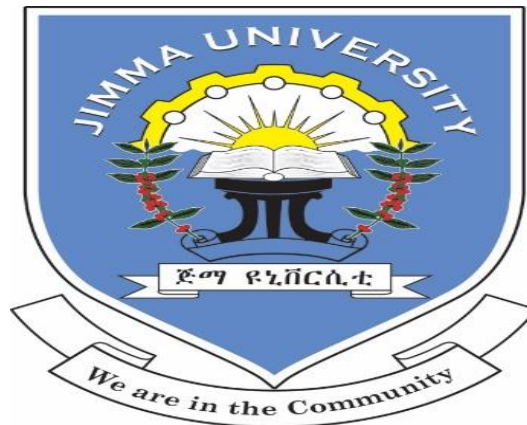


Examining the Financial Distress Condition and its Determinant Factors: A Study on Selected Insurance Companies in Ethiopia.

A Thesis Submitted to the School of Graduate Studies of Jimma University in Partial Fulfillment of the Requirements for the Award of the Degree of Master of Science in Accounting and Finance

**BY:
ENYEW MULU ZELIE**



**JIMMA UNIVERSITY
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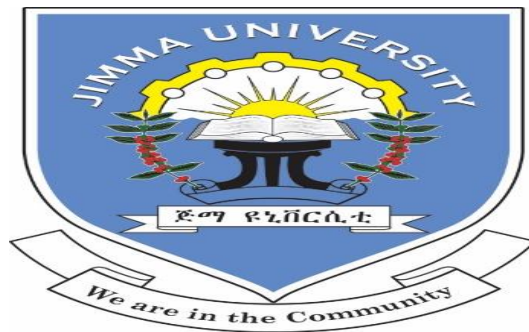
**JUNE, 2017
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**Under the Guidance of
Mr. Tezera Selamu.**

**And
Mr. Mohammed Sultan.**



**JIMMA UNIVERSITY
MSc. IN ACCOUNTING AND FINANCE PROGRAM**

A Thesis Submitted to the School of Graduate Studies of Jimma University in Partial Fulfillment of the Requirements for the Award of the Degree of Master of Science in Accounting and Finance

**JUNE, 2017
JIMMA, ETHIOPIA**

DECLARATION

I hereby declare that this thesis entitled “Examining the Financial Distress and Its Determinant Factors: A Study on Selected Insurance Companies in Ethiopia”, has been carried out by me under the guidance and supervision of Mr. Tezera Selamu and Mr. Muhammed Sultan.

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

Researcher’s Name

Date

Signature

CERTIFICATE

This is to certify that the thesis entitles “Examining the Financial Distress and Its Determinant Factors: A Study on Selected Insurance Companies in Ethiopia”, submitted to Jimma University for the award of the degree of Master of Science in Accounting and Finance and is a record of bona fide research work carried out by Mr. Enyew Mulu Zelig, under our guidance and supervision.

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

Main Advisor’s Name

Date

Signature

Co-Advisor’s Name

Date

Signature

Abstract

The financial health status of business firms and the effect of firm characteristics on it are taught to be very important issues in the current business environment. This study empirically examines the financial distress condition and its firm specific determinant factors (Profitability, Liquidity, Efficiency, Leverage and firm size) in the Ethiopian insurance industry. The study is based on a ten year panel data ranging from 2007 to 2016 GC obtained from a sample of nine insurance companies. The study employed the Altman's Z''-score model to test the financial health condition of the sampled insurance companies and the pooled OLS regression to determine the relationship between the explanatory variables and financial health condition. The result of Altman's Z''-score analysis shows that the financial health condition of the insurers under study was not in a safe condition and it shows continuous fluctuations. On the other hand, the results obtained from the pooled OLS regression analysis shows that profitability and liquidity of insurers have statistically significant positive effect on their financial distress condition. Whereas leverage has a statistically significant negative effect on the financial distress condition of insurance companies. In contrast, efficiency and firm size have no statistically significant effect on the financial health condition of insurance companies.

Key Words: *Altman's Z''-Score, Financial distress, Pooled OLS.*

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ACRONYMS

OLS - Ordinary least squares

VIF - Variance inflation factor

Prof - Profitability

Eff - Efficiency

Lnsiz - Natural logarithm of size

Lev - Leverage

Liq - liquidity

UNIC - United Insurance Company

NICE - National Insurance Company of Ethiopia

EIC - Ethiopian Insurance Corporation

CHAPTER ONE

1. INTRODUCTION

1.1 Background of the Study

Various scholars have given different definitions for financial distress. According to Andrade & Kaplan (1998), financial distress is a condition in which a company does not have the capacity to fulfill its liabilities to the third parties. In this case, a company is unable to fulfill its debt obligations to third parties, which leads to either restructuring or bankruptcy. Financial distress can be defined as “the likelihood of bankruptcy, which depends on the level of liquid assets as well as the availability of credit” (Hendel, 1996). “Financial distress is a situation where a firm’s operating cash flows are insufficient to cover current obligations, such as trade credits or interest payments, and the firm is obliged to take remedial action” (Wruck, 1990).

There are many factors that cause financial distress and bankruptcy. These causes can be varied when we are taking into consideration the instability, vulnerability, and ultimately the deep-rooted structural change taking place in the world economy, (Outecheva, 2007). Past studies that are conducted by Andrade and Kaplan (1998); Asquith et al. (1994); Theodossiou et al. (1996) and Whitaker (1999), have provided some empirical evidence that financial distress arises in many cases, such as endogenous risks, miss-management, high leverage level, and an inefficient operating structures. A very low level of liquidity and negative cash flows combined with high leverage leads to financial distress (Outecheva, 2007).

On condition that liquidity is not maintained, highly leveraged firms may be unable to renegotiate their debt arrangements, rather they may go for restructuring, acquisition, merger or liquidation. When a firm have reached a certain degree of leverage but do not perform to their business plans, financial distress can occur even in a growing economic situation. Altman & Hotchkiss (2005) suggests that high levels of leverage and increasing volatility make equity value vulnerable and may cause a decline in the enterprise value which rapidly impair equity.

Firms failing under financial distress will face a variety of events, such as dividend reductions, losses, plant closings, layoffs, reduced stock prices, CEO resignations and so on. A financially distressed firm may face two possible conflicts. The first one is cash shortage on the ‘assets’ side of the balance sheet and the second one is debt overhanging in the ‘liabilities’ side of the balance sheet. In both circumstances, we will get the same result which is the insufficiency of cash flows to cover current obligations. This condition forces the distressed firms into negotiations with their creditors about the postponement of their debt repayment (Charalambakis, Espenlaub & Garrett, 2008). When the firms become financially distressed, they are confronted with the problem of raising additional capital in order to finance the related costs.

The costs of financial distress to the firm may arise from the following sources.

1. Lose customers, valuable suppliers, and key employees, market share to their competitors;
2. Financial penalties for violating debt agreements, accelerated debt repayment, operational inflexibility, and managerial time and resources spent on negotiations with the lenders.
3. Missing valuable projects due to costly external financing (Purnanandam, 2007)

Many theoretical and empirical literature show that profitability, liquidity, efficiency, leverage and firm size are the major factors that determine the financial distress position of a company (Altman & Hotchkiss, 2006; Pranowo, Azam, chain,& Nuryartono, 2010; Ogawa, 2003; Cheluget, 2014). But, in Ethiopia, the studies made on the subject of financial distress are very limited. In addition, the existing studies are mainly focused on the banking and manufacturing industry. So this study adds value to the existing literature about financial distress concentrating on the insurance business in Ethiopia.

1.2. Background of Insurance Companies in Ethiopia

Financial institutions are essential instruments of economic growth for any economy. The major financial institutions operating in Ethiopia are insurance companies, banks, and microfinance institutions. The Ethiopian financial sector in general and insurance companies, in particular, have shown a remarkable progress in terms of number of companies and type and quality of financial services. This sector critically helps the country's economy through creating employment opportunities and supporting the activities of different business enterprises.

In Ethiopia, the history of insurance service is dated back to the starting of the modern form of banking service which was introduced in 1905. During that time, Emperor Menelik II and a representative of the British-owned National Bank of Egypt was agreed to open a new bank in Ethiopia. Likewise, modern insurance service, which was introduced by foreigners, mark out their origin as far back as 1905. It was started when the Bank of Abyssinia began to handle fire and marine insurance on behalf of a foreign insurance company. According to a survey made in 1954, there were nine insurance companies that were operating in the country. Except for the 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 in the country was increased to thirty-three. At that moment insurance business, like any business undertaking was classified as trade and was administered by the provisions of the commercial code of Ethiopia. The first significant event that was observed in the Ethiopian insurance business was the issuance of Proclamation No. 281/1970, which was issued to provide for the control and regulation of insurance business in the country. Consequently, it created an insurance council and an insurance controller's office. Immediately in the year after the issuance of the law, the insurance controller's office licensed fifteen domestic insurance companies, thirty-six agents, seven brokers, three actuaries and eleven assessors in accordance with the provisions of the proclamation (Hailu Zeleke, 2007).

Accordingly, as stated by the insurance controller's office, the law required an insurer to be a domestic company whose minimum share capital (fully subscribed) not to be less than

Birr 400,000 for a general insurance business, Birr 600,000 for long-term insurance business and Birr 1,000,000 to do both long-term and general insurance business. As per the proclamation '**domestic company**' is defined 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”.

In 1974, (four years after the enactment of the proclamation), the military government came to power and put an end to all private enterprises. All insurance companies were nationalized and from January 1, 1975, onwards the government took over the full ownership and control of these companies and merged them into a single unit called “Ethiopian Insurance Corporation (EIC)”.

After the change of the military government in 1991, the proclamation for the licensing and supervision of insurance business signaled the beginning of a new era. Immediately after the enactment of a proclamation in 1994, private insurance companies began to increase. As of January 2016, there are **17** public and private owned insurance companies operating in Ethiopia (National Bank of Ethiopia 2016). The list of those insurance companies is indicated in the following table.

Table 1.1. List of insurance companies operating in Ethiopia as of January 2016

S/No.	Insurance Company	Type	Year of Establishment
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 and General Insurance S.C	Life & General	2008
12	Oromia Insurance Company S.C	General	2009
13	Abay Insurance Company	General	2010
14	Birhan Insurance company S.C	General	2011
15	Lucy insurance share company	General	2012
16	Tsehay Insurance S.C.	General	2012
17	Buna insurance company	General	2013

Source: National Bank of Ethiopia, 2016

1.3. Statement of the Problem

It is obvious that without the insurance sector, the whole economy can be adversely affected (International Accounting Standards Board, 2007). The insurance industry is an essential part of the country's financial sector and its benefits cannot be underestimated. If this key sector stayed missing, the consequence on the economy would be shocking. The Insurance sector offers protection covers to the assets which are used in the operation other sectors of the economy. Provision of insurance covers for investors' assets facilitates positive economic growth and favorable investment climate within the economy. Insurances are also important sources of funds through their pooling system. This is an addition to their basic role of providing protections to the insured against financial loss as well as being a source of security (Rand, 2004). However, the failure of a firm in this sector may lead to economic crisis. When companies become financially distressed, they will have an effect on the economy and negatively affect the economic stability of other sectors in a country (Kana, 2004).

Financial difficulties in Ethiopian companies had occurred during the global financial crisis happened in 2008, raw material price blow in 2009, and Ethiopian currency devaluation in 2010, (Andualem, 2011). Holland Car and Access Real Estate are among the companies who faced severe financial distress in Ethiopia. Since insurance companies are closely connected and serve in almost all sectors of the economy, failure of firms in one sector will spread to them. Financial institutions including insurance companies are very sensitive to factors that affect their financial health. So there should be a continuous test of their financial and operational conditions.

The current trend in Ethiopian insurance industry is that it is showing progress in performance and almost all insurers are reporting positive accounting profit. However, being profitable does not assure the financial healthiness of the companies, and it does not necessarily mean that all profitable companies are healthy enough to fulfill their short and long term obligations. This is because of the fact that not all of the profit can be used as source of funds or be accessible for paying its obligations (Pranowo, et al., 2010)

Andualem (2011) have conducted a research entitled "Financial Distress and Its Determinants in Selected Beverage and Metal Manufacturing Firms in Ethiopia" and found

that firm age, profitability, firm efficiency and liquidity have positive and significant influences to Debt Service Coverage as a proxy of financial distress. Whereas, leverage has a negative and significant relation with Debt Service Coverage.

Yohannes (2014) have studied the determinants of financial distress in the case of manufacturing share companies in Addis Ababa-Ethiopia and found that solvability, economic growth, firm size, and liquidity have a positive and significant impact on financial distress measured by Debt Service Coverage. But, leverage has a negative and significant relation with financial distress. Other variables such as profitability, efficiency and inflation have no significant impact on financial distress condition of manufacturing share companies in Addis Ababa-Ethiopia.

Ephrem (2015) examined the determinants of financial distress conditions of private commercial banks in Ethiopia using ZETA score as a proxy for financial distress. The study has found that capital to loan ratio, net interest income to total revenue ratio have statistically significant and positive effect on the financial health condition of banks. On the other hand, nonperforming loan ratio has a statically significant negative influence on the financial health of the banks.

Cheluget (2014) have studied the determinants of financial distress in insurance companies in Kenya using ZETA score as a proxy for financial distress measurement. The study concluded that there is a significant and positive relationship between the independent variables (profitability, liquidity, efficiency, and leverage) and the dependent variable (financial distress) of insurance companies in Kenya.

Up to the best knowledge of the researcher, there is no previous study made on the determinants of financial distress in case of Ethiopian insurance companies. In addition, most previous studies conducted in other industries of Ethiopia have used debt service coverage, a univariate analysis technique which uses a single financial ratio, operating income/ total debt service costs, as a proxy for measuring financial distress. In this Study, ZETA analysis, a multivariate analysis technique is used. Edward I. Altman in 1968, was the first researcher to develop a multivariate statistical model to discriminate failure from non-failure firms using five financial ratios. In this study, the researcher used the Altmans' Z'-Score model (ZETA score) as a proxy for measuring financial distress.

1.4 Objectives of the Study

1.4.1. General Objective

The general objective of this study is to assess the financial health condition and its determinant factors in the case of Ethiopian insurance companies.

1.4.2. Specific Objectives

In this study, the researcher addressed the following specific objectives.

1. To examine the financial distress condition of insurance companies in Ethiopia.
2. To examine the effect of profitability on financial distress condition.
3. To examine the effect of liquidity on financial distress condition.
4. To examine the effect of efficiency on financial distress condition.
5. To examine the effect of leverage on financial distress condition.
6. To examine the effect of firm size on financial distress condition.

1.5. Hypotheses of the Study

In order to achieve the aforementioned specific objectives, the study has the following hypotheses.

Ha1: The financial health condition of Ethiopian insurance companies is in a healthy and stable condition.

Ha2: Profitability has a statistically significant positive effect on financial distress condition of Ethiopian insurance companies.

Ha3: Liquidity has a statistically significant positive effect on financial distress condition of Ethiopian insurance companies.

Ha4: Efficiency has a statistically significant positive effect on financial distress condition of Ethiopian insurance companies.

Ha5: Leverage has a statistically significant negative effect on financial distress condition of Ethiopian insurance companies.

Ha6: Firm size has a statistically significant positive effect on financial distress condition of Ethiopian insurance companies.

1.6. Significance of the Study

The importance of this study mainly arises from the fact that the insurance sector plays a vital role in enhancing the country's economy through providing critical services for its customers. So primarily this study contribute to the companies under study and regulatory authorities by giving information about their financial health condition and the areas which are more susceptible to cause financial distress. These ideas will be used to manage and supervise their operations. Since there is no other study considered on the financial distress and its determinants in Ethiopian insurance companies, this study is a base for future studies on the same subject matter. In addition, the study will contribute to enhancing the existing understanding of the determinants of financial distress in the insurance business.

1.7. Scope and Limitation of the Study

Although there are other types financial institutions in the country, this study focused only on the financial health condition and its determinants in insurance companies in Ethiopia. Moreover, the scope of the study confined purely on the quantitative measure of financial distress and its determinants in insurance companies in Ethiopia. Among the registered insurance companies in the country, those which have at least ten years of financial data ranging from 2007 to 2016 GC, the latest ten report periods, are included under the sample. So the sample of this study did not include companies having less than ten years of existence. In addition, the study has considered only the firm-specific factors that determine the financial health condition of insurance companies under study. This is because macro variables are common to all sectors and they are external to the firms under study, on which they have no control.

1.8. Organization of the Paper

This thesis is composed of five chapters. The first chapter is the introductory part which deals with the background of the study, the background of insurance companies in Ethiopia, statement of the problem, the general and specific objectives of the study, hypotheses of the study, significance of the study and scope and limitation of the study. The second chapter is about the review of related literature. The literature about the theoretical and empirical framework of financial distress are included in this part. The third chapter deals with the research methodology used to undertake the study. The fourth chapter is about data analysis, results, and discussions which include the descriptive statistics, regression analysis and discussion of the results obtained from these analyses. The last chapter comprises the conclusions and recommendations.

CHAPTER TWO

2. REVIEW OF RELATED LITERATURE

2.1. Theoretical and Conceptual Literature

2.1.1. Introduction

Currently, the business environment is becoming highly competitive. Competition and other business matters will have the outcome of success or failure. In an economic viewpoint, firms that earn adequate returns on their investments are said to be successful. Whereas firms that have continuous inadequate returns are said to be failed. In a financial context, business failure is viewed as technical insolvency, legal insolvency or bankruptcy. Technical insolvency occurs when the firm is unable to meet its current obligations as they come due. Legal insolvency occurs when the recorded value of the firm's assets is less than the recorded value of its liabilities. While bankruptcy occurs when the firm is unable to pay its debts and files a bankruptcy petition in accordance with federal bankruptcy laws (Moyer, 2006).

2.1.2. Meaning and Causes of Business Failure

Business failure is a situation of termination or interruption of business activity due to its inability to generate sufficient revenue to cover its expenses and debt, that results in a loss to its creditors. There are many causes of business failure. These include economic factors, financial distress (the primary cause), lack of experience of the owners and management of the business and maturity of the business. When businesses face problems like inadequate sales and large operating expenses, they frequently encounter cash flow problems as well. As a result of cash flow problems businesses increase their short-term borrowings. If the cash flow problem persists, the business may not be able to meet its obligations to its creditors. Many of these features of failing firms were measured by the financial ratios used in the Altman bankruptcy prediction model (Moyer, 2006).

The intrinsic value of a company is the present value of its expected future cash flows. There are many factors that can reduce this value. These factors include:

- General economic conditions;
- Industry trends;

- Company-specific problems such as shifting consumer tastes, obsolescent technology, and changing demographics in existing retail locations;
- Financial factors, such as too much debt and unexpected increases in interest rates.

The importance of these different factors varies over time, and most business failures occur because of a number of factors combined to make the business unsustainable. Most case studies show that financial difficulties are usually the result of a series of errors, misjudgments, and interrelated weaknesses that can be attributed directly or indirectly to management (Brigham, 2011).

2.1.3. Stages of Business Failure

According to Weitzel and Jonsson (2009), business decline has the following five stages.

- I. **The blinded stage:** in this stage, the managers of the declining company do not recognize the threat to long-term survival.
- II. **The inaction stage:** in this stage, the managers have detected the threats but they do nothing about it by expecting that things will become better.
- III. **The faulty action stage:** in this stage managers distinguish that something must be done but take indicators rather than the fundamental causes. There is a temptation to try proven remedies to old solutions which have worked in the past or to try to do more of what has caused the problem.
- IV. **The crisis stage:** in this stage business financial distress become severe and the business is now in crisis. Managers are confused on what to do next because they have tried the obvious remedies and the money is running out.
- V. **Dissolution and collapse:** in this stage the business pass the point of no return and failure becomes unavoidable.

2.1.4. Meaning of Financial Distress

Financial distress is one of the major causes of business failure. It can be defined as a condition of being in severe financial difficulties, especially being close to bankruptcy. The inability to meet or having difficulty in paying off its financial obligations to its creditors (Chang-e, 2006). Financial is the likelihood of bankruptcy, which depends on the level of liquid assets as well as on the availability of credit (Hendel, 1996). Financial distress is a situation where a firm's operating cash flows are insufficient to cover current obligations, such as trade credits or interest payments, and the firm is obliged to take remedial action (Wruck, 1990).

According to Brigham (2011), financial distress arises when a firm is impotent to meet scheduled payments or when cash flow predictions indicate that it will soon be unable to meet its payments. Financial distress and failure is the result of continuing losses which cause a lop-sided increase in the liabilities accompanied by a reduction in the value of assets (Gestel et al., 2006).

According to Baldwin and Scott (1983), when a firm's business worsens to the point where it cannot pay off its financial obligations, the firm is said to be financially distressed. They have suggested that the first signals of financial distress are typically violations of the terms of debt covenants and omission or decrease of dividends payments.

Financial distress manifests through events such as; bond default, bankruptcy, bank account was overdrawn, or default of a preferred stock dividend (Beaver, 1966). Lau (1987), classified the state of financial distress into five processes. These are;

1. State 0: financial stability;
2. State 1: reducing dividend payments more than 40% below previous year;
3. State 2: technical default and default on loan payments;
4. State 3: protection under the Bankruptcy Act; and
5. State 4: bankruptcy and insolvency.

2.1.5. Theories of Financial Distress

There are numerous theories which can be used to summarize the basic characteristics of a firm facing financial distress, to select the predictors to the models; and to explain the functional form between these predictors. These are; Liquid Asset Theory, Gambler's Ruin Theory, Liquidity and Profitability Theory, Cash Management Theory, Balance Sheet Decomposition Measure, and Credit Risk Theory (Cheluget, 2014).

A. Liquid Asset Theory

This theory can best be described within the context of a cash-flow. Beaver (1966) put that a firm is regarded as a reservoir of liquid assets. This liquid asset reserve is supplied by the inflows and drained by the outflows of liquid assets. The reserve is used as a buffer against deviations in the flows of assets. The solvency of the firm can be demarcated in terms of the possibility that the reservoir will be drained at which point the firm will be impotent to pay its current obligations as they become mature and this may result in failure.

This theory is based on the concept that net cash flows relative to current liabilities should be the primary standard to be used to describe a company's financial distress condition. Firms which have positive cash flows are able to increase their capital and borrow from the capital market, whereas firms which have negative or inadequate cash inflow are unable to borrow from the capital market. Therefore they face the risk of default. According to this theory, a firm is anticipated to go bankrupt whenever the current year's profit or net cash flow is negative or less than the level of debt obligations (Scott, 1981). This situation is called technical insolvency.

B. Liquidity and Profitability Theory

According to this theory when the firm's liquidity and profitability indicators are good, it is considered as healthy and vice versa. A positive and high level of these two indicators shows a lower risk of bankruptcy.

This theory suggests that a firm can fail even though its profitability is good. If the firm's growth rate is significantly greater than the internal rate of return, its revenue flow can be inadequate to finance expenditures and the firm is unable to pay its obligations if it is highly indebted. The firm's profitability should be greater than the company's growth rate.

C. Balance Sheet Decomposition Measure (Entropy Theory)

One way of identifying firms' financial distress is a cautious look at the major changes happening in their balance sheets (Aziz & Dar, 2006).

If a firm's balance sheet shows significant changes in their composition of assets and liabilities over a reasonable period of time, it is more likely that the firms are unable to maintain the equilibrium state. Since these changes are likely to become uncontrollable in future, we can anticipate financial distress in these firms (Monti & Moriano, 2010).

D. Gambler's Ruin Theory

The basic idea of this theory relates to the game of a gambler. A gambler usually bets with an arbitrary sum of money with some probabilities of gain and loss. The game would last until the gambler loses all of his money. In the context of a firm's failure, it would continue to operate until its net worth becomes zero, the point where it would become bankrupt (Espen, 1999).

The firm would experience either positive or negative cash flow over a number of periods. There is one possible composite possibility that cash flow will be permanently negative. Such a circumstances would lead the firm to declare bankruptcy, as it becomes out of cash (Aziz & Dar, 2006). Hence, under this approach, the firm remains solvent as long as its net worth is greater than zero.

E. Cash Management Theory

This theory is concerned with the managing of cash inflows and outflows of the firm through financing deficit or investing surplus cash. The management of cash balances is the most important concern of each firm. This is because it is challenging to predict cash flows precisely, particularly the inflows, and there is no perfect concurrence between cash inflows and outflows. An imbalance between cash inflows and outflows would signal the failure of cash management function of the firm. Persistence of such imbalance may eventually cause financial distress to the firm and, hence, business failure (Aziz & Dar, 2006).

F. Credit Risk Theories

Credit risk is a risk that a debtor will fail to pay back an amount owed to the creditor. Credit risk includes all of the counterparties and reasons for which they may default on their obligations to repay (Westgaard and Wijst, 2001). This theory suggests that credit cycles follow business cycles. A failing economy would be followed by downgrades and defaults increase. Hence default probability of a firm is a function of macroeconomic variables such as interest rates, unemployment rate, government expenses, growth rate, aggregate savings and foreign exchange rates, etc. Credit risk is, therefore, the investor's risk of having of financial or other losses arising from a debtor who does not pay off his or her dues as agreed in the contractual terms (Nyunja, 2011).

2.1.6. Major Issues Facing a Financially Distressed Firm

Financial distress starts when a firm is unable to pay scheduled payments or when cash flow predictions indicate that it will soon be unable to do so. As the situation develops, five central issues arise.

1. Is the problem a temporary cash flow problem, or is it a permanent problem caused by asset values having fallen below debt obligations?
2. If the problem is a temporary one, then an agreement with creditors that gives the firm time to recover and to satisfy everyone may be worked out. However, if basic long-run asset values have truly declined, then economic losses have occurred. In this event, who should bear the losses, and who should get whatever value remains?
3. Is the company "worth more dead than alive"? That is, would the business be more valuable if it were liquidated and sold off in pieces or if it were maintained and continued in operation?
4. Should the firm file for protection under the Bankruptcy Act, or should it try to use informal procedures? (Both reorganization and liquidation can be accomplished either informally or under the direction of a bankruptcy court.)
5. Who should control the firm while it is being liquidated or rehabilitated? Should the existing management be left in charge, or should a trustee be placed in charge of operations? (Brigham, 2011).

2.1.7. Alternatives for a Financially Distressed Firm

Once a company faces financial difficulties, the owners and managers should have to consider the alternatives that are available to fix the problems. There are two alternatives;

1. Try to resolve the difficulties with its creditors on a voluntary/ informal basis (Voluntary settlement) or,
2. Declare a formal bankruptcy through courts.

1. Informal (Voluntary Settlement)

When the financial difficulties appear to be temporary, creditors are generally eager to help the company to recover and reestablish itself on a sound financial basis. Such voluntary procedures, commonly called workouts, usually require a restructuring of the firm's debt, because current cash flows are insufficient to service the existing debt. Restructuring normally involves extension, composition and/or creditor control. In an extension, creditors agree to postpone the dates of required interest or principal payments or both. In a composition, creditors voluntarily reduce their fixed claims on the debtor by accepting a lower principal amount, by reducing the interest rate on the debt, by taking equity in exchange for debt, or by some combination of these changes. Creditor control means a committee of creditors decides about the replacement of the operations management of the firm (Brigham, 2011).

When it is evident that a firm is more valuable dead than alive, informal procedures can also be used to **liquidate** the firm. The assignment is an informal procedure for liquidating a firm, and it usually yields creditors a higher amount than they would get in a formal bankruptcy liquidation. However, assignments are feasible only if the firm is small and its affairs are not too complex. An assignment calls for title to the debtor's assets to be transferred to a third party, known as an assignee or trustee.

Then the assignee liquidates the assets through a private sale or public auction and then to distribute the proceeds among the creditors on a pro rata basis. Voluntary settlements are simple and relatively inexpensive because legal and administrative expenses are held to a minimum (Brigham, 2011).

2. Formal Settlement Through Courts

The primary purpose of the bankruptcy law is to avoid firms that are worth more as ongoing concerns being put out of business by individual creditors, who could force liquidation without regard to the effects on other parties. Formal bankruptcy proceedings are designed to protect both the firm and its creditors.

A firm is officially bankrupt when it files for bankruptcy with a federal court. If a company has filed for court protection, it means it is attempting to reorganize under the supervision of a bankruptcy court. If the problem is temporary insolvency, then the firm may use bankruptcy proceedings to gain time to solve its cash flow problems without asset seizure by its creditors. On the other hand, if the problem is a true bankruptcy, i.e., that liabilities exceed assets, then creditors can use bankruptcy procedures to stop the firm's operations, further loss of money, and thus drain assets that should go to creditors (Brigham, 2011).

If no fair and feasible reorganization can be worked out, the bankruptcy judge will order that the firm is liquidated under procedures spelled out in the bankruptcy law. A trustee will be appointed to take control over the company if the court believes existing management is incompetent or if fraud is suspected. The appointment, powers removal, replacement, liabilities, and remuneration, of the trustee is guided by Art. 994 to 1001 of the commercial code of Ethiopia. The trustee attempts to negotiate with management for a reorganization, which may include the restructuring of debt (Brigham, 2011).

Formal reorganization procedures can be guided by the **absolute priority doctrine** or the **relative priority doctrine**. This absolute priority doctrine states that creditors should be reimbursed for their claims in an inflexible hierarchical order and that senior claimants must be paid in full before junior claimant. On the other hand, the relative priority doctrine articulates that more flexibility should be permitted in a reorganization and that a balanced consideration should be given to all claimants.

If the possibility of restoring the company to financial health is far-off and the creditors are exposed to a high risk of greater loss if operations are continued, then it must be liquidated. In Ethiopia, the liquidation process and distribution of assets to claimants in a liquidation is governed under the 1960 commercial code of Ethiopia Book V, Art 968 – 1182. The following is the priority rule for the distribution of proceeds.

Art 1110: Distribution of Proceeds of winding-up:

After the deduction of:

- a) Costs and expenses for by Trustee;
- b) Sums applied for the support of the debtor and his family; and
- c) Sums paid to preferred creditors,

The net proceeds of the winding-up shall be distributed to all the creditors in proportion to their debts proved and admitted, subject to the provisions of Art. 1065 and 1068.

2.1.8. The Insurance Sector and its Role in the Economy

The insurance sector is an essential part of the international financial market since insurance companies are significant institutional investors. In recent periods, the insurance sector has grown in its economic importance. This growth can be credited to a number of factors such as;

- Growing income and demand for insurance services,
- Rising insurance sector employment, and
- Increasing financial intermediary services for policyholders, particularly in the pension business (Ward and Zurbruegg, 2002).

It is obvious that the primary function of the insurance industry is to give individuals and businesses coverage against specified contingencies, by covering losses of policyholders. Insurance companies, therefore, involved in underwriting, managing, and financing risks faced by the policyholder.

The importance of the insurance sector in modern economies is clear and it has been recognized for many centuries. Beyond its role in business matters and its protection of a large part of the country's wealth, it is an essential means by which the adversity of a particular risk to an individual or a community is shared by several policyholders or communities; thus the impact of great catastrophes are lessened, repaired. In these days, insurance is an essential element in the operation of sophisticated national economies throughout the world. Without insurance coverage, the private commercial sector would be ineffective to function (Peter, Haiss and Sumegi, 2008).

Insurance enables businesses to operate in a cost-effective manner by providing risk transfer mechanisms. It allows businesses to take on credit that otherwise would be inaccessible from creditors which are fearful of losing their principal and interest settlements without such protection, and it provides protection against the business risks of expanding into unaccustomed place (new locations) products or services, which is critical for inspiring businessperson to take risks and creating and ensuring economic growth (Ward and Zurbruegg, 2002).

Apart from the commercial world, insurance is vital to individuals by giving protection from the uncertainties of everyday life. Life insurance, health insurance, property and other insurance coverage's are essential to the financial security, well-being and peace of mind of the beneficiary. Insurance policy legally binds the insurance company to pay for the losses of the policyholder when a specific incident occurs. The insurer accepts the risk that the event will occur in exchange for the insurance premium paid by the policyholder. The insurer, in turn, may pass on some of that risk to other insurers called reinsurers (Ward and Zurbruegg, 2002).

Agreeing to Malik (2011), insurance plays a vital role in the development of commercial and infrastructural businesses through promoting financial and social stability; mobilizing and channeling funds, supporting trade, commerce, and entrepreneurial activity and improving the quality of the lives of individuals and the overall well-being of a country. A study made by Koller (2011) identified that insurance companies are playing the role of transferring risks and channeling funds from one unit to the other (financial intermediation). This indicates that insurance companies are greatly helping every economy through transferring and sharing of risk which can create confidence over the occurrences of uncertain events and through financial intermediation, channel financial resources from one party to the other.

2.1.9. The Importance of Identifying Insurance Company's Financial Distress

Identifying the financial health status of insurance companies is very important to different parties such as regulators, customers, agents and the insurers themselves.

1. Regulators:

Defending the policyholders from losses due to insurer's insolvency is the primary purpose of insurance regulation (Harrington and Nelson, 1986). Identifying insurance companies that are likely to be financially distressed helps insurance regulators to decide how much attention should be given to that particular firms. The timely identification of the financial distress condition of insurers would help insurance regulators to reduce the frequency and severity of the damages from insurance company failures, thus reducing the overall costs of insurer insolvency. To achieve the goal of customer protection, insurance regulators monitor several aspects of insurer operations, including the ability of the insurance company to meet its obligations (Barrese and Nelson, 1991).

2. Customers/policyholders:

Insurance policyholders mainly face a risk of default like that of bondholders. Due to the absence of readily available financial information on insurers, the facility of policyholders to accurately estimate default risk is limited. Even having a complete financial information, most customers lack the skill to evaluate the insurer's default risk (James, 1992).

3. Agents:

The liability for giving coverage with the insurer that later becomes insolvent is an exposure that is likely to increase with the frequency and severity of insurer insolvencies. As discussed in Pearsall (1993), agents will have greater accountability in the area of carrier solvency. An early detection of financially distressed insurers would help the agents to meet this duty (James, 1992).

4. Insurers

An early detection of financial distress is very important to the insurers themselves to avoid distress and to alert their managements to minimize distress costs.

2.2. Empirical Literature

A company is believed to have failed if it is liquidated, merged with a healthy company, purchased and acquired under central government pressure, or rescued with financial support (Hambrick and D'Aveni, 2004). Literature regarding financial distress in Ethiopian context are very limited.

Andualem (2011) have conducted a research entitled “Financial Distress and Its Determinants in Selected Beverage and Metal Manufacturing Firms in Ethiopia”. He used a six-year panel data starting from 1999 to 2005 from a sample of 68 companies selected out of 116 share companies and found that firm age, profitability, firm efficiency and liquidity have positive and significant influences to Debt Service Coverage as a proxy of financial distress. Whereas, leverage has a negative and significant relation with Debt Service Coverage.

Ephrem (2015) examined the determinants of financial distress conditions of private commercial banks in Ethiopia using Z-score as a proxy for financial distress. The study has found that capital to loan ratio, net interest income to total revenue ratio have statistically significant and positive effect on the financial health condition of banks. On the other hand, nonperforming loan ratio has a statically significant negative influence on the financial health of the banks.

Yohannes (2014) have studied the determinants of financial distress in the case of manufacturing share companies in Addis Ababa-Ethiopia and found that solvability, economic growth, firm size, and liquidity have a positive and significant effect on Debt Service Coverage as a proxy of financial distress. Leverage level has a negative and significant relation with financial distress measured by debt service coverage. Other variables such as profitability, efficiency and inflation have no significant impact on financial distress in manufacturing share companies in Addis Ababa-Ethiopia.

Ephrem and Nidu (2013) also studied financial distress conditions of six private commercial banks. They studied the financial health status of the selected banks using Altman Z-score model (ZETA Analysis) on panel data from 2002/03 to 2011/12. The

results of the study show that the financial health condition of the selected banks were in a good condition and improving from time to time, but some fluctuations observed.

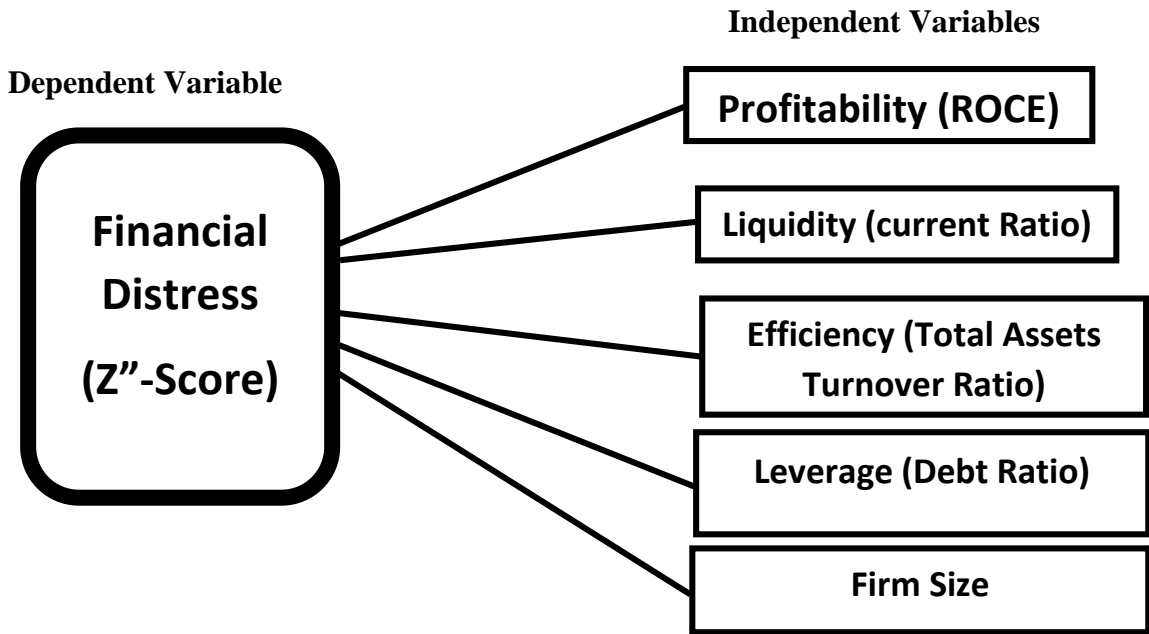
Cheluget (2014) have studied the determinants of financial distress in insurance companies in Kenya using ZETA score as a proxy for financial distress measurement. The study concluded that there is a significant and positive relationship between the independent variables (profitability, liquidity, efficiency, and leverage) and the dependent variable (financial distress) of insurance companies in Kenya.

Financial distress can affect not only the distressed organization but can also mislead the whole economy. So it is very important to check the financial health condition of each and every sector of an economy. But most previous studies that are conducted in Ethiopia were mainly focused on the manufacturing and banking sector. In addition, these studies were concentrated on testing the determinants of financial distress, without giving due emphasis on the financial health status of the firms under study. Since the insurance sector is one of the major players of the financial sector and it serves as a guarantee for other sectors, the financial wellbeing of the companies under this sector should be established. These gaps inspired the researcher to test the financial health condition and its determinant factors in the insurance industry.

2.3. Conceptual Framework

The conceptual framework of this study shows the relationship between the dependent variable (financial distress) and the firm-specific explanatory variables.

Figure 2.1. Conceptual Model of the Study



Source: Developed by the Researcher, 2017 GC.

CHAPTER THREE

3. RESEARCH DESIGN AND METHODOLOGY

In this section, the methodologies that the researcher applied in undertaking this research project are presented. It consists of an outline of the research design, the sources and type of data, data collection methods, the target population of the study, sampling techniques used, the methods of data analysis, model specification and description of variables.

6.1. Research Design

A research design is an outline that states the research approaches or strategies that were adopted by the researcher in order to carry out a particular research project. This study is mainly explanatory/casual type since it is aimed at explaining the causal relationship between financial distress and factors that affect it. According to Kothari (2004), there are two basic approaches to research. These are quantitative approach and the qualitative approach. The quantitative approach involves the generation of data in a numerical form which can be subjected to rough quantitative analysis in a formal and rigid manner. Whereas the qualitative approach is mainly concerned with a subjective assessment of the attitudes, opinions, and behavior of the subject matter under study. The choice of a particular research approach should be based on the research hypotheses and objectives of the study. Hence the major objective of this study is to measure the financial distress condition and its causal relationship with its determinant factors, the researcher used a quantitative research approach.

6.2. Data Source, Type and Collection Techniques

In order to fulfill the objectives of this study, the researcher used only secondary data. This is because using secondary data has the advantage of getting higher quality data compared with primary data; the feasibility to conduct panel study, which is the case in this thesis; and the permanence of data, i.e., 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. It will be acquired from the annual financial reports of the selected insurance companies in Ethiopia. A ten-year panel data of the audited financial statements was collected from the

selected insurance companies. In addition, previous research papers, journals, books, articles were consulted.

6.3. Target Population, Sampling Technique and Sample Size

In research, population means a collection of individuals, objects, items or firms from which the samples are taken for obtaining data. The target population of this study is the total insurance companies operating in Ethiopia. The National Bank of Ethiopia announces that there are seventeen (17) registered insurance companies in Ethiopia. In this study, the researcher used purposive sampling method. Insurance companies that have operated for a minimum of ten years were included in the sample. Because the study is based on a panel data of ten years and in order to draw trends in financial matters it is better to have a sufficient number of time. Among the total insurance companies, nine of them are operated for ten years and above. So these insurance companies were included in the sample of the study. Insurance companies having less than ten years of presence were excluded from the sample.

6.4. Data Analysis Methods

In order to meet the objective of the study, the collected financial data is analyzed using different statistical models. For the purpose of testing the financial distress condition of the insurance companies, **Altman's Z-score model** is used. Altman's Z-score model had a high predictive ability for the initial sample one year before failure (95% accuracy). However, the model's predictive ability had substantially dropped off to 72% accuracy two years before failure, and down to 48% accuracy three years before failure, 29% accuracy four years before failure, and 36% accuracy five years before failure. The model's predictive ability when tested on a hold-out sample is 79%.

In addition, in order to test the numerical relationship between the dependent variable (i.e. financial distress condition) and the independent variables (i.e. profitability, liquidity, leverage, efficiency and firm size), **the pooled OLS regression analysis** is used.

6.5. Model Specification

In order to measure the financial health condition of the sampled insurance companies, the researcher applied Altman's Z"-Score model. Cheluget, K. (2014), Ephrem, G., & Nidu (2015), and Trieschmann and Pinches (1973) applied this model to a financial data to identify financial distress condition in insurance, commercial banks, and property-liability insurers respectively. In the year 2000, Edward I. Altman has revised his bankruptcy prediction model and developed a new Z-score model which can be applied for predicting the financial distress condition of non-manufacturing firms. The new Z-Score model is;

$$Z'' = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$$

Where;

Z''= Overall index of the financial distress measure of financial institutions

$$X_1 = \frac{\text{Working capital}}{\text{Total assets}}$$

This is a measure of the net liquid assets of the firm relative to the total Assets. Working capital is the difference between total current assets and total current liabilities.

$$X_2 = \frac{\text{Retained Earnings}}{\text{Total assets}}$$

This is a measure of cumulative profitability over time. According to Altman (2000), the age of a firm is implicitly considered in this ratio.

$$X_3 = \frac{\text{Earnings Before Interest and Taxes (EBIT)}}{\text{Total Assets}}$$

This ratio measures the true productivity of the company's total assets, independent of any tax or leverage effects. Since a firm's ultimate existence is based on the earning power of its assets, this ratio appears to be mostly appropriate for studies dealing with corporate failure.

$$X_4 = \frac{\text{Book Value of Equity (BVE)}}{\text{Total Debt}}$$

This measure shows how much the firm's assets can decline in value before the liabilities exceed the assets and the firm becomes insolvent.

If the Z"-score level of a firm is:

1. Greater than 2.90 the firm is in the "Safe Zone".
2. Between 2.90 and 1.23 the firm is in the "Gray Zone".
3. Less than 1.23 the firm is in the "Distress Zone" (Altman, 2000).

In order to examine the relationship between the financial distresses condition of insurance companies and the explanatory variables (liquidity, leverage, profitability, size, and efficiency) the pooled OLS regression analysis is used. For estimating the dependent variable (financial distress) the Z-score value is used as a proxy. The regression equation of this model is as follows.

$$FD = \beta_0 + \beta_1 Prof + \beta_2 Liq + \beta_3 Eff + \beta_4 Lev + \beta_5 LnSize + \epsilon_t$$

Where:

FD = Financial distress

β_0 = Constant

Prof = profitability of the firm;

Liq = liquidity;

Eff = Efficiency of the firm;

Lev = the level of the firm leverage

LnSize = the size of the firm (the natural logarithm of total assets)

ϵ_t = The Error term

β_1, \dots, β_5 = the beta coefficient of each explanatory variable.

6.6. Variables Description

1. Financial Distress (FD)

This is the dependent variable of the study. Z''-Score result is used as a proxy to measure the level of financial distress.

2. Firm Profitability

Profitability ratios such as gross profit margin, net profit margin, operating profit margin, return on capital employed, return on equity, and return on assets give an indication of how effective a company is generating profits given sales and or its capital assets. For this study, the return on capital employed is used to measure the profitability of the firms. This is because it compares net income to the sum of a company's long-term debt and equity capital and it can give a long-term picture of profitability by showing how effectively the company's assets are performing while taking into consideration of long-term financing.

$$\text{Return on Capital Employed (ROCE)} = \frac{\text{Earnings Before interest and Tax}}{\text{Long term Debt + Average shareholders' Equity}}$$

3. Firm Liquidity

Liquidity is the ability of a firm to satisfy its short-term obligations as they come due. It can be measured by liquidity ratios. Liquidity ratios are quick measures of a firm's capacity to provide sufficient cash to conduct business operations. The liquidity ratio of a firm can be measured by the current ratio or the quick ratio. In this study, the current ratio is used to measure the liquidity of each company under study.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current liabilities}}$$

The current asset includes the level of cash available in the firm's hand and in its bank account and any asset that can be converted into cash within one year period. The current liability includes any debt that is expected to come due within the next year (R. Charles Moyer, 2006).

4. Efficiency of the Firm

Efficiency is a measure of how productively the firm is utilizing its assets in generating revenues. It is also called the Activity Ratio. It is measured in turnover ratios such as fixed asset turnover, total asset turnover, average collection period, average payment period and return on asset.

In this study, total asset turnover ratio is used as a measure of firm efficiency. Because it considers the effectiveness of the firm in using its total assets to generate sales and it can summarize the other measures of efficiency (R. Charles Moyer, 2006).

$$\text{Total Asset Turnover Ratio} = \frac{\text{Total Income}}{\text{Total Assets}}$$

5. Firm's Leverage

Leverage is the use of financing sources which impose fixed charges such as debt, preferred stock, and leases. Financial leverage ratios measure the degree to which a firm is using financial leverage.

Firm leverage can be measured by debt ratio, debt to equity ratio, interest coverage ratio - EBIT/ Interest expense. These ratios measure the ability of the business to meet its debt obligations, such as interest and principal payments and other fixed obligations like lease payments.

In this study, the debt ratio is used to measure the degree of firm leverage. It is selected because it indicates the ability to satisfy its liabilities with its assets or the portion of a firm's total assets to be sold to pay all its liabilities.

$$\text{Debt Ratio} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

6. Firm size

In order to measure the size of the firms under study, the researcher will take the volume of total assets of the firm. The natural logarithm of total assets will be used to measure the firms' size.

Table 3.1. Expected relationship between financial distress and its determinants

Variables		Measurement	Expected Relation
Dependent Variable	Financial Distress	Z''-Score	
Independent Variables	Profitability	Return on Capital Employed	+
	Liquidity	Current Ratio	+
	Efficiency	Total Assets Turnover Ratio	+
	Leverage	Debt Ratio	-
	Firm size	The Value of Total Assets	+

Source: Developed by the Researcher.

CHAPTER FOUR

4. DATA ANALYSIS, RESULTS AND DISCUSSION

This chapter deals with the analysis of the financial data obtained from the sampled insurance companies. The study covered a period of ten years of balanced panel data ranging from 2007 to 2016 GC obtained from nine insurance companies.

4.1 Descriptive statistics

4.1.1 Analysis of the Financial Distress Conditions of Insurance Companies

In this section, the results of the analysis made to determine the financial health condition of nine Ethiopian insurance companies which are included in the sample is presented. In order to achieve the first specific objective of the study, which is “to evaluate the financial health condition of insurance companies in Ethiopia”, the ten year financial data ranging from 2007 to 2016 GC collected from the sampled insurance companies are first analyzed with the use of a Multiple Discriminate Analysis (MDA) called Altman’s Z –score analysis model of 2000 GC. A Z’-Score result of greater than **2.90** will be classified under the “**Safe Zone**”, between **2.90** and **1.23** will be classified in the “**Gray Zone**”, and less than **1.23** will be classified under the “**Distressed Zone**” (Altman, 2000). The result of the Z’-Score analysis for each insurance company included in the sample of this study is presented as follows.

Table 4.1. Summary Statistics for Z-score Value of the sampled Insurance Companies.

No	Company	Mean	SD	Variance	Range	Minimum	Maximum
1	Africa	-0.3232774	1.207906	1.459036	3.388842	-1.907028	1.481814
2	Awash	0.6191351	0.4733885	0.2240966	1.45174	-0.17174	1.28
3	EIC	1.664491	0.3775743	0.1425624	1.203946	1.16475	2.368695
4	Global	2.058994	1.44452	2.086637	3.94798	0.31026	4.25824
5	NICE	1.530992	1.220869	1.490521	4.30164	0.062998	4.364638
6	Nib	1.297955	0.4093859	0.1675968	1.248291	0.7231452	1.971436
7	Nile	0.9228288	1.28987	1.663766	3.415872	-1.328182	2.087689
8	Nyala	2.173697	0.6590792	0.4343854	1.833488	1.039361	2.87285
9	UNIC	1.998135	0.8795464	0.7736018	2.629006	0.6523234	3.281329
Total		1.326994	1.201372	1.443294	6.271666	-1.907028	4.364638

Source: The Researcher’s Computation Based on Financial Data of Insurance Companies.

As indicated in table 4.1, the average financial distress condition, as measured by Z''-Score, of the insurance companies under study for the whole study period is 1.33, which lies in the gray zone. The standard deviation of Z''-Score for the sampled insurance companies during the study period is around 1.20, which indicates how close the Z''-score of each company is to the mean value. Since the value of the standard deviation is large, it implies the presence of higher variations among the Z''-Score of insurance companies included in this study. The minimum value of Z''-Score is around -1.91 and its maximum value is around 4.37, with a difference of around 6.28. This indicates that the most financially distressed insurance company recorded a Z''-Score of -1.91 and the company with most healthy financial status recorded a Z''-score of 4.37 during the study period.

In the following section, the Z''-Score analysis of the sampled insurance companies is presented including the ratios used in calculating their z''-score level.

1. Z''-Score Analysis of Ethiopian Insurance Corporation Sc.

Table 4.2. Financial Ratios and Z''- Score of Ethiopian Insurance Corporation Sc. (EIC)

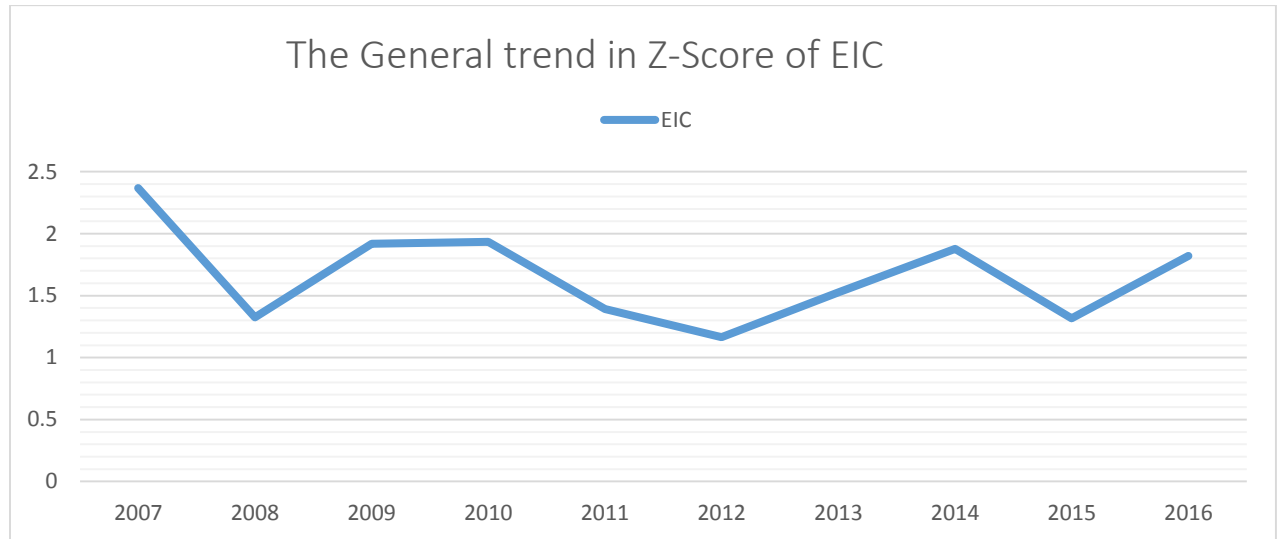
Year	X1	X2	X3	X4	Z''-Score	Status
2007	0.116175	0.162657	0.088101	0.461226	2.368695	Gray
2008	-0.00561	0.11584	0.090924	0.354733	1.324305	Gray
2009	0.079646	0.11727	0.097293	0.343345	1.9191	Gray
2010	0.066171	0.12268	0.117099	0.317935	1.954758	Gray
2011	-0.00665	0.127234	0.112184	0.254409	1.392193	Gray
2012	-0.04903	0.105802	0.136635	0.212664	1.164743	Distress
2013	-0.02666	0.11362	0.165243	0.210079	1.526552	Gray
2014	-0.01233	0.131387	0.192055	0.227834	1.877251	Gray
2015	-0.04452	0.036011	0.189145	0.209616	1.316527	Gray
2016	0.022667	0.05601	0.184851	0.334393	1.924599	Gray

Source: The Researcher's Computation, 2009 EC.

As indicated in table 4.2, from 2007 to 2011 the Z-Score level of Ethiopian Insurance Corporation (EIC) was in the gray zone, which is an area between healthy zone & distress zone. In 2012, the Z'' Score level moved down to 1.164743 (the minimum Z''-Score level of the company through the whole study period), which indicates that during that year the company was under financial distress. While during the period 2013 to 2016, the company's financial health condition was in the gray zone, on which we cannot surely

predict whether the company will be bankrupt or not. The following graph shows the general trends of the financial health condition of Ethiopian Insurance Corporation was highly fluctuating throughout the study period.

Figure 4.1: General Trends in Z''-Score of EIC in the Study Period.



Source: The Researcher's Analysis, 2009 EC.

2. Z''-Score Analysis of Awash Insurance Company Sc.

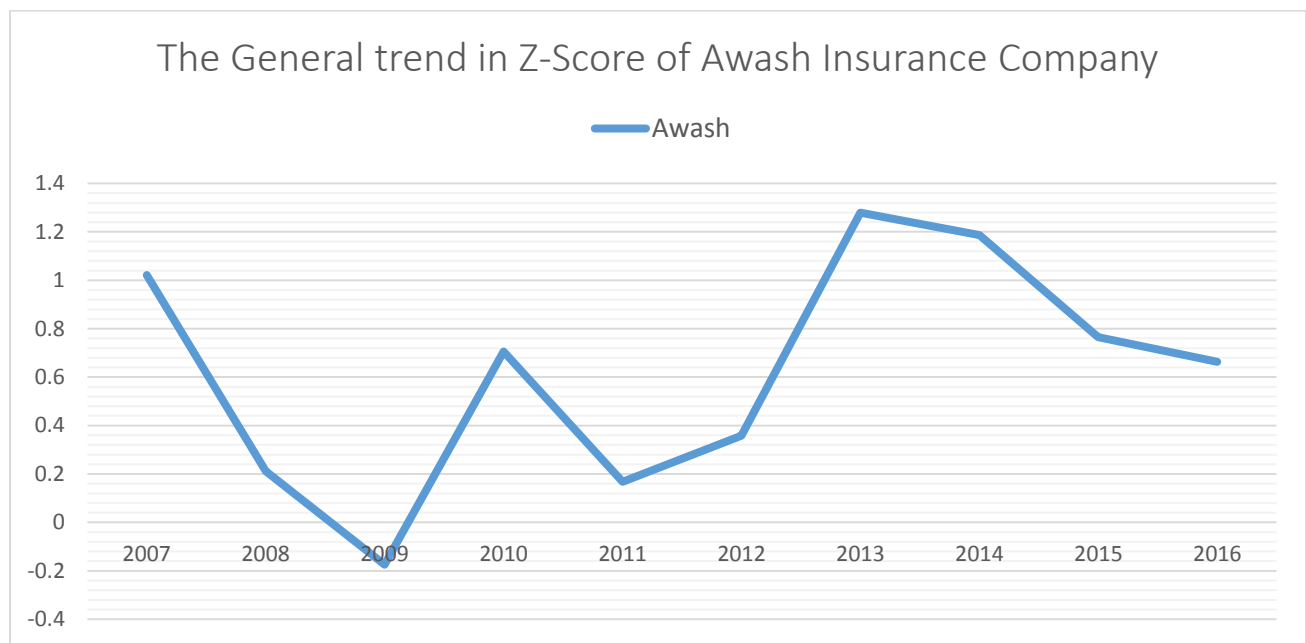
Table 4.3. Financial Ratios and Z''- Score of Awash Insurance Company Sc.

Year	X1	X2	X3	X4	Z''-Score	Status
2007	-0.00742	0.046	0.065	0.46	1.021115	Distressed
2008	-0.12826	0.0445	0.0685	0.4256	0.210884	Distressed
2009	-0.1564	0.03444	0.0521	0.3707	-0.17436	Distressed
2010	-0.11566	0.07515	0.111	0.451	0.705729	Distressed
2011	-0.14	0.055	0.07955	0.354	0.167176	Distressed
2012	-0.11	0.069	0.08	0.302	0.35804	Distressed
2013	-0.082	0.128	0.152	0.361	1.27985	Gray
2014	-0.0963	0.1846	0.1116	0.44421	1.186441	Distressed
2015	-0.11664	0.089	0.116	0.438703	0.76514	Distressed
2016	-0.1181	0.096243	0.09042	0.4922	0.663449	Distressed

Source: The Researcher's Computation, 2009 EC.

As shown in table 4.3, from 2007 to 2012, the Z'-Score of Awash Insurance Company was in the distress zone (even negative in 2009) in which bankruptcy is more likely to occur. During the year 2013, the company's z' score level slightly increased and reaches the gray zone. But, in the remaining periods, the score returned back to the distress zone. This risky trend was mainly attributable to a very low level of working capital to total assets ratio, which its value is negative throughout the whole study period. The following graph illustrates how the general trend of Z' score of Awash Insurance Company looks like in the study period.

Figure 4.2: General Trends in Z'-Score of Awash Insurance Company in the Study Period.



Source: The Researcher's Analysis 2009 EC.

3. Z''-Score Analysis of Global Insurance Company Sc.

Table 4.4. Financial Ratios and Z''- Score of Global Insurance Company Sc.

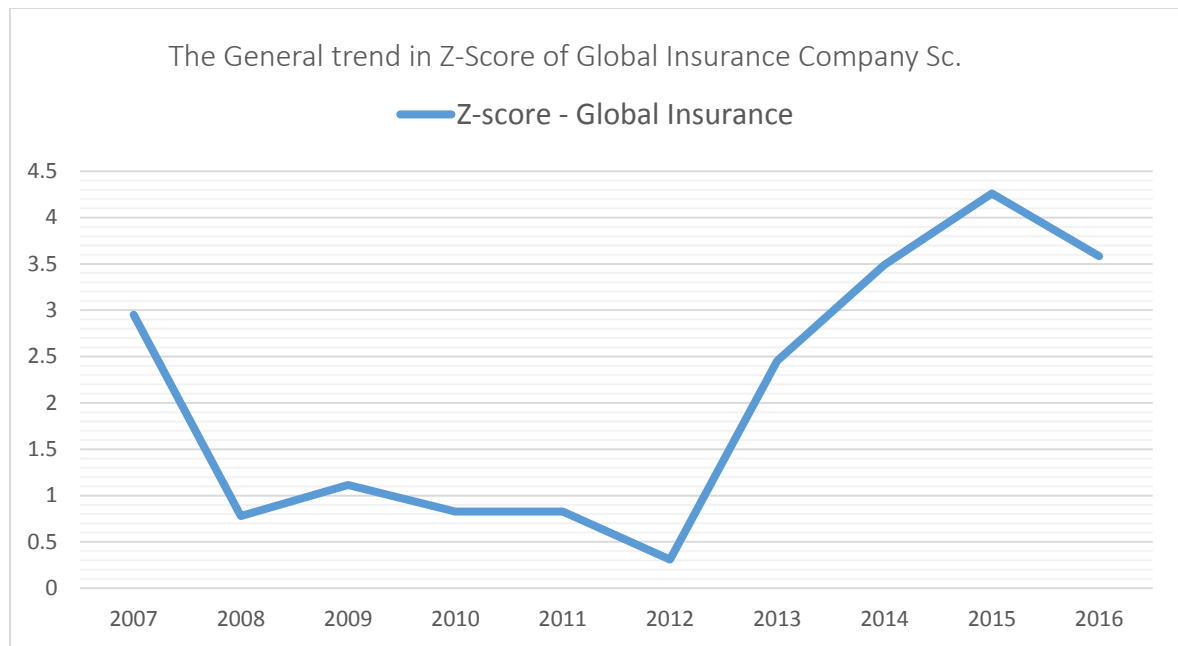
Year	X1	X2	X3	X4	Z''-Score	Status
2007	0.201	0.03812	0.05457	1.08663	2.9505	Safe
2008	-0.07185	0.01121	0.0452	0.80401	0.7796	Distressed
2009	-0.01946	0.041883	0.05411	0.73407	1.114	Distressed
2010	-0.08665	0.05234	0.07803	0.6803	0.8261	Distressed
2011	-0.04238	0.05506	0.03642	0.74171	0.8268	Distressed
2012	-0.05466	0.015778	0.020302	0.46741	0.31026	Distressed
2013	0.081812	0.094923	0.153184	0.54448	2.452653	Gray
2014	0.189352	0.11535	0.160344	0.754571	3.488005	Safe
2015	0.292626	0.098482	0.136417	1.048423	4.25824	Safe
2016	0.226638	0.083294	0.117261	0.988097	3.583777	Safe

Source: The Researcher's Computation, 2009 EC.

As indicated in table 4.4, the financial health condition of Global Insurance Company in 2007 was in the healthy zone, in which bankruptcy is not likely to happen.

But in the successive five years, (i.e. 2008 to 2012), the financial health condition of the company was deteriorated and fall in the distressed zone, which is a risky condition in which bankruptcy is more likely to occur. This drastic deterioration of the company's financial status was due to a very low level of working capital to total assets ratio (i.e., negative X1). In 2013 the financial health condition of the company shows an improvement and fall in the gray zone. Then from 2014 to 2016, the ZETA score of the company was considerably increased and stayed in the healthy zone. The following graph demonstrates how the general trend of Z'' score of Global Insurance Company looks like in the study period.

Figure 4.3: The General trend in Z-Score of Global Insurance Company Sc. in the Study Period.



Source: The Researcher’s Analysis, 2009 EC.

4. Z’’-Score Analysis of Nile Insurance Company Sc.

Table 4.5. Financial Ratios and Z’’- Score of Nile Insurance Company Sc.

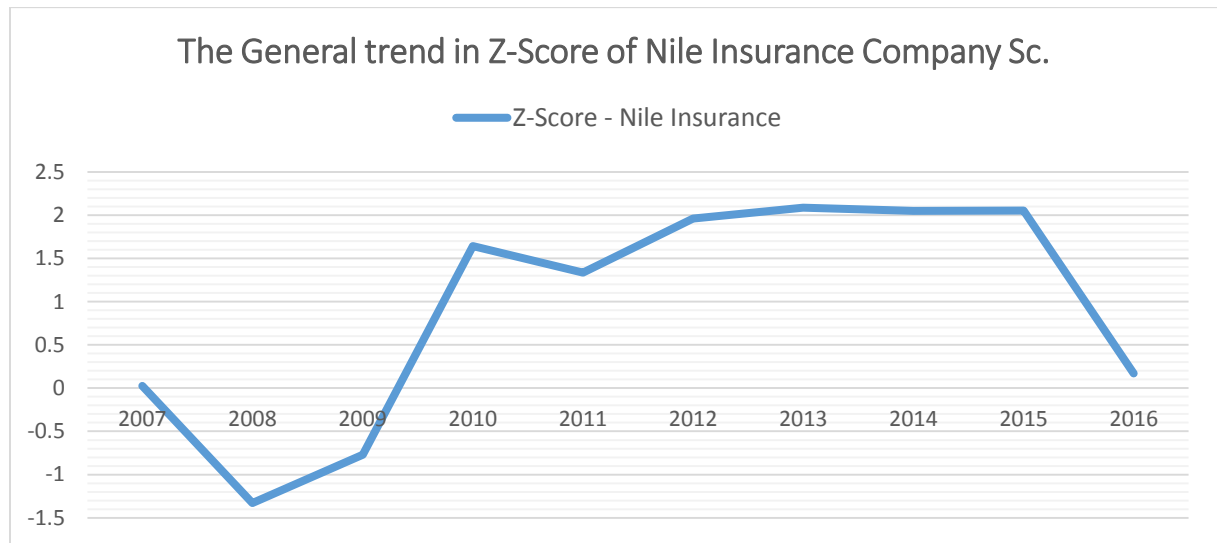
Year	X1	X2	X3	X4	Z’’-Score	Status
2007	-0.08154	0.020462	0.022735	0.324939	0.026437	Distressed
2008	-0.22104	-0.00571	-0.02653	0.303538	-1.32818	Distressed
2009	-0.19473	0.00476	0.021733	0.32996	-0.76942	Distressed
2010	-0.04317	0.128061	0.137929	0.551936	1.640694	Gray
2011	-0.02175	0.075897	0.097951	0.545749	1.336011	Gray
2012	0.056998	0.096856	0.101956	0.559059	1.961814	Gray
2013	0.069711	0.101035	0.109611	0.537547	2.087689	Gray
2014	0.057995	0.102699	0.118709	0.510964	2.049486	Gray
2015	0.094082	0.073515	0.085108	0.595756	2.054307	Gray
2016	-0.09949	0.027674	0.030749	0.500214	0.169453	Distressed

Source: The Researcher’s Computation, 2009 EC.

As shown in table 4.5, for the first three years of the study, the financial health condition of Nile Insurance Company was in the distressed zone with a z’’ Score of 0.026437 in 2007 and 0.026437 and -0.76942 in 2008 and 2009 respectively.

The company's financial health status was improved in the subsequent periods and stay in the gray zone from 2010 to 2015. However, in 2016, the financial health of the company degraded back to the distressed zone with a score of 0.169453. The following graph depicts the general trend of the Z'' score of Nile Insurance Company throughout the whole study period.

Figure 4.4: General Trends in the Z''-Score of Nile Insurance Company Sc.



Source: The Researcher's Analysis, 2009 EC.

5. Z''-Score Analysis of National Insurance Company of Ethiopia Sc.

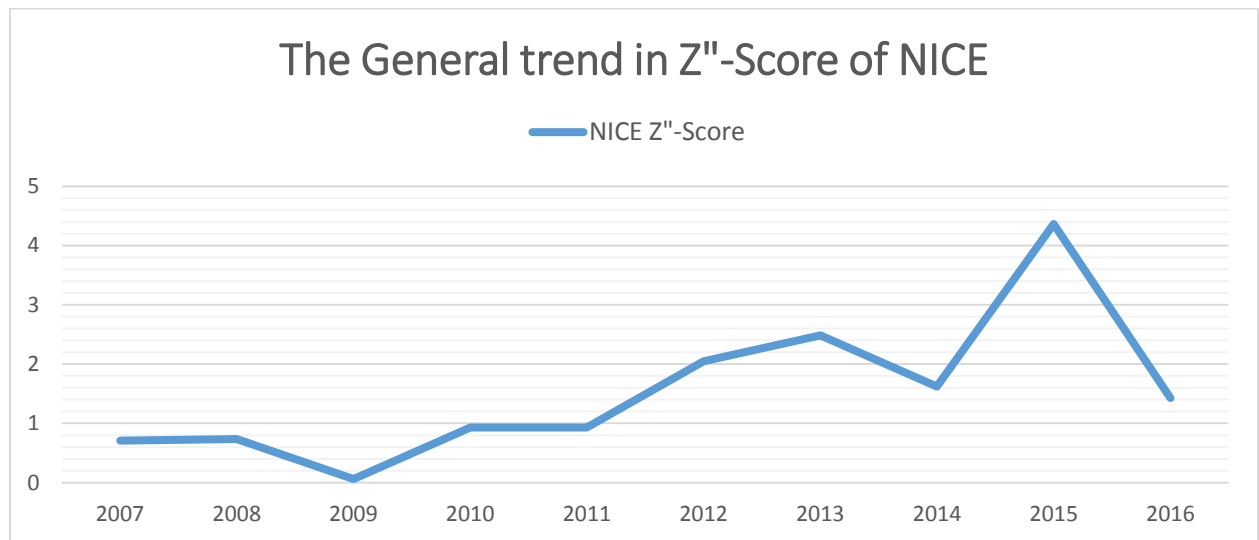
Table 4.6. Financial Ratios and Z''- Score of National Insurance Company of Ethiopia Sc.

Year	X1	X2	X3	X4	Z''-Score	Status
2007	-0.03477	0.051663	0.056444	0.370073	0.708218	Distressed
2008	-0.04564	0.03871	0.057178	0.500968	0.737031	Distressed
2009	-0.1284	0.030953	0.046253	0.470094	0.062998	Distressed
2010	-0.00558	0.039267	0.058833	0.42276	0.930628	Distressed
2011	0.094893	0.000468	0.002904	0.270794	0.927871	Distressed
2012	0.039437	0.109145	0.174276	0.248897	2.046999	Gray
2013	0.140002	0.094599	0.139289	0.308099	2.486331	Gray
2014	0.090693	0.056262	0.069469	0.358321	1.62143	Gray
2015	0.140999	0.089865	0.393986	0.475373	4.364638	Safe
2016	0.053169	0.064493	0.067779	0.389776	1.423772	Gray

Source: The Researcher's Computation, 2009 EC.

The above Z''-Score table of National Insurance Company of Ethiopia shows that, from 2007 to 2011, the company was in the distress zone. This insecure financial condition was caused by a very low level of working capital to total assets ratio (negative X1). However, from 2012 to 2014, the financial health condition of the company increased and remained in the gray zone. In 2015, the company attained the safe zone with a Z'' Score of 4.364638, which is the maximum score of the company in the whole study period. But, in 2015, the financial health condition of the company drives back to the gray zone. The following graph portrays the overall trend of the Z'' score of National Insurance Company of Ethiopia. As indicated by the pattern of the Z''-Score graph of the company, its financial health condition was highly fluctuating during the course of the whole study period.

Figure 4.5: General Trends in Z''-Score of NICE during the Study Period.



Source: The Researcher's Analysis, 2009 EC.

6. Z''-Score Analysis of Africa Insurance Company Sc.

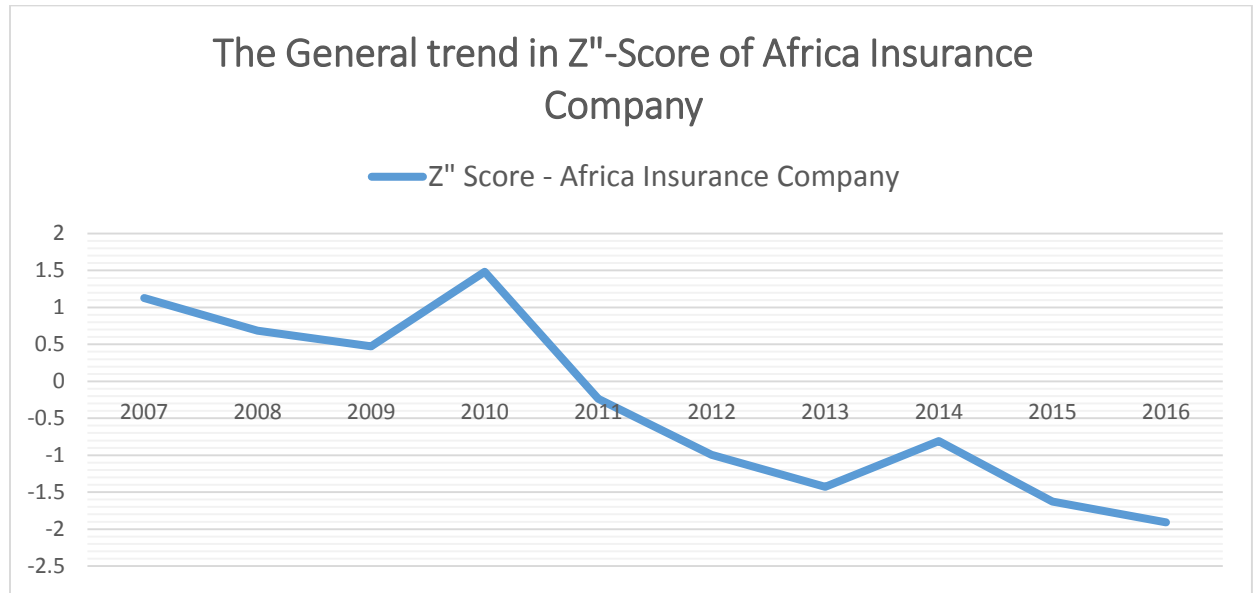
Table 4.7. Financial Ratios and Z''- Score of Africa Insurance Company Sc.

Year	X1	X2	X3	X4	Z''-Score	Status
2007	0.062348	0.069554	0.020372	0.336807	1.126295	Gray
2008	-0.00076	0.055697	0.037314	0.247293	0.686965	Distressed
2009	-0.05045	0.062175	0.047778	0.265616	0.471691	Distressed
2010	0.089896	0.077614	0.05794	0.237824	1.481814	Gray
2011	-0.14217	0.034983	0.052964	0.215881	-0.23598	Distressed
2012	-0.26649	0.046976	0.053241	0.231813	-0.99382	Distressed
2013	-0.35666	0.061	0.061893	0.281105	-1.42974	Distressed
2014	-0.2835	0.060578	0.080398	0.299048	-0.80799	Distressed
2015	-0.4274	0.05637	0.072025	0.486666	-1.62498	Distressed
2016	-0.47321	0.055672	0.063905	0.558386	-1.90703	Distressed

Source: The Researcher's Computation, 2009 EC.

As shown in Table 4.7, from 2007 to 2009, the financial health status of Africa Insurance Company was in the distress zone. In 2010, it shows little improvement in its financial condition and reaches the gray zone. However, starting from 2011 to 2016, the company's financial condition was highly deteriorated and return to the distress zone with a negative Z'' score level. This very unsafe and undesirable financial status of the company was happened mainly because of the very low level of working capital to total assets ratio as shown in the X1 column of the above table. The following is the graphical representation of the Z'' score of Africa Insurance Company for the whole study period. As the pattern of the graph indicates, there is a downward trend in the Z''-Score level of the company.

Figure 4.6: General Trends in Z''-Score of Africa Insurance Company in the Study Period.



Source: The Researcher's Analysis, 2009 EC.

7. Z''-Score Analysis of Nib Insurance Company Sc.

Table 4.8. Financial Ratios and Z''- Score of Nib Insurance Company Sc.

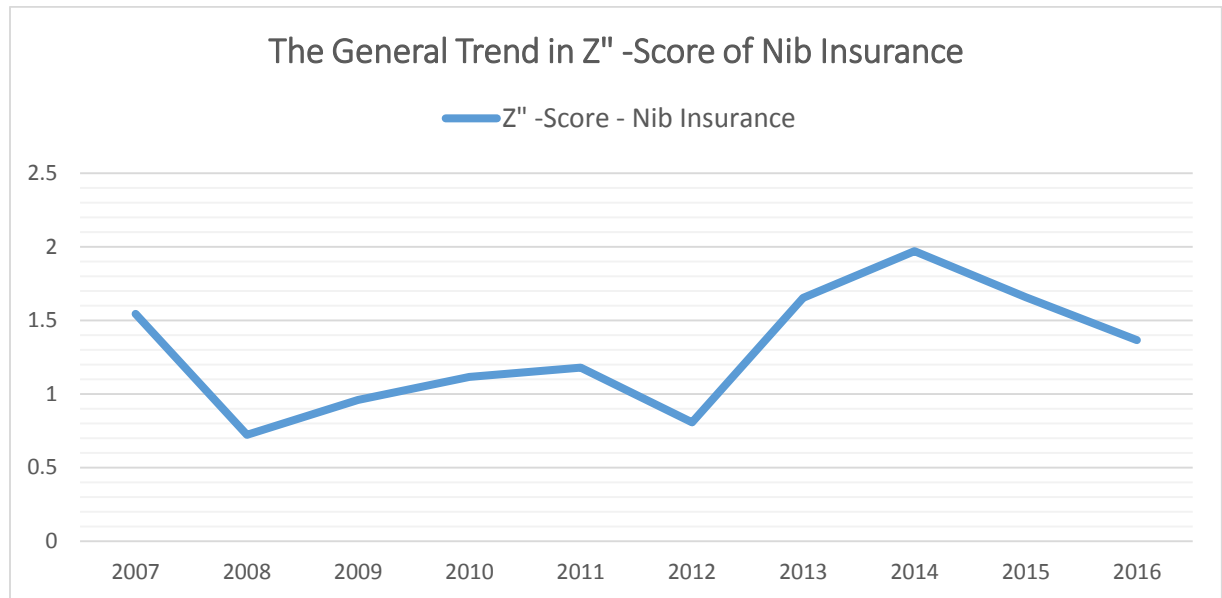
Year	X1	X2	X3	X4	Z''-Score	Status
2007	0.032484	0.062014	0.075693	0.591931	1.545448	Gray
2008	-0.10243	0.081469	0.112181	0.357728	0.723145	Distressed
2009	-0.04197	0.067529	0.095178	0.357432	0.959735	Distressed
2010	-0.01516	0.072086	0.094022	0.331451	1.115385	Distressed
2011	0.0000568204	0.10704	0.068823	0.350672	1.180021	Distressed
2012	-0.02391	0.052292	0.075197	0.274664	0.807315	Distressed
2013	0.037873	0.08437	0.111177	0.364519	1.653341	Gray
2014	0.075345	0.08214	0.112712	0.430452	1.971436	Gray
2015	0.065218	0.06196	0.075571	0.495968	1.658427	Gray
2016	0.035517	0.054916	0.055997	0.549507	1.365299	Gray

Source: The Researcher's Computation, 2009 EC.

Table 4.8 shows that, during 2007, the financial health condition of Nib Insurance Company was in the gray area. But from 2008 onwards, its financial health status diminished and stayed in the distress zone until 2012. In 2013, the Z''-Score of the company increased to reach the gray area and remained in this financial health status up to 2016.

In general, the financial health of the company showed a continuous fluctuation and never reach the safe zone throughout the whole study period, as shown in the following graphical presentation of the Z''-Score of the company.

Figure 4.7: General Trends in Z''-Score of Nib Insurance Company in the Study Period



Source: The Researcher's Analysis, 2009 EC.

8. Z''-Score Analysis of Nyala Insurance Company Sc.

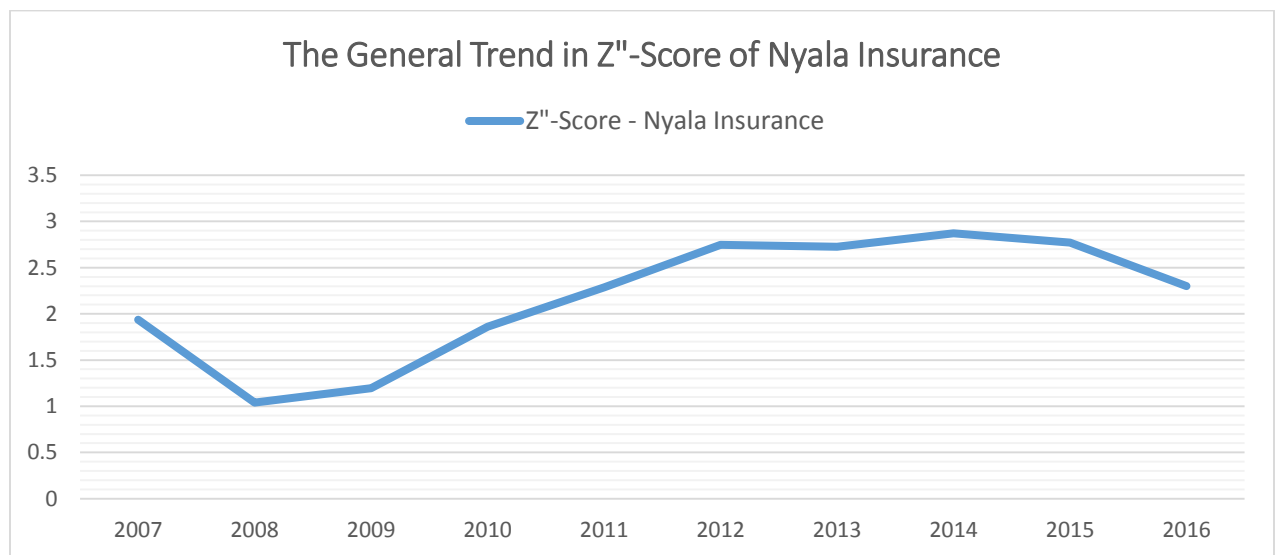
Table 4.9. Financial Ratios and Z''- Score of Nyala Insurance Company Sc.

Year	X1	X2	X3	X4	Z''-Score	Status
2007	0.04485677	0.071616	0.097171	0.718948	1.935615	Gray
2008	-0.0176919	0.053368	0.055724	0.578073	1.039361	Distressed
2009	-0.0532099	0.058169	0.134033	0.43222	1.195108	Distressed
2010	-0.0105703	0.09101	0.137718	0.672951	1.859416	Gray
2011	0.01015429	0.116324	0.159094	0.73618	2.28793	Gray
2012	0.05924876	0.129621	0.182026	0.680014	2.748463	Gray
2013	0.08791642	0.120763	0.164699	0.618412	2.726528	Gray
2014	0.13117755	0.109574	0.143369	0.658736	2.87285	Gray
2015	0.15287968	0.095877	0.122722	0.599717	2.769846	Gray
2016	0.11193859	0.074313	0.1099	0.558802	2.30185	Gray

Source: The Researcher's Computation, 2009 EC.

As shown in the above table 4.9, the financial health condition of Nyala Insurance Company was in the gray zone for the first year of the study, 2007. In 2008 and 2009, the company's financial health status was dropped to the distress zone. However, from 2010 onwards, there was an improvement in the financial health condition of Nyala Insurance Company. Its z"-Score level was in the gray zone for seven consecutive years, (i.e., from 2010 to 2016). As portrayed in the following graph, the general trend of the company's financial health status was less fluctuating. But it never reached the safe zone during the whole study period.

Figure 4.8: General Trends in Z"-Score of Nyala Insurance Company in the Study Period



Source: The Researcher's Analysis, 2009 EC.

9. Z''-Score Analysis of United Insurance Company Sc. (UNIC)

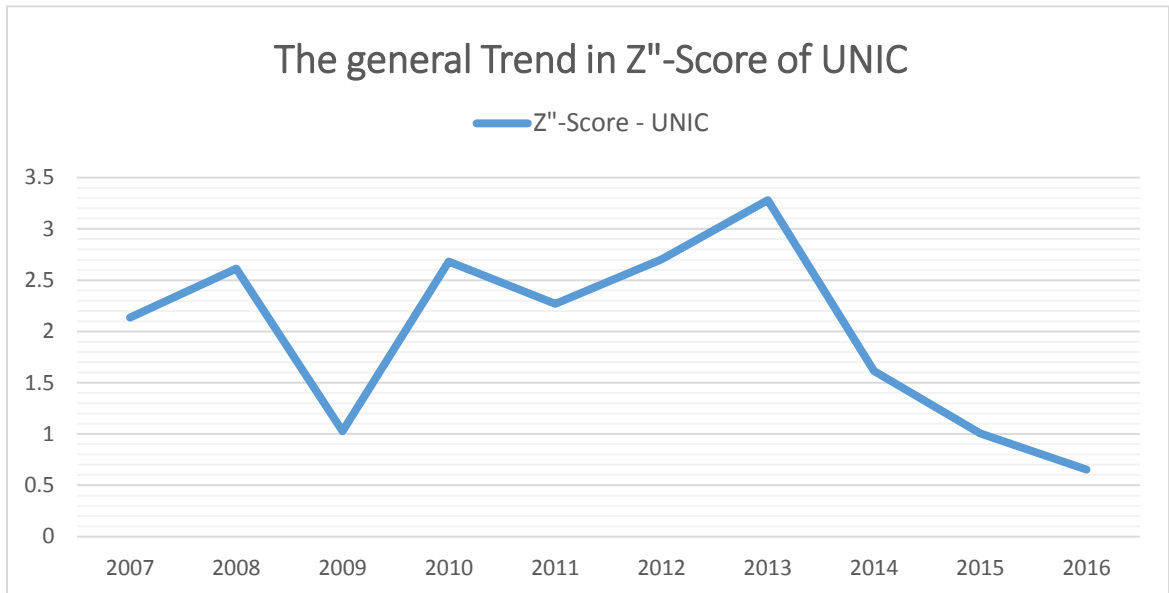
Table 4.10. Financial Ratios and Z''- Score of United Insurance Company Sc.

Year	X1	X2	X3	X4	Z''-Score	Status
2007	0.06549064	0.102345	0.100176	0.664194	2.133851	Gray
2008	0.06513388	0.128345	0.166788	0.614085	2.61129	Gray
2009	0.01829132	0.036391	0.047218	0.449688	1.028104	Distressed
2010	0.10544828	0.113181	0.148699	0.591756	2.68131	Gray
2011	0.12251696	0.097039	0.087412	0.534173	2.268348	Gray
2012	0.15819951	0.084673	0.121934	0.543718	2.704126	Gray
2013	0.16606161	0.118866	0.173187	0.61014	3.281329	Safe
2014	-0.0512526	0.110318	0.141249	0.611279	1.614455	Gray
2015	-0.1511186	0.091261	0.130647	0.782947	1.006215	Distressed
2016	-0.1518764	0.062942	0.083017	0.8434	0.652323	Distressed

Source: The Researcher's Computation, 2009 EC.

As it is shown in table 4.10, during 2007 and 2008 the financial health condition of United Insurance Company was in the gray zone. However, in 2009, the company's financial health condition goes down to the distress zone. From 2010 to 2012, the Z''-Score of the company improved to the gray zone and in 2013 it reaches the safe zone. In 2014 however, it's Z''-Score level dropped again to the gray zone and in the remaining periods, continued to fall to the distress zone. As the following graphical presentation of the Z''-Score of United Insurance Company shows, the company's financial health status was highly fluctuating throughout the period under study and shows a downward trend in recent years.

Figure 4.9: General Trends in Z"-Score of United Insurance Company in the Study period



Source: The Researcher's Analysis, 2009 EC.

i. Summary of the Result of Z''-Score Analysis

Generally, the Z''-Score analysis of the selected insurance companies indicates that the financial health condition of the insurers under study was highly fluctuating. The financial health status of the sampled insurance companies for the most time of the study period falls in the gray and distressed zones and rarely falls in the safe zone. The gray zone is an undesirable status of financial health that the likelihood of being financially distressed or healthiness cannot be clearly determined. When we come to the distressed zone, it is characterized by the existence of financial difficulties and a greater likelihood of the occurrence of bankruptcy. Since the financial health condition of the insurers under study is not in a safe condition and shows greater fluctuation, we fail to reject the null hypothesis, i.e., *The financial health condition of Ethiopian insurance companies is not in a healthy and stable condition.*

4.2. Regression Analysis

In order to determine the relationship between the dependent variable (Z'' -Score) and the explanatory variables (Profitability, Liquidity, Leverage, Efficiency and Firm size), the researcher used multiple linear regression models for panel data. So as to perform multiple linear regression, the researcher must check the collected data against the assumptions of the classical linear regression models (CLARM).

4.2.1. Test Statistics

1. Normality Test

We use normality tests to determine whether a data set is normally distributed or not or to compute how likely an underlying random variable is to be normally distributed (Gujarati, 2009). Normality test guarantees the validity of other tests (p, t, and F). Normality can be estimated by using the Shapiro-Wilk W test for normal data.

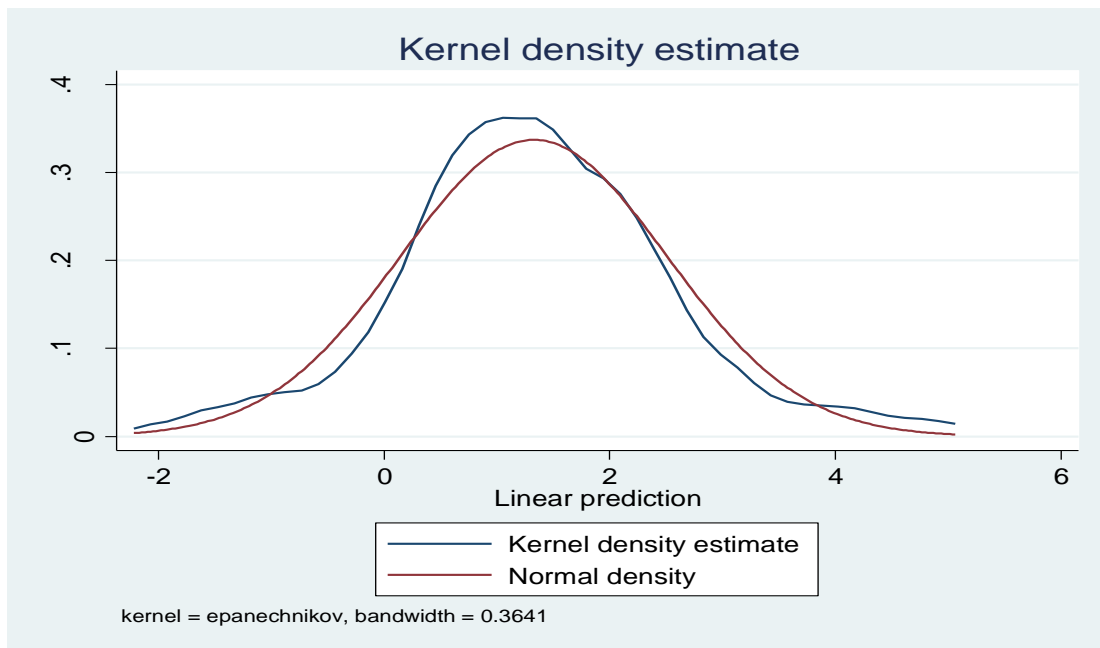
Table 4.11. Shapiro-Wilk W Test for Normality

Variable	Observations	W	V	z	Prob.>z
r	90	0.98317	1.273	0.532	0.29724

Source: STATA Output Using Financial Data of Insurance Companies.

As shown in the above table of Shapiro-Wilk W test for Normality, the P-Value is (0.29724) is greater than 0.05. So there is no reason to reject the null hypothesis, and we can conclude that the data is normally distributed. In the following Kernel Density graphical estimation of normality, the residuals follow a 'normal' pattern. So the data set is normally distributed (There is no normality problem).

Figure 4.10. Kernel Density Normality Estimation



Source: STATA Output Using Financial Data of Insurance Companies.

2. Heteroscedasticity Test

One of the key assumptions of the Classical Linear regression models is that the variance of the residuals is constant across different observations in the data. If the residuals have constant variance we call them homoscedastic. In order to test heteroscedasticity, the researcher applied the Breusch-Pagan test. If the p-value is sufficiently small, that is, below the chosen significance level, then we reject the null hypothesis of homoscedasticity and some corrective measure should be taken. One possibility is to just use the heteroscedasticity-robust standard errors and test statistics (Wooldridge, 2012).

Table 4.12. Breusch-Pagan / Cook-Weisberg Test for Heteroscedasticity

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity	
Ho: Constant variance	
Variables: fitted values of Z²-Score	
chi2(1)	= 0.81
Prob > chi2	= 0.3672

Source: STATA output Using Financial Data of Insurance Companies

As shown in table 4.12, the P-value for Breusch-Pagan heteroscedasticity test is 0.3672, which is greater than 0.05. So we failed to reject the null hypotheses (homoscedasticity). So there is no evidence for the existence of heteroscedasticity problem in this data set.

3. Multicollinearity Test

Another useful assumption in the multiple regression models is that the independent variables should not be perfectly multicollinear. This means, one regressor variable should not be a linear function of another. The existence of multicollinearity problem can be tested using correlation coefficient test or variance inflation factors (VIF test). If VIF is greater than 10 or a $1/VIF < 0.10$ indicates the existence of the multicollinearity problem.

Table 4.13. VIF Test for Multicollinearity

Variable	VIF	1/VIF
Prof	1.85	0.540786
Eff	1.56	0.639515
Lnsiz	1.49	0.670366
Lev	1.44	0.693860
Liq	1.32	0.755410
Mean VIF	1.53	

Source: STATA output Using Financial Data of Insurance Companies.

As indicated in table 4.13, the value of mean VIF is lower than 10. The individual value of VIF for each independent variables are lower than 10 and the value of $1/VIF$ are greater than 0.10. So, there is no evidence for the existence of Multicollinearity problem in this data set.

4. Test for Autocorrelation: The Durbin - Watson (DW) test

The assumption of autocorrelation assumes that the error terms are uncorrelated with one another over time or cross-sectional units. This means there is zero covariance between the disturbances (Brook, 2008). Autocorrelation can be detected using Durbin-Watson (DW) test. Accordingly, in order to say that there is no autocorrelation, the value of DW test statistic should be closer to 2.

Table 4.14. The Durbin – Watson (DW) Test

	Durbin-Watson d-statistic(6, 90)
estat dwatson	1.669873

Source: STATA output Using Financial Data of Insurance Companies.

As shown in table 4.14, the value of Durbin-Watson (DW) test statistic is 1.669873, which is closer to 2. Hence, there is no evidence for the existence of autocorrelation problem in the data set.

4.2.2. Model Selection Tests

In panel data regression, there are three models. These are fixed effects, random effects or pooled OLS models. So it is necessary to determine which model is appropriate for our data set.

A. Testing for Fixed Effects vs. Random Effects Model: The Hausman Test

In order to distinguish between the fixed effects and random effects, we use a Hausman test.

Table 4.15. The Hausman Test

Coefficients.....		b-B Difference	Sqrt(diag(V b-V_B)) S.E.
	(b) fe	(B) re		
Prof	7.515096	7.66106	-0.1459642	0.205288
Liq	4.181175	4.178078	0.0030968	0.0667414
Eff	0.1716386	0.0993422	0.0722964	0.1963211
Lev	-1.950237	-2.122484	0.172247	0.3909374
Size	0.0130178	0.0476147	-0.0345969	0.0337617
b = consistent under Ho and Ha; obtained from xtreg				
B = inconsistent under Ha, efficient under Ho; obtained from xtreg				
Test: Ho: difference in coefficients not systematic				
chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)				
= 3.26				
Prob>chi2 = 0.6594				

Source: STATA output Using Financial Data of Insurance Companies

As shown in table 4.15, the P-value (0.6594) is greater than 0.05. So random effects model is more appropriate than the fixed effects for this data set.

B. Testing for random effects vs. Pooled OLS regression: Breusch-Pagan Lagrange multiplier (LM)

The Lagrange Multiplier (LM) test helps us to decide between a random effects regression and a pooled

OLS regression. In the Lagrange Multiplier (LM) test, the null hypothesis is “**The variances across entities is zero**”. This means, there is no significant difference across units or entities (i.e. no panel effect).

Table 4.16. Breusch and Pagan Lagrangian multiplier (LM) test for random effects

zscore[company1,t] = Xb + u[company1] + e[company1,t]		
Estimated results:		
	var	sd = sqrt(Var)
Zscore	1.443294	1.201372
E	0.0475286	0.2180105
u	0	0
Test: Var(u) = 0	chibar2(01) = 0.00 Prob > chibar2 = 1.0000	

Source: STATA output Using Financial Data of Insurance Companies

As shown in table 4.16, the P-value of Breusch and Pagan Lagrangian LM test is greater than 0.05. So, we failed to reject the null hypotheses. So, there are no significant differences across entities) and we can use the Pooled OLS model over the random effects model estimation. Accordingly, the analysis and discussion of result for this study were based on pooled OLS regression.

4.3. Regression Analysis Results and Discussions

In this section, the result of the regression analysis that has been estimated to determine the relationship between the dependent variable (financial health condition, as measured by Z''-Score) and the independent variables (profitability, liquidity, efficiency, leverage and firm size) is presented. As shown in the model specification tests section, the pooled OLS estimation is found to be the best fit model for this data set than the fixed effects and random effects models.

Pooled OLS Estimation is an OLS estimation with independently pooled cross sections, panel data, or cluster samples, where the observations are pooled across time (or group) as well as across the cross-sectional units (Wooldridge, 2012).

The result of the pooled OLS estimation of Z''-Score and the explanatory variables is presented in the following table.

Table 4.17. The result of Pooled OLS Regression between Z''-Score and the Explanatory Variables.

Source	SS	DF	MS		Number of Obs. = 90	
Model	124.549463	5	24.9098926		F(5, 84) = 536.02	
Residual	3.90367184	84	0.046472284		Prob. > F = 0.0000	
Total	128.453135	89	1.44329365		R-Squared = 0.9696	
					Adj. R-Squared = 0.9678	
					Root MSE = 0.21557	
Z''-Score	Coef.	Std. Err	t	P> t	(95% Conf. Interval)	
Prof	7.66106	0.5546163	13.81	0.000	6.558144	8.763975
Liq	4.178078	0.1246508	33.52	0.000	3.930196	4.42596
Eff	0.0993422	0.3150965	0.32	0.753	-0.5272618	0.7259461
Lev	-2.122484	0.3332829	-6.37	0.000	-2.785254	-1.459715
Lnsiz	0.0476147	0.0287177	1.66	0.101	-0.0094937	0.1047231
_Cons	-3.055317	0.5253666	-5.82	0.000	-4.100066	-2.010568

Source: STATA Output Using Financial Data of Insurance Companies.

Table 4.17 shows the OLS regression estimated to examine the effect of the explanatory variables (profitability, liquidity, efficiency, leverage and firm size) on the financial health condition of Ethiopian insurance companies measured by Z''-Score.

The overall P-value of the model is less than 0.05, which indicates the overall significance of the explanatory variables used in this study in explaining the changes in the financial health condition of insurance companies under study. The result of R^2 shows that about 96.96% of the variation in Z'' - the score is explained by the explanatory variables and the models used in this study is well fitted to the data. The value of adjusted R^2 is very close to the R^2 , which indicates there is a very honest statistical association between the explanatory variables and the explained variable. The value of F-statistic of the model is 536.02, which shows the overall significance of the explanatory variables and the model used in the study sufficiently describes the data.

Referring to the P-value and t-statistic of each explanatory variables in table 4.17, profitability (Prof), liquidity (Liq) and leverage (Lev) have significant effects on the financial health condition (Z'' -Score), at 1% significance level. Whereas, efficiency (Eff) and firm size (Lsize) have no significant effects on the financial health condition (Z'' -Score) of insurance companies. So we did not interpret the coefficients of those insignificant explanatory variables. In the following section, the regression result of each explanatory variables is individually discussed in order to test the hypotheses of the study and reach conclusions.

1. Profitability and Financial Distress

As the result of pooled OLS regression indicates, the profitability of insurance companies, measured by Return on Capital Employed ratio, have a statistically significant positive effect on financial distress condition, with a regression coefficient of 7.66106. This coefficient tells us that, holding all the other variables constant, when the profitability of insurance companies increase by one unit, Z'' - the score is expected to increase by 7.66106. The P-value and t-statistics of profitability are 0.000 of 13.81 respectively. Thus, we accept the alternative hypothesis, i.e., *Profitability has a statistically significant positive effect on financial distress condition of Ethiopian insurance companies*, at 1% level of significance. This result is consistent with the liquid asset theory, which suggests that “a firm is anticipated to go bankrupt whenever the current year’s profit or net cash flow is negative” and the liquidity and profitability theory, which suggests “a positive and high level of these **profitability** and liquidity indicators shows a lower risk of bankruptcy”.

2. Liquidity and Financial Distress

The regression result concerning liquidity shows that liquidity of insurance companies, measured by the Current Ratio, have a statistically significant positive effect on their financial health condition. The regression coefficient of liquidity is 4.178078, which implies when the value of liquidity of insurance companies increase by one unit, their Z'-score level is expected to increase by 4.178078, *ceteris paribus*. Since the P-value is 0.000 and the value of t-statistics is 33.52, we accept the alternative hypothesis, i.e., *Liquidity has a statistically significant positive effect on financial distress condition of Ethiopian insurance companies, at 1% significance level. This statistical result is in agreement with the liquidity and profitability theory, which suggests "a positive and high level of these profitability and liquidity indicators indicates a lower risk of being bankrupt"*.

3. Efficiency and Financial Distress

The efficiency of insurance companies, measured by the Total Assets Turnover ratio, has a positive relationship with the financial health condition of insurance companies, with a regression coefficient of 0.0993422. But, as the p-value is 0.753, which is greater than 0.05 and 0.10. So it has no statistically significant influence on financial health condition even at 10% level of significance. The value t-statistics is 0.32, which is less than 1.96. So we failed to reject the null hypothesis, i.e., *Efficiency has no a statistically significant positive effect on financial distress condition of Ethiopian insurance companies.*

4. Leverage and Financial Distress

As it can be observed from the regression result in the above table, leverage has a statistically significant negative effect on the financial health condition of insurance companies, with a regression coefficient of -2.122484. This implies that a one unit change in the level of leverage (measured by the debt ratio in this study) will cause a 2.122484 reduction in the level of financial distress (measured by Z'-Score). The P-value and t-statistics of this variable are 0.000 and -6.37 respectively, which enables to accept the alternative hypothesis, i.e., *Leverage has a statistically significant negative effect on financial distress condition of Ethiopian insurance companies.*

This result is in agreement with the general premise that the use of too much debt leads to higher financial risks and deteriorate financial stability. High leverage leads to financial distress (Outecheva, 2007).

5. Firm Size and Financial Distress

As shown in table 4.17, the regression result regarding firm size (Lns_{size}), which is measured by the natural logarithm of the total assets of each insurer included in the sample, indicates that the size of the insurer has no a statistically significant impact on the financial health condition of insurance companies. The beta coefficient of Lns_{size} is 0.0476147, which implies that firm size has a positive effect on the financial health condition of insurance companies. But, the P-value and t-statistics of Lns_{size} are 0.101 and 1.66 respectively. Accordingly, we fail to reject the null hypothesis, i.e., *Firm size has no a statistically significant positive effect on financial distress condition of Ethiopian insurance companies*, even at 10% level of significance.

CHAPTER FIVE

5. CONCLUSIONS AND RECOMMENDATIONS

This study empirically examines the financial health condition and the firm-specific factors that determine the level of financial health status of selected insurance companies in Ethiopia. The study used a ten-year financial data from 2007 to 2016, from a sample of nine insurance companies. Based on the findings obtained from Altman's Z'' -score analysis and pooled OLS regression analysis, the researcher made the following conclusions

5.1. Conclusions

- ❖ The result of Altman's Z'' -Score analysis revealed that the financial health condition of the sampled insurance companies was not in a safe condition and their financial health status shows continuous fluctuations throughout the study period.
- ❖ The result of the pooled OLS regression analysis shows that profitability of insurance companies has a statistically significant positive effect on the financial health condition of Ethiopian insurance companies. Keeping other things constant, the higher the level of profitability, the better financial healthiness, and stability. Since profitability measured by return on capital employed ratio have the highest beta coefficient than the other variables, it is regarded as the leading determinant of financial distress condition in Ethiopian insurance sector.
- ❖ Liquidity of insurance companies measured by the current ratio has a statistically significant positive effect on financial distress condition of Ethiopian insurance companies. This implies that keeping other things constant, when the ratio of current assets to current liabilities increases, the financial healthiness of insurance companies will be improved and vice versa. Insurers with a higher level of liquidity indicators will face lower financial risks.

- ❖ The Efficiency of insurance companies measured by the total assets turnover ratio has no a statistically significant effect on the financial health condition of Ethiopian insurance companies.
- ❖ Leverage level of insurance companies measured by the debt ratio has a statistically significant negative effect on financial distress condition of Ethiopian insurance companies. This means the use of higher debt financing will negatively affect the financial healthiness of insurers.
- ❖ The size of insurance companies measured by the value of total assets has no a statistically significant effect on financial distress condition of Ethiopian insurance companies. Even though the regression coefficient of the natural logarithm of firm size shows that it has a positive relationship with the financial health condition of insurance companies, its effect is not statistically significant.

5.2. Recommendations

Based on the key findings and conclusions of this study, the researcher forwards the following recommendation points, which may be essential for the betterment of the financial healthiness of insurance companies.

- ❖ Since the financial health condition of insurers under study was not in a safe and stable condition, they should strive towards the improvement of their financial stability. This can be done through improving profitability and liquidity levels and reducing the level of leverage to the optimum level. Because these financial ratios are found to have significant effects on the financial healthiness of insurance companies.
- ❖ It is obvious that the failure of insurance companies may mislead the whole economy. So there should be increased supervision and control from the regulatory authority, in order to prevent the incidence of bankruptcy.
- ❖ For future researchers who are interested in the area of financial distress, the researcher advises considering other organizations in the financial sector as well as other sectors.

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APPENDICES

APPENDIX I: Summary Statistics of the Dependent and Independent Variables

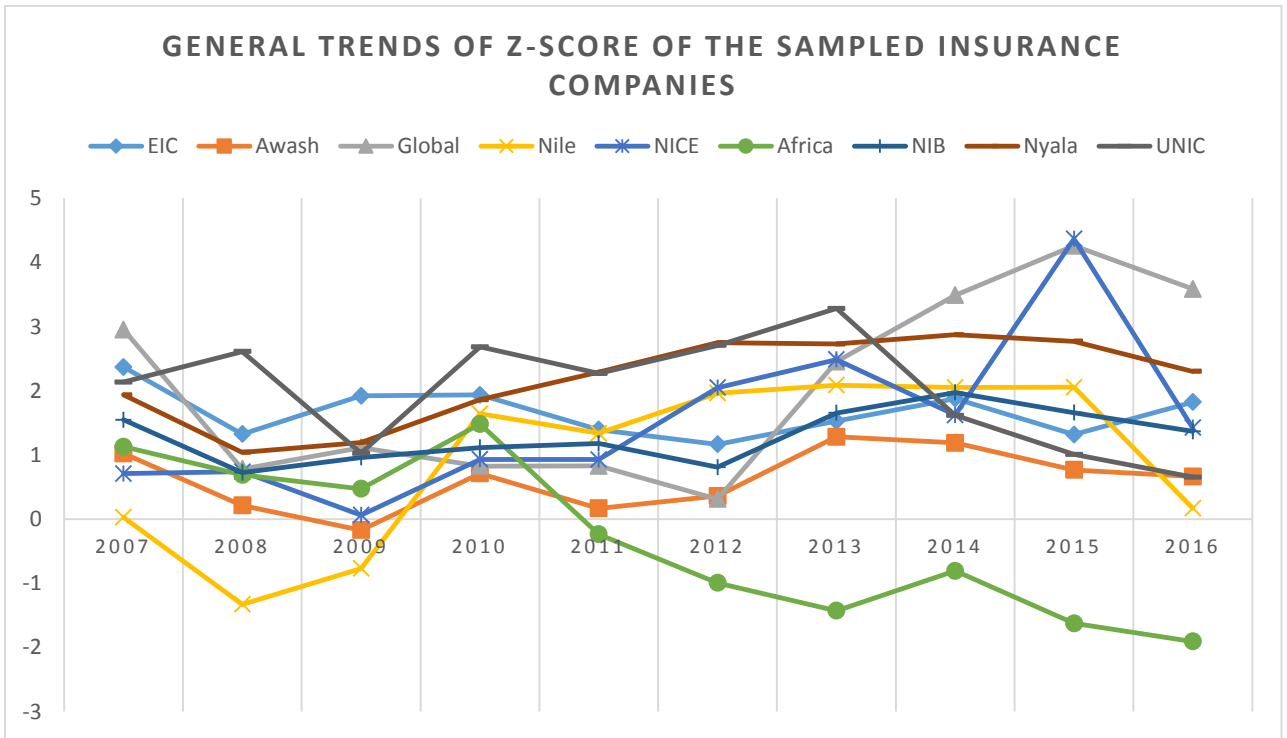
Summary statistics: mean, p50, sd, variance, N, range, min, max
by categories of: company

company	zscore	prof	liq	eff	lev	size
Africa	-.3232774	.054783	.7208424	.0915218	.7646752	4.22e+08
	-.5219858	.0555906	.7494403	.0883271	.7853526	4.64e+08
	1.207906	.0171308	.2735865	.0158512	.0610984	1.69e+08
	1.459036	.0002935	.0748496	.0002513	.003733	2.84e+16
	10	10	10	10	10	10
	3.388842	.0600261	.8207929	.0452566	.1807593	4.77e+08
	-1.907028	.0203721	.2625542	.0741691	.6416895	1.75e+08
	1.481814	.0803982	1.083347	.1194257	.8224487	6.52e+08
Awash	.6191351	.0926145	.8465447	.1702084	.7106068	4.11e+08
	.686725	.0851206	.8321777	.179908	.6982739	4.00e+08
	.4733885	.0300318	.0593626	.0389214	.0305747	2.44e+08
	.2240966	.0009019	.0035239	.0015149	.0009348	5.93e+16
	10	10	10	10	10	10
	1.45174	.1000627	.2045515	.1072763	.0981567	7.07e+08
	-.17174	.0520701	.7846431	.1043417	.6701506	1.34e+08
	1.28	.1521328	.9891946	.211618	.7683073	8.41e+08
EIC	1.664491	.1373529	1.025503	.2148827	.7764449	1.64e+09
	1.673911	.1268667	.9920304	.2170626	.7779755	1.54e+09
	.3775743	.0420834	.0844836	.0518956	.0485727	7.39e+08
	.1425624	.001771	.0071375	.0026932	.0023593	5.46e+17
	10	10	10	10	10	10
	1.203946	.1039543	.2666832	.1267243	.1423518	2.03e+09
	1.16475	.0881006	.9405398	.14897	.6843566	7.80e+08
	2.368695	.1920549	1.207223	.2756944	.8267084	2.81e+09
Global	2.058994	.0855817	1.161457	.1641548	.5669582	1.04e+08
	1.783326	.0662975	1.048428	.163781	.5720445	7.95e+07
	1.44452	.0517118	.3091493	.0450513	.065571	6.44e+07
	2.086637	.0026741	.0955733	.0020296	.0042996	4.15e+15
	10	10	10	10	10	10
	3.94798	.1400423	.7924541	.1245247	.2022322	1.84e+08
	.31026	.0203022	.8395039	.1036613	.4792416	3.67e+07
	4.25824	.1603445	1.631958	.228186	.6814739	2.21e+08
NICE	1.530992	.1094879	1.046432	.2565373	.7094354	1.50e+08
	1.1772	.0686239	1.063199	.1582406	.697374	1.16e+08
	1.220869	.1108706	.126309	.2065224	.0385916	1.10e+08
	1.490521	.0122923	.015954	.0426515	.0014893	1.22e+16
	10	10	10	10	10	10
	4.30164	.3910815	.3967916	.5367053	.1206728	2.97e+08
	.062998	.0029041	.8112347	.0442036	.6662367	3.96e+07
	4.364638	.3939856	1.208026	.580909	.7869095	3.37e+08

Nib	1.297955	.0876552	1.0118	.2014072	.7123099	4.20e+08
	1.27266	.0848579	1.025852	.2096626	.734692	3.90e+08
	.4093859	.0202236	.0773824	.0204058	.0502936	2.63e+08
	.1675968	.000409	.005988	.0004164	.0025294	6.93e+16
	10	10	10	10	10	10
	1.248291	.056715	.2506623	.0636727	.1563522	7.21e+08
	.7231452	.0559966	.8572724	.1699578	.6281679	9.87e+07
	1.971436	.1127116	1.107935	.2336305	.7845201	8.20e+08
Nile	.9228288	.0699953	.9466931	.1940125	.6811951	3.57e+08
	1.488353	.0915296	.9458457	.2113136	.6561079	3.16e+08
	1.28987	.0537573	.1653772	.050009	.0541833	1.71e+08
	1.663766	.0028898	.0273496	.0025009	.0029358	2.91e+16
	10	10	10	10	10	10
	3.415872	.1644568	.4691303	.1573788	.1404806	4.63e+08
	-1.328182	-.0265281	.6842814	.1121001	.6266622	1.89e+08
	2.087689	.1379287	1.153412	.2694789	.7671428	6.52e+08
Nyala	2.173697	.1306456	1.083388	.2413766	.6039559	3.71e+08
	2.29489	.1358756	1.088323	.2542247	.6003074	2.62e+08
	.6590792	.0366048	.1127194	.0855121	.0250261	2.67e+08
	.4343854	.0013399	.0127057	.0073123	.0006263	7.11e+16
	10	10	10	10	10	10
	1.833488	.126302	.3382798	.2996606	.073738	7.38e+08
	1.039361	.0557237	.9062843	.1227221	.5677802	1.27e+08
	2.87285	.1820257	1.244564	.4223827	.6415182	8.65e+08
UNIC	1.998135	.1200326	1.047601	.1966494	.6183116	3.43e+08
	2.2011	.1262906	1.109123	.2014211	.6208446	3.09e+08
	.8795464	.0401803	.199846	.0360799	.0429077	1.92e+08
	.7736018	.0016145	.0399384	.0013018	.0018411	3.70e+16
	10	10	10	10	10	10
	2.629006	.1259687	.5498654	.1055741	.1473277	5.57e+08
	.6523234	.0472179	.7185583	.1445113	.5424758	1.12e+08
	3.281329	.1731866	1.268424	.2500854	.6898035	6.69e+08
Total	1.326994	.0986832	.9878068	.1923056	.6826548	4.69e+08
	1.320417	.0924733	.9870257	.180548	.6815319	2.93e+08
	1.201372	.0560269	.2109189	.0906845	.0823101	5.22e+08
	1.443294	.003139	.0444868	.0082237	.0067749	2.73e+17
	90	90	90	90	90	90
	6.271666	.4205137	1.369404	.5367053	.3474668	2.77e+09
	-1.907028	-.0265281	.2625542	.0442036	.4792416	3.67e+07
	4.364638	.3939856	1.631958	.580909	.8267084	2.81e+09

APPENDIX II: Z”-score Table and Graph of the Sampled Insurance Companies

No	Year	Name of Insurance Company								
		EIC	Awash	Global	Nile	NICE	Africa	Nib	Nyala	UNIC
1	2007	2.369	1.022	2.9505	0.02644	0.7082	1.1263	1.5455	1.9356	2.134
2	2008	1.32431	0.211	0.7796	-1.3282	0.7370	0.687	0.7232	1.0394	2.6113
3	2009	1.9191	-0.1717	1.114	-0.7694	0.063	0.47169	0.9597	1.1951	1.0281
4	2010	1.9343	0.71	0.8261	1.6407	0.9306	1.4818	1.1154	1.8594	2.6813
5	2011	1.3922	0.1672	0.8268	1.3360	0.9279	-0.236	1.1800	2.2879	2.2684
6	2012	1.16475	0.358	0.31026	1.962	2.047	-0.9938	0.8073	2.7485	2.7041
7	2013	1.5266	1.28	2.45265	2.0877	2.4863	-1.4297	1.6533	2.7265	3.2813
8	2014	1.8773	1.18644	3.4880	2.0495	1.6214	-0.808	1.9714	2.8728	1.6145
9	2015	1.31653	0.765	4.25824	2.0543	4.3646	-1.625	1.6584	2.7699	1.0062
10	2016	1.82127	0.66345	3.58378	0.1695	1.4238	-1.9070	1.3653	2.3019	0.6523
Mean		1.6645	0.61914	2.05899	0.923	1.531	-0.3233	1.298	2.1737	1.9981
Std. Dev.		0.3776	0.47339	1.4445	1.2899	1.2209	1.20791	0.4094	0.6591	0.8795
Minimum		1.16475	-0.1717	0.31026	-1.3282	0.063	-1.9070	0.7232	1.0394	0.6523
Maximum		2.369	1.28	4.25824	2.0877	4.3646	1.4818	1.9714	2.8728	3.2813



Appendix III: Regression Result of the Fixed Effects Model

. xtreg zscore prof liq eff lev lnsizel, fe

```

Fixed-effects (within) regression      Number of obs      =      90
Group variable: company1              Number of groups   =       9

R-sq:  within = 0.9525                Obs per group: min =      10
      between = 0.9929                  avg =              10.0
      overall  = 0.9689                  max =              10

                                          F(5,76)            =    304.52
corr(u_i, Xb) = 0.1261                 Prob > F            =     0.0000
  
```

zscore	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
prof	7.515096	.5913903	12.71	0.000	6.33724	8.692951
liq	4.181175	.1413939	29.57	0.000	3.899564	4.462785
eff	.1716386	.3712516	0.46	0.645	-.5677731	.9110503
lev	-1.950237	.5137213	-3.80	0.000	-2.973402	-.9270728
lnsize	.0130178	.0443234	0.29	0.770	-.0752599	.1012954
_cons	-2.500461	.9090906	-2.75	0.007	-4.311072	-.6898505
sigma_u	.06967304					
sigma_e	.21801048					
rho	.09267018	(fraction of variance due to u_i)				

F test that all u_i=0: F(8, 76) = 0.77 Prob > F = 0.6330

APPENDIX IV: Regression Result of the Random Effects Model

```
. xtreg zscore prof liq eff lev lnsizes, re
```

```

Random-effects GLS regression           Number of obs   =       90
Group variable: company1                Number of groups =        9

R-sq:  within = 0.9519                   Obs per group:  min =       10
      between = 0.9957                       avg =      10.0
      overall = 0.9696                       max =       10

                                           Wald chi2(5)    =    2680.08
corr(u_i, X) = 0 (assumed)                Prob > chi2     =     0.0000

```

zscore	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
prof	7.66106	.5546163	13.81	0.000	6.574032	8.748088
liq	4.178078	.1246508	33.52	0.000	3.933767	4.422389
eff	.0993422	.3150965	0.32	0.753	-.5182356	.71692
lev	-2.122484	.3332829	-6.37	0.000	-2.775707	-1.469262
lnsize	.0476147	.0287177	1.66	0.097	-.008671	.1039005
_cons	-3.055317	.5253666	-5.82	0.000	-4.085017	-2.025617
sigma_u	0					
sigma_e	.21801048					
rho	0	(fraction of variance due to u_i)				