinary Least Square (OLS) regression analysis indicates that size, risk and leverage are important determinants of performance of life insurance companies of Pakistan while ROA has statistically insignificant relationship with growth, profitability, age and liquidity.

The review of related literature is divided into four sections; the first section deals with the concept of insurance and their profitability, the second section provides studies concerning profitability performance of insurance companies together with other financial institutions. The third section presents previous investigations on determinants of profitability in insurance companies. The last section summarizes empirical literature concerning factors affecting profitability in insurance companies.

2.2 The concept of insurance companies and their financial performance

Renbao Chen et.al (2004) stated in their investigation that “higher profits provide both the means (greater availability of finance from retained profits or from the capital market) and the incentive (a high rate of return) for new investment”. Therefore, we can understand from the above explanation that insurance companies have double responsibility: in one way they are required to be profitable so as to have high rate of return for new investment. On the other hand, insurance companies need to be profitable in order to be solvent enough so as to make other industries in the economy as they were before even after risk occurred.

Profitability is one of the most important objectives of financial management because one goal of financial management is to maximize the owner's wealth and profitability which in turn indicates better financial performance. According to Hifza Malik (2011) insurance plays a crucial role in fostering commercial and infrastructural businesses. From the latter perspective, it promotes financial and social stability; mobilizes and channels savings; supports trade, commerce and entrepreneurial activity and improves the quality of the lives of individuals and the overall wellbeing in a country. Michael Koller (2011) in his investigation

identified that insurance companies are playing the role of transferring risk channeling funds from one unit to the other (financial intermediation) such as general insurance companies and life insurance companies respectively. This implies that insurance companies are helping the economy of a country one way by transferring and sharing of risk which can create confidence over the occurrences of uncertain event and in another way insurance companies like other financial institutions plays the role of financial intermediation so as to channel financial resources from one to the other.

Therefore, we can divide insurance companies in to two broad categories based on their role to the economy; the general insurance companies and life insurance companies. For instance, Renbao Chen et.al (2004) summarized firm specific factors affecting property/liability which is general insurers and life/health insurance profitability separately that again provide valuable guidelines for insurers financial health. This is because life/health insurance companies are different from property/liability insurers in terms of operation, investment activities, vulnerability and duration of liabilities. Life insurers are said to function as financial intermediaries while general insurers function as risk takers Renbao Chen et..al (2004)

2.3 The concept of profitability

According to Hamdan Ahmed Ali Al-Shami (2008) there are different ways to measure profitability such as: ROA, return on equity (ROE) and return on invested capital (ROIC). ROA is an indicator of how profitable a company is relative to its total assets. It gives us an idea as to how efficient management is in using its assets to generate earnings whereas ROE measures a company's profitability which reveals how much profit a company generates with

the money shareholders have invested. ROIC is a measure used to assess a company's efficiency in allocating the capital under its control in profitable investments. This measure gives a sense of how well a company is in using its money to generate returns. Comparing a company's ROIC with its weighted average cost of capital (WACC) reveals whether invested capital is used efficiently or not. In contrast, William H. Greene and Dam Segal (2004) argued that the performance of insurance companies in financial terms is normally expressed in net premium earned, profitability from underwriting activities, annual turnover, return on investment, return on equity. These measures could be classified as profit performance measures and investment performance measures. However, most researchers in the field of insurance and their profitability stated that the key indicator of a firm's profitability is ROA defined as the before tax profits divided by total assets. Philip Hardwick and Mike Adams (1999), Hafiz Malik (2011) are among others, who have suggested that although there are different ways to measure profitability it is better to use ROA.

Therefore, being profitable means that insurance companies are earning more revenues than being disbursed as expenses. As explained above just to analyze the drivers of profitability, it is useful to decompose either the return on asset ROA or ROE into their main components. According to Swiss Re (2008) Profits are determined first by underwriting performance (losses and expenses, which are affected by product pricing, risk selection, claims management, and marketing and administrative expenses); and second, by investment performance, which is a function of asset allocation and asset management as well as asset leverage. The first division of the decomposition shows that an insurer's ROE is determined by earnings after taxes realized for each unit of net premiums (or profit margin) and by the

amount of capital funds used to finance and secure the risk exposure of each premium unit (solvency). That is why most researchers use ROA as a measure of profitability in financial institutions.

The term profit can take either its economic meaning or accounting concept which shows the excess of income over expenditure viewed during a specified period of time. On one hand, profit is one of the main reasons for the continued existence of every business organization. On the other hand, profit is expected so as to meet the required return by owners and other outsiders. John J. Hampton (2009) clarified profitability ratio as a class of financial metrics that are used to assess a business's ability to generate earnings as compared to its expenses and other relevant costs incurred during a specific period of time. Accordingly, the term 'profitability' is a relative measure where profit is expressed as a ratio, generally as a percentage. Profitability depicts the relationship of the absolute amount of profit with various other factors. Similarly, Michael Koller (2011) argued that profitability is the most important and reliable indicator as it gives a broad indicator of the ability of an insurance company to raise its income level. In practice, executives define profits as the difference between total earnings from all earning assets and total expenditure on managing entire asset-liabilities portfolio Kaur and Kapoor, (2007).

The variation of profit among insurance companies over the years in a given country would result to suggest that internal factors or firm specific factors play a crucial role in influencing their profitability. It is therefore imperative to identify what are these factors as it can help insurance companies to take action on what will increase their profitability and investors to

forecast the profitability of insurance companies in Ethiopia. To do so, it is better to see what factors were considered in previous times by different individuals. The following points are some of the work of others among many others.

2.4 Determinates of profitability in insurance companies: an empirical review

Profitability in insurance companies could be affected by a number of determining factors. These factors, as explained above could be further classified as internal, industry, and macroeconomic factors. However, as will be discussed in the coming consecutive sections of the review, in most literatures, profitability with regard to insurance companies usually expressed in as a function of internal determinants. Rather, most researches concerning determinants of profitability in insurance companies are divided in to two, such as determinants of profitability in property/liability or general insurance companies and in life/health insurance companies. Accordingly, Hifza Malik (2011) in pakistan, Sylwester Kozak (2011) in poland, Hamadan Ahamed Ali Al-Shami (2008) in United Arab emirates (UAE), Swiss Re (2008) in Egypt and Jay Angoff Roger Brown (2007) in United kingdom conducted their research concerning determinants of profitability in general insurance companies where as Naveed Ahmed, Zulfqar Ahmed, Ahmad Usman (2011), in Pakistan, Adams M., Hardwick P. and Zou H., (2008) in Canada, Desheng Wu Z., Sandra V. & Lianga (2007), Wright, K. M. (1992), and others conducted their study on determinants of life and health insurance companies. Hence, most of the researchers focused on internal factors affecting profitability and most of the factors considered are age of company, size of company, leverage ratio, growth rate, volume of capital, tangibility of assets and liquidity ratio. Now let us see empirical evidences for each variable independently.

2.4.1 Internal Determinants

The internal determinants of insurance companies' profitability are those management controllable factors which account for the inter-firm differences in profitability, given the external environment. Accordingly Hafiz Malik (2011) defines internal determinants of profitability as factors that could be influenced by management decisions. As stated by Hamadin Ahamed Ali-Al-Shami (2011) internal determinants can be broadly classified into two sub-categories namely financial statement variables and non-financial statements variables. The financial statement variables are determining factors which are directly driven from items in a balance sheet and profit & loss accounts of the insurance companies. On the other hand, the non-financial statement variables are those factors which are not directly displayed on the financial statements accounts.

According to Yuqi Li (2007) financial institutions' non-financial statements variables are classified as management quality, efficiency and productivity, age and number of branches. Most researches concerning insurance companies are conducted with respect to only financial statement variables. Hence, Hamadin Ahamed Ali Al-Shami (2008) in his dissertation regarding UAE used financial statement variables such as size, leverage, liquidity, tangibility of assets, volume of capital, and premium growth. Similarly, Hafiz Malik (2011) in Pakistan used such variables mentioned above and age as a non-financial statement variable. Sylwester Kozak (2011) in Poland, Hamadan Ahamed Ali Al-Shami (2008) in United Arab Emirates (UAE), Swiss Re (2008) in Egypt and Jay Angoff Roger Brown (2007) in United Kingdom, Naveed Ahmed, Zulfqar Ahmed, Ahmad Usman (2011), in Pakistan, Adams M., Hardwick P. and Zou H., (2008) in Canada, Desheng Wu Z., Sandra

V. & Lianga (2007), Wright, K. M. (1992), Flamini et.al (2009) in Sub-Saharan countries are among others used financial statement variables as independent variables. The following are the variables used in researches concerning profitability of insurance companies and related financial institutions and the details of internal financial statement and one non financial statement variable are discussed in detail in this section.

2.4.1.1 Firm size and age

Newly established banks are not particularly profitable in their first years of operation, as they place greater emphasis on increasing their market share, rather than on improving profitability Athanasoglou *et al.*, (2005). Similarly, Yuqi li (2007) indicate that older banks expected to be more profitable due to their longer tradition and the fact that they could build up a good reputation. Obviously, the above empirical studies those include age as one of their explanatory determinant indicates a positive relationship between age and profitability.

Several studies have been conducted to examine the effect of size and age on firm profitability. However, the empirical evidences of the linkage between profitability and firm size are somewhat inconsistent. For example, evidence collected by Philip Hardwick and Mike Adams (1999) from UK companies suggests that there is an inverse relation between profitability and firm size. Jay Angoff Roger Brown (2007) found that there is a positive and significant relationship between the age of a company and its profitability as measured by ROA. Similarly, the research conducted on the relationship among firm characteristics including size, age, location, industry group, profitability and growth by Swiss Re (2008) indicated that larger firms are found to grow faster than smaller and younger firms found to grow faster than older firms. In contrast, Hamadan Ahamed Ali Al-Shami (2008) found no

significant statistical relation between age and profitability of insurance companies in UAE but there exist a positive and statistical significant relation between firm size and profitability. Similarly, Hafiz Malik (2011) in his Pakistan study found that there is significantly positive association between age & size of the company and profitability. The older the firm the more may be the profitability of the firm. This could be justified as experience and efficiency in the operation process may decrease cost of production and he found even that age is the strongest determinant of profitability.

In most literatures the effect of size on banks profitability are represented by total asset. Flamini et.al (2009) indicated that size is used to capture the fact that larger firms are better placed than smaller firms in harnessing economies of scale in transactions and enjoy a higher level of profits. One of the most important questions underlying bank policy is which size optimizes bank profitability. According to Athanasoglou *et al.*, (2005) the effect of a growing size of a bank on profitability has been proved to be positive to a certain extent. Consequently, a positive relationship is expected between size and profitability by many insurance area researchers. However, for firms that become extremely large, the effect of size could be negative due to bureaucratic and other reasons Yuqi Li (2007). Hence, the size-profitability relationship may be expected to be non-linear. Therefore most studies use the real assets in logarithm and their square in order to capture the possible non-linear relationship. Athanasoglou *et al.* (2005 and Yuqi Li found positive relationship between size and profitability.

2.4.1.2 Liquidity

Liquidity from the context of insurance companies is the probability of an insurer to pay liabilities which include operating expenses and payments for losses/benefits under insurance policies, when due then shows us that more current assets are held and idle if the ratio becomes more which could be invested in profitable investments. For an insurer, cash flow (mainly premium and investment income) and liquidation of assets are the main sources of liquidity Renbao Chen and Kie Ann Wong (2004). Empirical evidences with regard to liquidity revealed almost inconsistent results. For instance, Naveed Ahmed et.al. (2011) in his investigation in Pakistan found that ROA has statistically insignificant relationship with liquidity. Similarly, several other studies also have been conducted to measure the performance of the insurance companies. In contrast, Chen and Wong (2004) examined that, liquidity is the important determinants of financial health of insurance companies with a negative relationship. Similarly, Hakim and Neaime (2005) observed that liquidity, current capital and investment are the important determinants of banks profitability. Valentina Flamini, Calvin McDonald, and Liliana Schumacher (2009) in their investigation regarding Sub-Saharan countries found significant and negative relationship between bank profitability and liquidity.

2.4.1.3 Leverage

The trade of theory suggests a positive relationship between profitability and leverage ratio and justified by taxes, agency costs and bankruptcy costs push more profitable firms towards higher leverage. Hence more profitable firms should prefer debt financing to get benefit from tax shield. In contrast to this pecking order theory of capital structure is designed to minimize the inefficiencies in the firms' investment decisions. Due to asymmetric

information cost, firms prefer internal finance to external finance and, when outside financing is necessary, firms prefer debt to equity because of the lower information costs. The pecking order theory states that there is no optimal capital structure since debt ratio occurs as a result of cumulative external financing requirements. Insurance leverage could be defined as reserves to surplus or debt to equity. The risk of an insurer may increase when it increases its leverage. Literatures in capital structure confirm that a firm's value will increase up to optimum point as leverage increases and then declines if leverage is further increased beyond that optimum level.

For instance Renbao Chen and Rie Ann Wong (2004) stated that leverage beyond the optimum level could result in higher risk and low value of the firm. Empirical evidences with regard to leverage found to be statistically significant relationship but negative. For instance Renbao Chen and Kie Ann Wong (2004), in Canada, Hamadan Ahamed Ali Al-Shami (2008) in UAE, Hifza Malik (2011) in Pakistan, Sylwester Kozak (2011) in UK Swiss Re (2008) in Egypt and Flamini et.al (2009) in Sub-Saharan countries found that negative but statistically significant relationship between leverage and profitability of firms. Harrington (2005) stated that the relationship between leverage and profitability has been studied extensively to support the theories of capital structure and argued also that insurance companies with lower leverage will generally report higher ROA, but lower ROE. Since an analysis for ROE pays no attention to the risk associated with high leverage.

2.4.1.4 Volume of Capital

In most of the studies concerning insurance companies' volume of capital measures as the difference between total assets and total liabilities and in some cases it is measured by the ratio of equity capital to total asset. Insurance companies' equity capital can be seen in two

ways. Narrowly, as stated by Uhomoibhi T. Aburime (2008), it can be seen as the amount contributed by the owners of an insurance (paid-up share capital) that gives them the right to enjoy all the future earnings. More comprehensively, it can be seen as the amount of owners' funds available to support a business. The later definition includes reserves, and is also termed as total shareholders' funds. No matter the definition adopted, volume of capital is widely used as one of the determinants of insurance companies' profitability since it indicates the financial strength of the firm. As it has been expected positive relationship between profitability and capital has been demonstrated by Athanasoglou *et al.* (2005).

Studies conducted in different countries found that for non-life insurance companies, size of capital is one of the important factors that affect ROA, Hifza Malik (2011) examined the relationship between volume capital and return on asset for Pakistan insurance industry and found positive and statistically significant relationship between insurance capital and profitability. Similarly Hamadan Ahamed Ali Al-Shami (2008), found in his investigation that there exists a positive and significant relationship between volume of capital and profitability of the UAE insurance companies.

2.4.1.5 Tangibility of assets

Tangibility of assets in insurance companies in most studies is measured by the ratio of fixed assets to total assets. A recent study by Naveed Ahmed *et.al...* (2011) investigates the impact of firm level characteristics on performance of the life insurance sector of Pakistan over the period of seven years. For this purpose, size, profitability, age, risk, growth and tangibility are selected as explanatory variables while ROA is taken as dependent variable. The results of OLS regression analysis revealed that leverage, size and risk are most important

determinant of performance of life insurance sector whereas ROA has statistically more of insignificant relationship with, tangibility of assets. However, Hafiz Malik (2011) found that there exists a positive and significant relationship between tangibility of assets and profitability of insurance companies and argued that the highest the level of fixed assets formation, the older and larger the insurance company is. In contrast to this, Yuqi Li (2007) in UK found no significant relationship between tangibility of assets and profitability of insurance companies.

2.4.1.6 Growth Rate

Growth as measured by the percentage change in total assets or sometimes percentage change in premiums of insurance companies is expected to positively related with profitability of insurance companies in Ethiopia. Insurance companies having more and more assets over the years have also better chance of being profitable for the reason that they do have internal capacity though it depends on their ability to exploit external opportunities. Empirical evidence by Naveed Ahmed et al (2011) in Pakistan, Yuqi Li (2007) in UK and Hamadin Ahmed Ali Al-Shami (2008) in UAE of their investigation found a positive and statistically significant relationship between growth and profitability of insurance companies.

2.5 Summary of the literature review

Most literatures focus on factors affecting profitability of banks rather than insurance companies. Therefore, there are fewer literatures concerning insurance companies as compared to banks. The existing literatures concerning insurance companies could be classified into two: determinants of financial performance of life and non-life insurance companies. Empirical evidences regarding determinants of insurance companies focused only

on internal factors such as age, size, leverage, growth, volume of capital, tangibility of assets and liquidity. The results found by the researchers mentioned above in the empirical revealed inconsistencies according to the country in which the research is conducted regarding some variables.

Chapter Three: Research Design and Methodology

3.1. Introduction

This study examines the previous findings in the literature, though not in Ethiopia and applies the results in current practical settings of the insurance companies in the country. Therefore, this chapter provides the detail steps and procedures used to conduct the analysis of factors affecting profitability of insurance companies in Ethiopia. It includes the approach adopted to examine the effect of main determinants on profitability, the type of data used and the techniques employed to collect the data, the sampling mechanism including sample size, the methods utilized to manage and analyze the data, and the process of constructing empirical model with identification and measurement of its components, measurement and selection of variables, expected relations between the dependent and independent variables. Accordingly, a deductive approach is adopted by constructing an empirical model and hypothesizing its linear relationship between determinants and its dependent variable. The methodology of carrying out this research is based on the objectives of the paper and the availability of relevant information.

To comply with the objective of this research, the paper is primarily based on survey of quantitative research, which constructed an econometric model to identify and measure the determinants of insurance companies' profitability. Classical linear regression analysis based on the results of multiple regression analysis is adopted to measure the effect of determinants on insurance companies' profitability by using E-views software packages and statistical software package for social sciences (SPSS).

3.2 Research Approach

In terms of investigative study there are two common approaches to business and social research: one is deductive approach that develops theories and hypotheses followed by a research strategy to test the hypotheses; and second inductive approach that finds data and develops theories as a result of the data analysis Saunders et al, (2003) as cited by Yuqi Li (2007). The deductive approach introduces a high level of objectiveness in research through external observation insofar as the choice of questions and subsequent phrasings are not subjective. In contrast, the inductive approach provides a high level of subjectiveness and a number of theoretical possibilities based on the context of the individual research situation Yuqi Li (2007).

This study examines the previous findings in the literature, and apply the model in Ethiopian insurance companies. Therefore, a deductive approach is adopted by constructing an empirical model and hypothesizing its collinear relationship between determinants and its dependent variable: profitability of insurance companies in Ethiopia.

3.3 Research Method

The methodology of carrying out this research is based on the objectives of the paper and the availability of relevant information. To comply with the objective of this research, the paper is primarily based on quantitative research, which constructed an econometric model to identify and measure the determinants of profitability. Specifically, multiple regression analysis is adopted to measure the effect of determinants on profitability. The use of multiple regressions considers the simultaneous relationships amongst the multiple numbers of independent and dependant variables found across the regression model, therefore suited to the nature of the study.

The significance of the impact of the independent variables on dependent variables is, at the same time, highlighted in using multiple regressions. Multiple regressions are further utilized to examine the associative relationships between variables in terms of the relative importance of the independent variables and predicted values of the dependent variables.

For the initial construction of the decomposed model an exploratory study was carried out through a search of the available literature to identify the exact components of the model. Further literature search was conducted to find other factors which could potentially and clearly affect profitability of insurance companies in Ethiopia. By summarizing previous studies, liquidity, volume of capital, firm size, age, leverage, growth and tangibility of assets are selected to be included as explanatory variables in the model.

3.4 Data and Data Sources

To comply with the research objectives, the researcher focused on secondary data, which are obtained from annual reports of individual insurance companies and NBE. And this is because the advantage of using secondary data includes the higher quality data compared with primary data collected by researchers themselves Stewart and Kamins, (1993) as cited by Yuqi Li (2007); the feasibility to conduct panel evidence, which is the case in this study; and the permanence of data, which means secondary data generally provide a source of data that is both permanent and available in a form that may be checked relatively easily by others, i.e more open to public scrutiny. Therefore, enhance the reliability of the data.

The principal secondary data sources for this paper are individual insurance companies annual reports that contain detailed consolidated balance sheets and income statements and

National Bank of Ethiopia, which can provide comprehensive database for all insurance companies.

The data collected and analyzed is a balanced panel of nine insurance companies in Ethiopia operating over the last 9 years. Panel data is selected by the researcher in order to meet the research objectives as it best fits better than the single time series or cross-sectional alone. That is why Chris Brookes (2008) in his book clearly presents the advantage of using panel data in the following way.

First, and perhaps most importantly, we can address a broader range of issues and tackle more complex problems with panel data than would be possible with pure time-series or pure cross-sectional data alone. Second, it is often of interest to examine how variables, or the relationships between them, change dynamically (over time). To do this using pure time-series data would often require a long run of data simply to get a sufficient number of observations to be able to conduct any meaningful hypothesis tests. But by combining cross-sectional and time series data, one can increase the number of degrees of freedom, and thus the power of the test, by employing information on the dynamic behavior of a large number of entities at the same time. The additional variation introduced by combining the data in this way can also help to mitigate problems of multi-collinearity that may arise if time series are modeled individually. Third, structuring the model in an appropriate way, we can remove the impact of certain forms of omitted variables bias in regression results.

Panel data analysis is an increasingly popular form of longitudinal data analysis among social and behavioral science researchers Yuqi Li (2007). Panel data analysis is a method of studying a particular subject within multiple sites, periodically observed over a defined time

frame. With repeated observations of enough cross-sections, panel analysis permits the researcher to study the dynamics of change with short time series.

Therefore, the combination of time series with cross-sections can enhance the quality and quantity of data in ways that would be impossible using only one of these two dimensions.

3.5 Sampling Mechanism

Given the research objectives coupled with research questions, it is considered that purposive sampling is employed so as to include all insurance companies established and serving with in the specified period of time from June 2003 to June 2011 and the size for sample is nine insurance companies operating over the period of 9 years as taken form table 1 above and the rest of insurance companies will not have a chance to be included. Nine years is assumed to be relevant because five years and above is the recommended length of data to use in most finance literatures.

3.6 Data Analysis

Data analysis section of this study is based on descriptive analysis and regression analysis. It means that the this section provides the descriptive analysis of the panel data and variables for the study in collaboration with some important test such as normality of data, discusses the correlation analysis between dependent and independent variables, deals the results of the linear regression and data analysis that constitute the main findings of this study.

3.6.1. Descriptive Analysis

The descriptive statistics explores and presents an overview of all variables used in the analysis. In this section the mean, minimum, maximum, standard deviation of the variables are produced for the variables under study for the period 2003 to 2011.

3.6.2. The Correlation Analysis

This section shows how variables are related with each other. The results of this analysis represent the nature, direction and significant of the correlation of the variables considered under this study.

3.6.3. Regression Analysis

The regression analysis is used to examine the relationship between the profitability of Ethiopian insurance companies and explanatory variables such as age, size, leverage, liquidity, volume of capital, growth and previous year profitability of the companies

The result of a regression analysis is an equation that represents the best prediction of a dependent variable from several other independent variables. In terms of regression analysis, as panel data is adopted in this study, corresponded regression model is selected from fixed effect and random effect regression. Fixed effects regression is the model to use when researcher want to control for omitted variables that differ between cases but are constant over time. It allows using the changes in the variables over time to estimate the effects of the independent variables on dependent variable. Otherwise random effect estimation model is used and it is the models to use when researchers want to control for omitted variables that change over time but are constant between cases. It allows using the variation between cases to estimate the effect of the omitted independent variables on dependent variable.

3.7 Design of Empirical Model

The literature generally, in so far as it is discussed, comes to the conclusion that the appropriate functional form for testing is a linear function although there are dissenting

opinions. The Davidson, Godfrey, MacKinnon (1985) as cited by Swiss Re (2008) specification test was also applied with results that supported the use of the linear function. The regression model is used to identify the relationship between the profitability of insurance companies and age of company, leverage ratio, growth, company size and volume of capital. Data analyzed are with one dependent variable (profitability) and seven independent variables (age of companies, size of companies, leverage ratio, volume of capital, tangibility of assets, liquidity and previous profitability).

The generally accepted way of choosing between fixed and random effects is running a Hausman test. Random effects will give better P-values as they are a more efficient estimator, so random effects regression should be adopted if it is statistically justifiable to do so. Based on Hausman test result, as shown in Appedix 2, the model is estimated through random effect regression. The Hausman test checks a more efficient model against a less efficient but consistent model to make sure that the more efficient model also gives consistent results. It tests the null hypothesis that the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effect estimator. If they are (insignificant P-value, Prob. of Chi-Square larger than .05) then it is safe to use random effects and vice visa

For estimation purposes, the following general linear model is used:

$$ROA_{i,t} = \alpha + \sum \beta_j X_{i,t}^j + v_i \text{-----}(1)$$

Where $ROA_{i,t}$ is the return on assets of insurance i for period t ; α is the regression constant; $X_{i,t}^j$ denote insurance specific determinants; $v_{i,t} = \varepsilon_{i,t}$ is the disturbance term.

By using the model and comparing the co efficiency of each explanatory variable, it will generate the finding that which factor is more significant in relation to insurance companies' profitability and the finding will correspond to the evidence in the literature.

3.8 Variable Selection and Measurement

As previously mentioned, the empirical part of this paper attempts to examine the main determinants of profits of insurance companies' measurement of profitability. According to Hamadan Ahamed Ali Al-Shami (2008), three important measures of firm's performance are: profitability, size and survivorship. Profitability indicates the firm's ability to achievement of the rate of return on a company's assets and investment funds. With regard to size, it is revealed in his work as "a firm's ability to expand its size could be a reflection of it success as earnings are reinvested and external funding could be easily found". Whereas survivorship indicates the ability to earn sustainable development concerning competitive advantages beyond initial opportunities like an economic upturn or the early growth stage of an industry.

This research is concerning only on profitability of insurance companies in Ethiopia as a financial performance and the internal factors that determine profitability. Hence, seven characteristics are used as internal determinants of performance. Referring to previous studies, the use of ratio in measuring leverage, liquidity, tangibility and profitability performance is common in the literature of finance and accounting practices. Hafiz Malik (2011) Hamadin Ali AL-Shami (2008) and Chen and Naveed Ahmed (2011) used ratio in measuring insurance companies financial performance. The greatest advantage for using ratio index in measuring performance is that it compensates disparities created by size Yuqi Li (2007).

In line with earlier studies that examined the determinants of insurance companies' profitability, accounting ratios are used as measurement of individual variables. In specific, the dependent variable, profitability of insurance companies, is measured by ROA. In order to select the determinants as explanatory variables in the model, previous studies have also been reviewed and literature suggests that the following factors exert strong impact on insurance companies' profitability as internal determinants; therefore, they are adopted in the constructed model. And following is the details of variables selected.

Profitability

There are many different ways to measure profitability, as shown in previous studies. In this study net income before tax to total assets (ROA) is used to measure profitability, because most of the studies regarding the subject used this ratio to determine the profitability of insurance companies.

Age of company

This variable is measured by the number of years from the date of establishment until 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010 and 2011 for nine consecutive years.

Volume of capital

Previous studies used the book value of equity as a measure of volume of capital. Similarly book value of equity is taken as a measure of volume capital for this study. Total equity capital= book value of equity measured by the natural logarithm of book value of equity.

Company size

In different studies, different researchers use different measurements of company size such as number of employees and total assets of a company. However, most of the researchers use

the log value of total assets as a measure of size in such area. Therefore, company size is measured by total assets in log value.

Leverage

The amount of debt used to finance a company’s assets. A company with significantly more debt than equity is considered to be highly leveraged. This variable is measured by total debt to total equity value of the company.

Firm growth

Growth is simply the change in size of the company as measured by the percentage change in total assets.

Liquidity

Liquidity from the context of insurance companies is the probability of an insurer to pay liabilities which include operating expenses and payments for losses/benefits under insurance policies, when due and therefore, measured by total current assets to total current liabilities.

To capture the tendency of profits to be persistent over time (due to market structure imperfections or high sensitivity to auto-correlated financial factors), the researcher tried to adopt a dynamic specification of the model, with a lagged dependent variable among the regressors. Cheris Brooks (2008) in his book for introductory econometrics for finance argued that lagged values of variables may capture important dynamic structure in the dependent variable that might be caused by a number of factors such as inertia of the dependent variable and overreactions. This yields the following model specification:

$$ROA_{i,t} = \alpha + \gamma ROA_{i,t-1} + \sum \beta_j + u_i \text{-----}(2)$$

Where $ROA_{i,t-1}$ is the one period lagged profitability and γ measures the speed of mean reversion. A value of delta between 0 and 1 indicates that profits are persistent, but they will eventually return to the equilibrium level. Specifically, values close to zero denote a high speed of adjustment and imply relatively competitive market structure, while a value closer to 1 implies slower mean reversion, and therefore, less competitive markets.

Taking all these explanatory variables into consideration, the extended equation to reflect the variables is formulated as follows:

$$ROA_{i,t} = \alpha + \gamma ROA_{i,t-1} + \beta_0 Age_{i,t} + \beta_1 LnSize_{i,t} + \beta_2 Lev_{i,t} + \beta_3 Gr_{i,t} + \beta_4 LnVoc_{i,t} + \beta_5 TA_{i,t} + \beta_6 LQ_{i,t} + \varepsilon_{i,t} \text{-----}(3)$$

Where:

1. $ROA_{i,t}$ is the profitability in insurance company i at time t (dependent variable) in this study return on assets (The return on assets (ROA) defined as the insurance companies' before tax profit over total assets) is used to measure profitability. My justification is that ROA as the key proxy for insurance companies' profitability, instead of the alternative return on equity (ROE), because an analysis of ROE disregards financial leverage and the risks associated with it as a measure of profitability in insurance companies. Since profits are a flow variable generated over the years, as opposed to the stock of total assets, I measure this ratio as a running year average, with the average value of assets of consecutive years as a denominator.
2. α is constant,
3. $ROA_{i,t-1}$: the profitability of insurance company 'i' in the previous times 't'

4. Age: the variable age of company will be measured from the number of years to date of establishments (difference between observation year and establishment year) or in other words the age of each insurance company at time 't'
5. Size: company size will be measured by total assets in log value,
6. Lev: is leverage ratio and for this variable the proxy is the ratio of total debt to equity value of the company that means total debts divided by total equity
7. Voc: is volume of capital and it is measured as the book value of equity so will also use the book value of equity as a measure of capital (total equity capital that is book value of equity will be measured by the natural log of book value of equity) and
8. TA: Tangibility (Fixed assets divided by total assets)
9. LQ: Liquidity (Current assets divided by current liabilities)
10. $\beta_0 \dots \beta_6$: coefficient of independent variables
11. ε is error term.
12. i is insurance companies 1 to 9

Based on review of relevant and related literatures, it is hypothesized that volume of capital, growth, age and size of company, leverage ratio, liquidity ratio and previous profitability are expected to influence firms' profitability as measured by ROA. Accordingly, the following hypotheses are tested by the study:

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

H2: There is a positive relationship between size and profitability of insurance companies in Ethiopia.

H3: There exists a positive relationship between any increase in volume of capital and profitability of insurance companies in Ethiopia.

H4: There is a negative relationship between leverage and profitability for Ethiopian insurance companies.

H5: There is a positive relationship between growth and profitability of Insurance companies in Ethiopia.

H6: Tangibility of assets of insurance companies and their profitability are negatively related.

H7: Liquidity ratio and profitability of insurance companies are negatively related.

Accordingly, in order to test for the empirical relevance of the hypotheses regarding to the determinants of insurance profitability, based on other studies the model with respect to determinants of profitability in insurance companies is designed as in the following diagram.

Based on the hypotheses above, the following table shows the expected results of each independent variable

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

Chapter 4: Analysis and Findings

4.1 Introduction

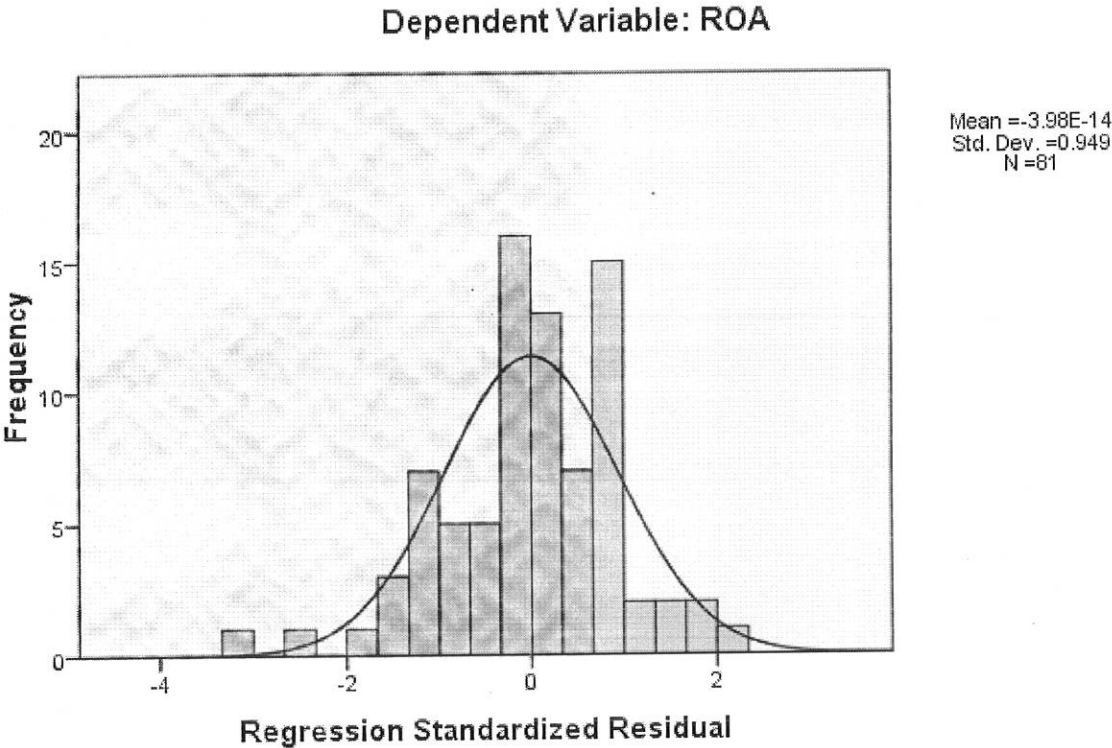
This chapter presents the empirical test results based on the linear regression to test the outcomes of the analysis for nine insurance companies in Ethiopia during the period of 2003 to 2011. The investigation is with regard to the relationship between profitability as dependent variable and age of insurance companies, size of insurance companies, volume of capital, leverage ratio, growth rate, tangibility of company assets and liquidity ratio as independent variables. Therefore, this chapter provides the results from the analysis of data and its interpretation. This chapter is divided into four sections. The first section provides the analysis throughout, test of the normality of data; the second section presents descriptive analysis of the data and variables for the study; the third section discusses the correlation analysis between dependent and independent variables followed by testing the hypothesis in the fourth section; the fifth section lays down the results of regression analysis that constitute the main findings of this study and presents the application of the model and eventually the summary of the chapter is presented in the last section.

Normality of Data

According to Gujarati (1995) before running regression analysis, it should be noted that there are four classic assumptions in undertaking the regression analysis and one of them is normality of data. Therefore, normality test becomes relevant. Chris Brooks (2008) also noted that in order to conduct hypothesis test about the model parameter, the normality assumption must be fulfilled. The normality assumption is about the mean of the residuals is zero. Therefore, the researcher used graphical methods of testing the normality of data as shown below.

From figure 4.1 below, it can be noted that the distribution is normal curve, indicating that the data confirms to the normality assumption. In addition, the normal probability plots were used to test the normality of data as shown below in figure 4.1 and figure 4.2.

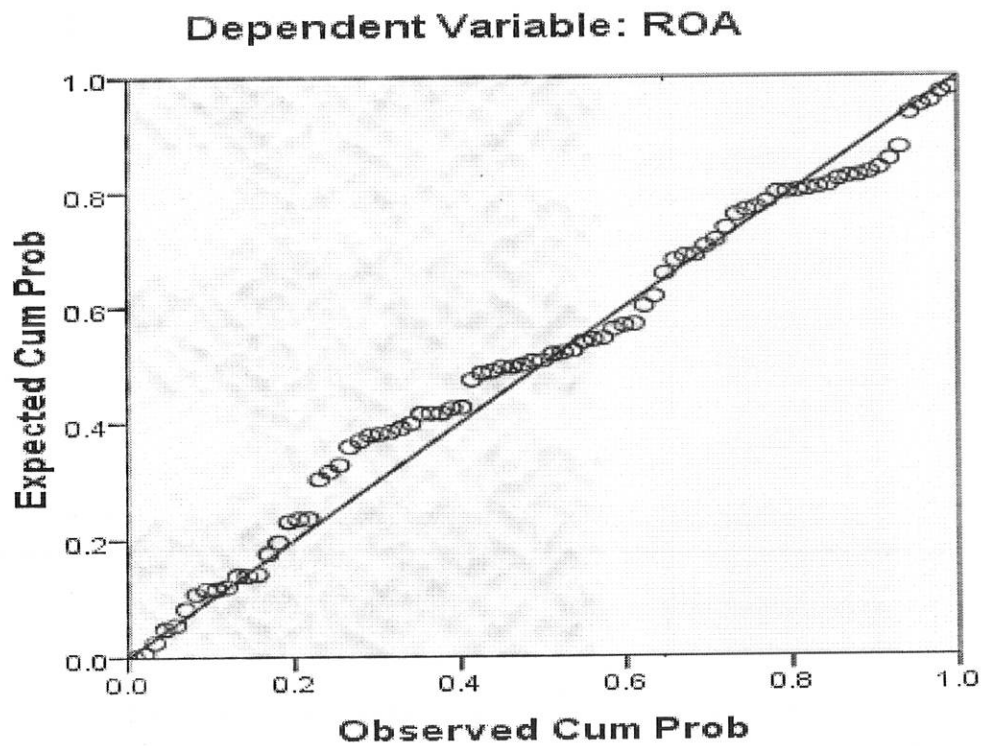
Figure 4.1: Histogram



Source: SPSS regression output

If the residuals are normally distributed around its mean of zero the histogram is a bell-shaped. The shape of the histogram as shown above in figure 4.1 revealed that the residuals are normally distributed around its mean of zero.

Figure 4.2: Normal P-P plot of regression standardized residual



Source: SPSS regression output

Similarly, the above figure shows the normal distribution of residuals around its mean of zero. Hence the normality assumption is fulfilled as required based on the above two figures, it is possible to conclude that the inferences that the researcher will made about the population parameter from the sample is somewhat valid.

Descriptive statistics

Univariate analysis of all the variables in this study is represented as in the following table. In this section, the study presents the empirical test results that include the descriptive. It explores and presents an overview of all variables used in the study.

The table below (Table 4.1) shows that there are 81 numbers of valid cases or “N” for each variable.

Table 4.1 Descriptive statistics

	Mean	Std. Deviation	N
ROA	0.060254	0.0425792	81
LAG	0.062355	0.0445553	81
AGE	13.67	7.440	81
SIZE	18.720871	1.0561071	81
LEV	2.1274820	0.9355457	81
GR	0.181054	0.1809098	81
VOC	17.62280	0.8792137	81
TA	0.134005	0.0880514	81
LQ	1.968611	0.6913957	81

Source: SPSS descriptive statistics out put

The table indicates that the mean values of all the variables ranges from minimum of 0.06 for ROA to a maximum of 18.7 for size. The average profitability as measured by ROA for Ethiopian insurance companies during the study period is about 0.06 and the value of the standard deviation for ROA is 0.04 which implies the presence of moderate variations among the values of profitability across the insurance companies included for this study.

The mean value of age is 13.67 years and there are significant differences among values of age because the value of the standard deviation as shown in the table is 7.44 years.

The mean value of size is 18.72. Therefore, with regard to size as shown in the table above, there exists significant variation across the sample insurance companies for the reason that the value of the standard deviation is 1.056107. Hence the highly variated size among

insurance companies may have significant impact on profitability of insurance companies that we are going to see in the regression results

The mean value of leverage is 2.127482 implies that there were moderate differences among the values of leverage as measured by debt to equity ratio across the sample insurance companies under this study and is because the value of standard deviation is 0.935546.

From table 4.1 above, the mean value of growth is 0.181054 and the value of standard deviation for the same variable is 0.180910 which shows that there were no significant variations among the values of growth as measured by the change in total assets over the years across the sample insurance companies.

The average value for volume of capital (VOC) has become 17.62280 with a standard deviation of 0.879214. Therefore, there exists very significant variation among the values of volume of capital across the sample insurance company included in this study.

Table 4.1 also shows that the mean value for tangibility of assets is 0.134005 and the standard deviation is 0.088051 implies that there exists moderate variation among the values of tangibility of assets in insurance companies.

Similarly the mean value of liquidity ratio is 1.968611 with the value of standard deviation 0.691396 which also shows us the existence of moderate difference among the values of liquidity ratio for insurance companies under consideration. Therefore, this study is conducted to what extent; the variations in factors affect the profitability of insurance companies in Ethiopia. As indicated in appendix 3; profitability measured by ROA for different insurance companies considered for this study for nine consecutive years is different. Identification of the internal factors that affect the profitability of these companies is the task of the researcher for this study.

Test for Hetroskedasticity

The other important assumption for classical linear regression model is that the disturbances appearing in the population regression are homoscedastic that means the variance of the error term is consistent. If errors don not have a constant variance (not homoscedastic), they are said to be Hetroskedastic Chris Brooks (2008).

For the test of the presence of hetroskedasticity, the researcher used white test and is based on the following null hypothesis and its respective alternative.

H0: There is no hetroskedasicity

H1: There is hetroskedasticity

To test the presence of hetroskedasticity, the residual sum of squares for each observation have been calculated and regressed against the independent variables. The results obtained are as follows:

Table 4.2 White test regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.382 ^a	0.146	0.064	0.00138718154

Source: SPSS regression output

Table 4.3 Chi Square calculated and tabulated

Test	t-statistics X^2 calculated $=nR^2$	X^2 (5% sig. level) $X^2_{\alpha(p)}$, where $p=xi+1$
White's test	11.826	18.307

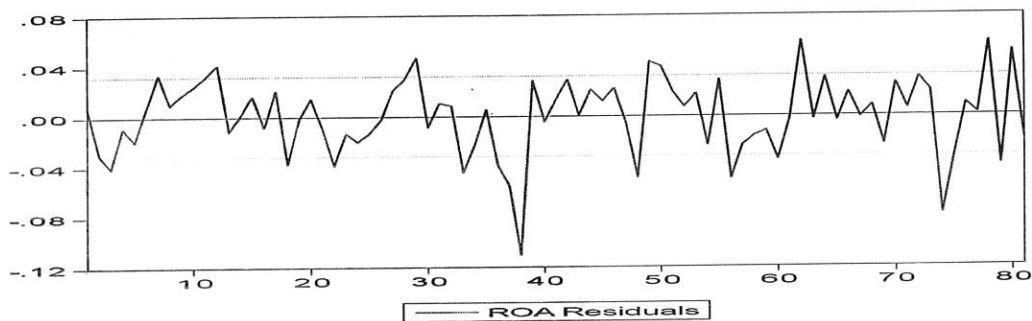
Source: SPSS regression output

The results from the table 4.2 and 4.3 above show that X^2 square value obtained through calculation is less than the value of Chi square value from the table at 5% significant level. According to white test if the value of chi square calculated is greater than the chi square tabulated at a given significant level, we have to reject the H_0 of no heteroskedasticity otherwise we fail to reject it and accept the alternative that there exists heteroskedasticity. The t-statistics value (chi square calculated) from table 4.3 above is 11.826 which is less than chi square tabulated at 5% significant level, 18.307. Hence 11.826 is less than 18.307 so that we fail to reject the null hypothesis of no heteroskedasticity. In this case it is indicated that there is no evidence for the existence of heteroskedasticity.

Test for autocorrelation

The Durbin-Watson Statistics (D-W stat.) from the regression result before analysis shows that 1.89 which is approaching to 2 and hence no evidence for the presence of autocorrelation. Of course autocorrelation test will be invalid with the presence of lagged variable so tested with out the lagged variable and result for DW stat. becomes 1.75. In addition the following distribution figure for residuals shows no pattern in residuals implies that there is no autocorrelation.

Figure 4.3 Residuals distribution



The next step is an analysis of bivariate relationship between variables. This is shown by using correlation matrix as derived from the E-views and SPSS. And it is because SPSS can read files saved in the form of E-views.

Correlation Analysis

The correlation coefficient represents the linear relationship between two variables. The most widely-used type of correlation coefficient is Pearson r, also called linear or product-moment correlation. The significance level calculated for each correlation is a primary source of information about the reliability of the correlation. The significance of a correlation coefficient of a particular magnitude will change depending on the size of the sample from which it was computed. Here, the analysis is with regard to significant correlations between the dependent variable and each independent variable separately, to decide whether to accept or reject the hypotheses.

Table 4.4 shows us correlations between ROA and independent variables. Return on assets is negatively correlated with leverage (lev) and liquidity (LQ). The coefficient estimates of correlation -0.015376 and -0.045734 for leverage and liquidity respectively. The result suggests that leverage and liquidity are independent of return on assets.

Table 4.4 Correlations between profitability and independent variables

	ROA	LAG	AGE	SIZE	LEV	GR	VOC	TA	LQ
ROA	1.000000	0.259071	0.222132	0.356744	-0.044616	0.257726	0.436393	0.090525	-0.056834
LAG	0.259071	1.000000	0.155454	0.254125	-0.038359	-0.285424	0.316130	-0.032067	0.099973
AGE	0.222132	0.155454	1.000000	0.478159	0.575873	-0.195013	0.743681	-0.092996	0.060831
SIZE	0.356744	0.254125	0.478159	1.000000	0.672534	-0.054147	0.971563	-0.182436	-0.083522
LEV	-0.044616	-0.038359	0.575873	0.672534	1.000000	0.076373	0.484409	-0.033366	-0.312444
GR	0.257726	-0.285424	-0.195013	-0.054147	0.076373	1.000000	-0.093431	-0.027489	0.020878
VOC	0.436393	0.316130	0.743681	0.971563	0.484409	-0.093431	1.000000	-0.217501	0.023037
TA	0.090525	-0.032067	-0.092996	-0.182436	-0.033366	-0.027489	-0.217501	1.000000	-0.435031
LQ	-0.056834	0.099973	0.060831	-0.083522	-0.312444	0.020878	0.023037	-0.435031	1.000000

Source: SPSS Output

The significance level of this result is indicated in the appendix section. The highest positive percentages are size as measured by total assets and volume of capital. The coefficients of correlations are 37.67% and 43.64% respectively and they are positively correlated with profitability as measured by ROA. This means that as these variables increase ROA also will increase. The table also shows that age and tangibility are correlated positively but it is not statistically significant at 1%, 5% and 10% significance level as shown in appendix 6. Therefore, profitability is independent of age and tangibility of assets. The descriptive statistics also indicate two of the variables namely size and volume of capital are strongly correlated with each other with a coefficient estimate of 97%. Hence, there may appear multicollinearity problem and care should be taken with the results of regression analysis.

The correlation analysis shows that ROA is significantly correlated with size of company, leverage ratio, firm growth, volume of capital and liquidity ratio. The analysis also indicates that several independent variables are correlated with each other. For instance volume of capital is positively correlated with size of company and age of company as well. This observation indicates that special attention should be given to the possible problem of multicollinearity when regression analysis is executed.

Testing the hypotheses based on correlation analysis

Hypothesis 1

Table 4.5 correlation between age and ROA

	Correlation coefficient (r)	P-value
AGE	0.22	0.15

Source: SPSS output

Form the table above, we found that there is no significant relationship between age and profitability as measured by ROA. Therefore, we do not accept the H1.

Hypothesis 2

Table 4.6 correlation between size and ROA

	Correlation coefficient (r)	P-value
Size	0.36	0.00

Source: SPSS output

From the table above we can see that size is positively correlated with ROA and this relationship is statistically significant. Hence H2 is accepted.

Hypothesis 3

Table 4.7 correlation between leverage ratio and ROA

	Correlation coefficient (r)	P-value
Leverage ratio	-0.044616	0.0025

Source: SPSS output

The results from table 4.5 above show that there is a significant and negative relationship between leverage ratio and ROA and therefore H3 is accepted.

Hypothesis 4

Table 4.8 correlation between growth and ROA

	Correlation coefficient (r)	P-value
Firm Growth	0.257726	0.02002

Source: SPSS output

The results from table 4.6 show that there is a significant positive correlation between firm growth and ROA. Hence H4 is accepted

Hypothesis 5

Table 4.9 Correlation between Volume of capital and ROA

	Correlation coefficient (r)	P-value
VOC	0.436393	0.0000

Source: SPSS output

The results from table 4.7 show that there is a significantly strong correlation between VOC and ROA. Hence H5 is accepted.

Hypothesis 6

Table 4.10 Correlation between tangibility of assets and ROA

	Correlation coefficient (r)	P-value
Tangibility of assets	0.0905	0.4216

Source: SPSS output

The results from the table 4.8 show that there is no significant relationship between tangibility of assets and ROA. Hence H6 is not accepted.

Hypothesis 7

Table 4.11 Correlation between liquidity ratio and ROA

	Correlation coefficient (r)	P-value
Liquidity	-0.0597	0.0614

Source: SPSS output

The results of the table 4.9 show that there is slightly negative correlation between liquidity and ROA. Hence H7 is accepted.

Collinearity statistics

In this section, the problem of multi-collinearity is discussed based on the results that have been produced. Multi-collinearity is investigated using tolerance value and variance inflator factor (VIF) value. An insignificant tolerance value indicates that the variable under consideration is almost a perfect linear combination of the independent variables already in the equation and that it should not be included to the regression equation. Tolerance ranges from zero to one. The closer the tolerance value to zero indicates a level of multi-collinearity.

Table 4.12 Collinearity (model 1)

Model	Coefficients		t	Sig.	Collinearity Statistics	
	B	Std. Error			Tolerance	VIF
1(Constant)	-.375	.113	-3.309	.001		
LAG	.175	.089	1.969	.053	.777	1.287
AGE	.001	.001	1.346	.182	.309	3.238
SIZE	-.120	.070	-1.716	.090	.003	321.102
LEV	.010	.020	.517	.606	.034	29.642
GR	.110	.022	5.099	.000	.795	1.257
VOC	.149	.071	2.100	.039	.002	445.438
TA	.069	.047	1.472	.145	.719	1.391
LQ	-.017	.007	-2.466	.016	.514	1.947

Source: Random effect regression output of SPSS

Regression Analysis

From table 4.12 for the first model the results show that VIF value is 445.438, 321.102 and 29.642 for size volume of capital and leverage respectively. It indicates that this model is not free from multi-collinearity between the independent variables in this model. The correlation analysis made here in this paper shows that volume of capital is highly correlated with size and moderately correlated with leverage. Hence the model will be tested for the second time by dropping out of the volume of capital form list of regressors.

Table 4.13 Collinearity (model 2)

Model 2	coefficients		t	Sig.	Collinearity statistics	
	B	Std.Error			Tolerance	VIF
C	-0.395	.116	-3.415	.001		
LAG	.181	.091	1.999	.049	.778	1.285
AGE	.001	.001	1.215	.228	.301	3.230
SIZE	.026	.007	3.936	.000	.259	3.867
LEV	-0.030	.006	-5.154	.000	.419	2.387
GR	.104	.022	4.746	.000	.811	1.233
TA	.067	.046	1.409	.163	.719	1.391
LQ	-0.012	.077	-1.758	.083	.602	1.662

Dependent variable: ROA

Source: Random effect regression output of SPSS

From the table above, for the second model excluding volume of capital, from the list of all regressors, the results show that VIF value for all variables becomes less and the tolerance value for all variables is not near to zero. It indicates that this model is free from multi-collinearity. Hence, there is no problem of multi-collinearity between the variables in this model. Therefore regression analysis is done by excluding volume of capital from the model.

Table 4.14 Model summary (b)

Model	R	R ²	Adjusted R ²	Standard Error of the estimate
2	0.699 ^a	0.488	0.439	0.0318967

Source: SPSS output

Hypothesis testing and interpretation of the results based on random effect panel

Shown below in table 4.3.1 is the empirical result of the study by using random estimators of panel data using SPSS.

Table 4.15 panel random effect estimation result after excluding VOC

Dependent variable: ROA	Panel random effect estimation result			
Independent Variables	β_1	β_2	Std.error	Sig.
LAG	0.181	0.190	0.116	0.049***
AGE	0.001	0.183	0.001	0.228
SIZE	0.026	0.648	0.007	0.000*
LEV	-0.030	-0.667	0.006	0.000*
GR	0.104	0.441	0.022	0.000*
TA	0.067	0.139	0.046	0.163
LQ	-0.012	-0.190	0.077	0.083***
Observations = 81	81			
R ² = 0.448	0.48			
Adjusted R ² = 0.439	0.439			
F-statistics = 9.937	9.937*			
DW statistics	1.89			

*Significant at 1%, ** Significant at 5%, *** Significant at 10%

Source: Random effect regression result of E-Views

The results of regression for six independent variables on ROA in model 2 are presented in Table 4.14. This table shows the independent variables entered into the regression model. When all the inter-correlation the variables are taken into account, the R square is 0.488, it

means that on average 48.8% of the variation in ROA can be explained by the independent variables under the model above. However, t test shows that two of the independent variables namely age and tangibility of assets are not significant with (P=0.1824) and (p=0.1455) respectively. Hence this result is consistent with the correlation analysis

Table 4.16 ANOVA (b)

Model	Sum of Squares	df	Mean Square	F	Sig.
2 Regression	.071	7	.010	9.937	.000 ^a
Residual	.074	73	.001		
Total	.145	80			

Source: Random effect regression result of E-Views

a. Predictors: (Constant), LQ, GR, SIZE, LAG, TA, LEV, AGE

b. Dependent Variable: ROA

The ANOVA table above shows that the F value is significant at p=0.000 when the seven variables are entered together. The model explains the relationship between the independent variables and the dependent variable, moreover this model is significant and use five independent variables are predictors of the ROA.

The main purpose of observing the adjusted value of R square is to apprehend the best model that can explain ROA in the Ethiopian insurance companies. It is noted from the regression result that the adjusted R square in the second model is 0.439. This indicates the model is the best to explain ROA of insurance companies in Ethiopia. Which means on average 43.9 % of the change in profitability as measured by ROA can be explained by the variables in the model. Hence the function for regression equation for second model is:

$$ROA = -0.3948 + 0.1813LAG + 0.0261SIZE - 0.0304LEV + 0.1039GR - 0.0117LQ + \epsilon$$

Alternatively the model is also tested by excluding one of the highly correlated variables (size) instead of VOC from the model as shown in the following tables

Table 4.17 Collinearity (model 3) random effect regression results excluding size

Model 3		Coefficients				Collinearity statistics	
3	Variables	β	Std. error			Tolerance	VIF
	Constant	-0.409	0.113	-3.614	0.001		
	LAG	0.175	0.090	1.946	0.055	0.777	1.287
	AGE	0.001	0.001	1.150	0.254	0.313	3.199
	LEV	-0.023	0.005	-4.250	0.000	0.483	2.069
	GR	0.104	0.022	4.830	0.000	.0815	1.228
	TA	0.070	0.047	1.471	0.146	0.719	1.391
	VOC	0.024	0.007	4.150	0,000	0.359	2.788
	LQ	-0.013	0.007	-1.919	0.059	0.610	1.640

Dependent variable: ROA

Source: SPSS Random effect regression output

Table 4.18 Model Summary

Model	R	R ²	Adjusted R ²	Std.	Durbin-Watson
3	.706 ^a	.478	.420	.0315891	1.868

a. Predictors: (Constant), VOC, LQ, GR, LAG, TA, LEV, AGE

Source: Random effect results of E-views

From the above table we can conclude that volume of capital is one of the important determining factors of profitability of insurance companies in Ethiopia. The regression results show a regression coefficient of 0.024, t-statistics of 4.150 and p-value of 0.000. Hence volume of capitals significantly and positively affects profitability of insurance companies in Ethiopia and this result is consistent with the hypothesis of the study.

The result implies that a 1% increase in volume of capital will result in a 2.8% increase in profitability. The coefficient of volume of capital is positive and highly significant, meaning that well capitalized insurance companies experience higher returns of assets and hence higher profits.

4.2 Summary of Findings

Discussion of findings is more depending on model two above and it is because the R square for the second model is to some extent more than the third model. Hence model two explains the study better than model three.

4.2.1 Age

In this study, random effect regression result shows that there is no significant relationship between age of insurance companies and their profitability in Ethiopia. As shown above in model two, the regression coefficient of age 0.001 with a t-statistics of 1.215 including significance value of 0.228. Thus from the results we can conclude that there exists no relationship between age and profitability of insurance companies in Ethiopia. Hence this result is not consistent with the hypothesis of the study. A research previously conducted was also resulted in inconsistent results some indicated that age is negatively related with profitability. For instance Swiss Re (2008) in Egypt indicated that larger firms are found to

grow faster than smaller and younger firms found to grow faster than older firms. In contrast, Hamadan Ahamed Ali Al-Shami (2008) found no significant relation between age and profitability of insurance companies in UAE. Although the results show no statistical significance between these variables, it can be concluded that the age of a firm still explains the variation in profitability of insurance companies positively.

4.2.2 Size

The positive and significant coefficient of the size variable gives support to the economies of scale market-power hypothesis. Larger insurance companies make efficiency gains that can be captured as higher earnings due to the fact that they do not operate in very competitive markets. The regression results by different researchers indicated that there exists a positive relationship between size and profitability of firms. Swiss Re (2008) indicated that larger firms are found to grow faster than smaller firms. In addition, Hamadan Ahamed Ali Al-Shami (2008) found positive and statistical significant relation between firm size and profitability. Similarly, Hafiz Malik (2011) in his Pakistan study found that there is significantly positive association between size of the company and profitability.

Similar to most of the researchers mentioned above, in this study, the panel random effect estimation result revealed that there exist a significant and positive relationship between size and profitability of insurance companies in Ethiopia with a regression coefficients of 0.026, t-statistics of 3.936 p-value of 0.000. Hence, the variables have statistically significant positive relationship. Hence the result of the regression output is consistent with the hypothesis of the study.

4.2.3 Leverage

The regression results of the study show that there is a statistically significant negative relationship between leverage ratio of insurance companies and their profitability in Ethiopia with a regression coefficient of -0.03, t-statistics of -5.154 and p-value of 0.000. Hence, the results are consistent with the hypothesis of the study. Literatures in capital structure confirm that a firm's value will increase up to optimum point as leverage increases and then declines if leverage is further increased beyond that optimum level. Empirical evidences with regard to leverage found to be statistically significant relationship but negative. For instance Renbao Chen and Kie Ann Wong (2004) in Canada, Hamadan Ahamed Ali Al-Shami (2008) in UAE, Hifza Malik (2011) in Pakistan, Sylwester Kozak (2011) in UK found that negative but statistically significant relationship between leverage and profitability of firms.

4.2.4 Growth

Growth as measured by the percentage change in total assets is positively related with profitability of insurance companies in Ethiopia. The results of the random effect regression analysis show that there is a positive and statistically significant relationship between growth rate and profitability of insurance companies with a regression coefficient of 0.104, t-statistics of 4.746 and p-value of 0.000. Hence the results are consistent with the hypothesis of the study and correlation analysis. Insurance companies having more and more assets over the years have also better chance of being profitable for the reason that they do have internal capacity though it depends on their ability to exploit external opportunities. Empirical evidence by Naveed Ahmed et al (2011) in his investigation of Pakistan insurance companies found a positive and statistically significant relationship between growth and profitability of insurance companies.

4.2.5 Tangibility of assets

The regression results concerning tangibility of assets show that there is no statistically significant relationship between tangibility of assets and profitability of insurance companies in Ethiopia. The regression coefficient is 0.067, t-statistics 4.746 and p-value of 0.163. Hence the result is inconsistent with the hypothesis of the study but consistent with the correlation analysis. Although the statistical results reveal no significant relationship between the variables, it can be concluded that tangibility of assets still positively explains profitability of insurance companies in Ethiopia. Regarding the effect of tangibility of assets of companies on their financial performance, empirical evidences by Hafiz Malik (2011) in Pakistan revealed that there exists a positive and significant relationship between tangibility of assets and profitability of insurance companies and argued that the highest the level of fixed assets formation, the larger the insurance company is. Hence tangibility of assets is also part of the size of the company.

4.2.6 Liquidity

For an insurer, cash flow (mainly premium and investment income) and liquidation of assets are the main sources of liquidity Renbao Chen and Kie Ann Wong (2004) the larger the liquidity ratio shows more current assets are held which would have been invested in profitable business hence the more the liquidity ratio the lower is the profitability. Empirical evidences by Chen and Wong (2004) in Canada examined that, liquidity is the important determinants of financial health of insurance companies with a negative relationship. Similarly, Hakim and Neaime (2005) observed that liquidity negatively related with profitability. Valentina Flamini, Calvin McDonald, and Liliana Schumacher (2009) in Sub-Saharan countries found significant but negative relationship between bank profitability and

liquidity. Consistent to the above empirical studies, the results of regression analysis show that there exist a negative and somewhat statistically significant relation between liquidity and profitability of insurance companies in Ethiopia. The results of the random effect regression of panel evidence over nine insurance companies for nine years revealed regression coefficient of -0.012, t-statistics of -1.758 and p-value of 0.083. Hence at 10% significance level, liquidity ratio negatively explains profitability of insurance companies and it is consistent with the hypothesis of the study.

4.2.7 Volume of Capital

From model three above as expected, it is indicated that positive relationship between capital strength and profitability. The coefficient of the VOC is 0.024 and is relatively high even at 1% significant level, showing that an increase in volume of capital will result in increased profitability. This is in line with the expectation as an insurance company with a sound capital position is able to pursue business opportunities more effectively and has more time and flexibility to deal with problems arising from unexpected losses, thus achieving increased profitability. Hence finding in this study is consistent with previous studies. For instance, Hamadin Ahamed Ali-Alshami (2008) in UAE, Hafiz Malik (2011) in Pakistan Yuqi Li (2007) in UK and indicates that well capitalized insurance companies face lower costs of going bankrupt, which reduces their cost of funding or that they have lower needs for external funding which results in higher profitability.

- Regression coefficient of size at 0.0261 indicates that when firm size increases by 1% the ROA will increase by 2.6%.
- Regression coefficient of Lev at -0.0304 indicates that when leverage increases by 1% the ROA will decrease by 3.04%.
- Regression coefficient of GR at 0.1039 indicates that when firm growth increases by 1% the ROA will increase by 10.39%
- Regression results of Volume of capital indicates that as volume of capital increase by 1% ROA will also increase by 2.4%
- The regression coefficient of LQ at -0.012 indicates that when liquidity ratio increases by 1% the ROA will decrease by 1.12%.
- Regression coefficient of LAG at 0.1813 indicates that the one period lagged profitability and 0.1813 measures the speed of mean reversion. This value lies between 0 and 1 indicates that profits are persistent. The magnitude and significance of the coefficient on the lagged ROA confirm the dynamic nature of the model, and show a moderate persistence in return. The coefficient estimate of 0.18 suggests the existence of market power in the Ethiopian insurance sector, but indicates profits tend to adjust fairly fast to their average level. This result is consistent with those reported in Athanasoglou, et al. (2005) Flamini et.al (2009) in Sub-Saharan countries. The lag coefficient on the one-year lagged ROA is positive and highly significant, which confirms the positive conditional serial correlation in returns that found in this model.

To summarize, this chapter presents the results of the hypotheses of the independent variables tested on the dependent variable (ROA). The equation applied in this study is examined against multi-collinearity.

Empirical results provide detailed discussions on sample descriptive statistics and mean comparison between ROA and independent variables (age, size, leverage, growth, volume of capital, tangibility of assets and liquidity ratio) followed by correlation analysis to determine the relationship between dependent variable and towards independent variables. Regression analysis is also used to describe the profitability among insurance companies.

ROA is affected positively by firm size, volume of capital and growth but negatively by leverage and liquidity. Therefore, growth, leverage, size, volume of capital and liquidity are identified as determinant factors of profitability in insurance companies of Ethiopia. The findings of this study contribute towards a better understanding of financial performance in Ethiopian insurance companies. ROA and seven other variables that represent age, size, leverage, growth, volume of capital tangibility and liquidity were developed to test which factors best describes profitability of Ethiopian insurance companies.

The results show that growth, leverage, volume of capital, size and liquidity are the most important factors affecting profitability of insurance companies in Ethiopia respectively in order of their degree of influence. The results show that there is no relationship between profitability and age of company of the Ethiopian insurance companies. Similarly, the results show that there exists no relationship between tangibility of assets and profitability of insurance companies in Ethiopia.

Chapter Five: Conclusion and Implications of the Results

5.1 Conclusion

The objective of this study is to examine the internal factors affecting profitability of insurance companies as measured by ROA. This study used secondary data during the period 2003-2011 and the sample of 9 insurance companies that were operating.

Descriptive statistics and regression analysis were performed to describe the profitability of insurance companies among insurance companies.

This chapter presents a conclusion of the study by summarizing the study's findings and discussing their implications, and providing suggestions for future research.

The study investigates the impact of firm level characteristics on performance of the insurance sector of Ethiopia over the period of nine years from 2003 to 2011. For this purpose, size, volume of capital, age, leverage, liquidity, growth and tangibility are selected as explanatory variables while ROA is taken as dependent variable. The results of regression analysis reveal that leverage, size, volume of capital, growth and liquidity are most important determinant of performance of life insurance sector whereas ROA has statistically insignificant relationship with, age and tangibility.

5.2 Implications of the Results

- The adjusted value of R square (0.43) indicates that performance of insurance companies is nearly 43% dependent on independent variables i.e. size, leverage, growth, volume of capital and liquidity. Therefore, it implies that internal factors are important determinants of profitability of insurance companies in Ethiopia to the extent on average 43% of the

change in profitability of the companies can be explained by the selected internal characteristics.

- Negative coefficient of variable liquidity specifies the negative relationship. However, the relationship between performance and liquidity is statistically significant. Hence, insurance companies having more liquid assets should find any available investment alternative. As the findings shows that liquidity and do have negative impact on profitability, and it provides further implication on the effective risk management practices in the companies.
- The coefficient of variable size is positive and statistically significant at 1% level. This predicts that performance of large size insurance companies are better than small size companies. The positive relationship between size and ROA implies that size is used to capture the fact that larger insurance companies are better placed than smaller once in harnessing economies of scale in transactions and enjoy a higher level of profits.
- The beta values of explanatory variables tangibility and age are with a positive coefficient sign. However, tangibility and liquidity are not statistically significant with the large p-values. Therefore, tangibility and age are not considered as powerful explanatory variables to define the performance of insurance companies in Ethiopia over nine years.
- Leverage is negatively and significantly related with the performance of the insurance companies. This predicts that the performances of highly levered Ethiopian insurance companies are going to be less profitable and implies equity financing is better than debt financing in Ethiopian insurance companies. The leverage ratio level of the insurance companies affects their profitability negatively, which supports the hypothesis formulated

for the study. Thus, from the result it is implied that highly profitable insurance companies are more likely relied on internally generated funds and equity capital than debt capital as the source of financing.

- The positive and significant relationship between volume of capital and profitability of insurance companies in Ethiopia implies that a sound capital position is able to pursue business opportunities more effectively and has more time and flexibility to deal with problems arising from unexpected losses, thus achieving increased profitability. Hence indicates that well capitalized insurance companies face lower costs of going bankrupt, which reduces their cost of funding or that they have lower needs for external funding which results in higher profitability.
- The positive and statistical significant relation between growth rate and profitability of insurance companies in Ethiopia implies that insurance companies with high rate of growth in terms of their total assets are also in a better position of being profitable.

5.3 Recommendations for future research

This work is an attempt to study the internal factors affecting profitability of the insurance sector in Ethiopia. Given the key role that the sector plays in the economy of the country, future research should focus on both internal and external factors that would provide better insights for both management and regulatory bodies. Other issues that could be covered in future research include whether insurance companies effectively and efficiently indemnify risks and intermediate savings for the provision of risk to the other sectors in the economy, or whether they allocate resources and manage risks efficiently hence factors affecting profitability of insurance companies and their implications in risk management practices. These are important considerations for insurance development in Ethiopia.

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Appendices

Appendix 1 Profitability of selected insurance companies (ROA)

	AIC	AWIC	EIC	GIC	NIC	NICE	NLIC	NYIC	UNIC
2002	0.080275	0.134543	0.072501	0.11427	-0.00047	0.035684	0.111769	0.132854	0.068388
2003	0.010684	0.077222	0.071182	0.030963	0.069356	0.047012	0.095333	0.097525	0.074011
2004	-0.00361	0.081567	0.078767	0.033329	-0.10886	0.024431	0.014806	0.082086	-0.04871
2005	0.069724	0.077288	0.082114	0.040445	0.091934	-0.04715	0.039079	0.090256	-0.01355
2006	0.019081	0.056011	0.070755	0.04319	0.046689	0.062004	0.034122	0.093177	0.091099
2007	0.034645	0.044162	0.07209	0.054427	0.075693	0.084913	0.021518	0.092597	0.0896
2008	0.043351	0.062898	0.072601	0.013966	0.103427	0.057178	-0.01439	0.063087	0.154931
2009	0.052638	0.047047	0.077455	0.054114	0.098719	0.046253	0.01973	0.121474	0.041224
2010	0.04799	0.099724	0.092721	0.080492	0.093889	0.058833	0.126543	0.121801	0.130664
2010	0.080275	0.072637	0.087805	0.036416	0.084496	0.002904	0.0902	0.137996	0.076476

Appendix 2 Hausman Test for panel regression

Correlated Random Effects - Hausman Test

Equation: EQUATION4

Test cross-section and period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	2.455350	8	0.9638
Period random	0.538037	8	0.9998
Cross-section and period random	2.909185	7	0.8933

Appendix 3: Random Effects Regression out put using E-views

Dependent Variable: ROA

Method: Panel EGLS (Two-way random effects)

Date: 05/22/12 Time: 02:07

Sample: 2003 2011

Periods included: 9

Cross-sections included: 9

Total panel (balanced) observations: 81

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.394827	0.115616	-3.414996	0.0010
LAG	0.181339	0.090731	1.998654	0.0494
AGE	0.001047	0.000861	1.215062	0.2283
SIZE	0.026134	0.006640	3.935510	0.0002
LEV	-0.030357	0.005890	-5.154297	0.0000
GR	0.103884	0.021890	4.745643	0.0000
TA	0.067291	0.047764	1.408838	0.1631
LQ	-0.011693	0.006650	-1.758351	0.0829

Weighted Statistics

R-squared	0.487931	Mean dependent var	0.060254
Adjusted R-squared	0.438829	S.D. dependent var	0.042579
S.E. of regression	0.031897	Sum squared resid	0.074270
F-statistic	9.936997	Durbin-Watson stat	1.894614
Prob(F-statistic)	0.000000		

Appendix 4: Table designed for collecting raw Panel financial data to be used in regression analysis.

Company's Name: _____
Year of Establishment: _____

Fiscal Year	Amount in ETB							
	Total Current Asset	Total Fixed Asset	Total asset	Short- term liability	Long-term liability	Total liability	Total capital	NIBT
2002								
2003								
2004								
2005								
2006								
2007								
2008								
2009								
2010								
2011								

Appendix 5: Descriptive statistics

[illegible]

Appendix 6: Correlation statistics

Covariance Analysis: Ordinary									
Date: 05/13/12 Time: 11:44									
Sample: 2003 2011									
Included observations: 81									
Correlation									
t-Statistic									
Probability									
Observations	ROA	LAG	AGE	SIZE	LEV	GR	VOC	TA	LQ
ROA	1.000000								

	81								
LAG	0.259071*	1.000000							
	2.384070	-----							
	0.0195	-----							
	81	81							
AGE	0.222132	0.155454	1.000000						
	2.024941	1.398705	-----						
	0.1463	0.1658	-----						
	81	81	81						
SIZE	0.356744**	0.254125**	0.478159*	1.000000					
	3.394139	2.335377	11.01225	-----					
	0.0011	0.0221	0.0000	-----					
	81	81	81	81					
LEV	-0.044616*	-0.038359	0.575873*	0.672534*	1.000000				
	-0.396952	-0.341189	6.260835	8.077128	-----				
	0.0025	0.7339	0.0000	0.0000	-----				
	81	81	81	81	81				
GR	0.257726**	-0.285424*	0.19501***	-0.054147	0.076373	1.000000			
	2.370810	-2.647018	-1.767241	-0.481976	0.680810	-----			
	0.0202	0.0098	0.0810	0.6312	0.4980	-----			
	81	81	81	81	81	81			
VOC	0.436393*	0.316130*	0.743681*	0.971563*	0.484409*	-0.093431	1.000000		
	4.310882	2.961717	9.887254	36.47021	4.921488	-0.834080	-----		
	0.0000	0.0040	0.0000	0.0000	0.0000	0.4068	-----		
	81	81	81	81	81	81	81		
TA	0.090525	-0.032067	-0.092996	-0.182436	-0.033366	-0.027489	-0.217501	1.000000	
	0.807921	-0.285161	-0.830165	-1.649203	-0.296728	-0.244424	1.980604**	-----	
	0.4216	0.7763	0.4089	0.1031	0.7675	0.8075	0.0511	-----	
	81	81	81	81	81	81	81	81	
LQ	-0.05683***	0.099973	0.060831	-0.083522	-0.312444*	0.020878	0.023037	-0.435031*	1.000000
	-0.505969	0.893051	0.541683	-0.744961	-2.923422	0.185604	0.204808	-4.294284	-----
	0.06143	0.3745	0.5896	0.4585	0.0045	0.8532	0.8382	0.0000	-----
	81	81	81	81	81	81	81	81	81

*Correlation is significant at 1% level
** Correlation is significant at 5% level
*** Correlation is significant at 10% level

Appendix 7: Panel unit root test on ROA

Panel unit root test: Summary
Series: ROA
Date: 05/14/12 Time: 07:05
Sample: 2003 2011
Exogenous variables: Individual effects
User specified lags at: 1
Newey-West bandwidth selection using Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross- sections
Null: Unit root (assumes common unit root process)			
Levin, Lin & Chu t*	-7.36522	0.0000	9