The Determinants of Financial Distress in the Case of Manufacturing Share Companies in Addis Ababa-Ethiopia

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Declaration

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

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Declaration

Addis Ababa University

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This is to certify that the thesis prepared by Yohannes T/Mariam entitled: the determinants of financial distress in manufacturing share companies in Addis Ababa-Ethiopia submitted in partial fulfillments of the requirements for the Degree of Master of Science in Accounting and Finance complies with the rules and regulations of the university and meets the expected standards with respect of originality and quality.

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Abstract

The Determinants of Financial Distress in Case of Manufacturing Share Companies in Addis Ababa-Ethiopia

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The major focus of this study is to investigate empirically financial distress determinants in the case of manufacturing share companies in Addis Ababa-Ethiopia. Twelve manufacturing share companies were included in the sample that had at least five years annual report. Document review was used for collecting data from 2009-2013 annual reports. In line with this objective, the study adopted quantitative methods of research approaches to test the study hypothesis. The study applied panel data model with its random effect estimate to test a series of hypotheses that emerge through the review of existing literature. To confidently forward conclusion, normality, multicollinearity, heteroscedastcity and autocorrelation tests were conducted on the data. The data then was processed using Eviews 6 statistical package. The collected data then analyzed using descriptive statistics, and panel date regression analysis. The results show that solvability (SOL), firm size (FSIZE), economic growth(EG) and liquidity(LI) have positive and significant influences to Debt Service Coverage (DSC) as a proxy of financial distress. On the other hand, leverage (Lev) has a negative and significant relation with DSC. Other variables such as profitability, efficiency and inflation have no significant impact on the status of firm's financial distress in manufacturing share companies in Addis Ababa-Ethiopia

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ACRONYMS

CPI: Consumer Price Index

CSA: Central Statistical Authority

DSC: Debt Service Coverage

DW: Durbin-Watson Statistic

EAT: Earning After Tax

EBIT: Earnings Before Interest and Tax

EFF: Efficiency of Firm

EG: Annual Economic Growth

FD: Financial Distress

FSIZE: Firm Size

GDP: Gross Domestic Product

HLT: High Leveraged Transactions

INF: Annual Inflation Rate

LEV: Firm Leverage

LI : Firm Liquidity

LOG: Natural Logarithm

MSCs: Manufacturing Share Companies

NPL: Non Performing Loan

PROFI: Profitability of Firm

SOL: Solvability of Firm

TA: Total Assets of firm

TL: Total liability of firm

Chapter One

1. Introduction

This chapter discusses the background information on the study. The balance of the chapter is organized as follows. The first section sets out problem statement. The second section provides the research objective. The hypothesis used is presented in section three. Significance, limitation of the study and scope of the study are presented in section four, five, six,and Structure of the Studyrespectively.

According to Glen (2005) financial distress is a situation whereby a firm does not meet creditors' obligations or are met with difficulties. Financially distressed firms have problems in meeting and/or paying off their due or overdue financial obligations to their creditors.

Financial distress is defined as "the likelihood of bankruptcy, which depends on the level of liquid assets as well as on credit availability" (Hendel1996).

This is the probabilistic definition given by Hendel in 1996, but various scholars given various contextual definitions for financial distress. There is no exact definition given for financial distress by any scholar, this is due to its complexity and variety of causes. Financial distress is surprisingly hard to define precisely. This is true partly because of the variety of events befalling firms under financial distress. The list of events is almost endless but here are some examples: dividend reductions, plant closings, losses, layoffs, CEO resignations, plummeting stock prices.

“Financial distress is a situation where a firm’s operating cash flows are not sufficient to satisfy current obligations (such as trade credits or interest expenses) and the firm is forced to take corrective action” (Wruck1990).

Arnold (2005) states that one of the cheapest ways to finance a company is through debt but firms tend to run into financial distress, induced by payment of interest regardless of the cash flow of the business. If the firms hit a rough patch in its business activities it may have trouble paying its bondholders, bankers and other creditors their entitlement. Firms that hit a rough patch in business fail to meet creditors’ entitlement. Debt is highly emphasized as the main cause of financial distress yet with this information it’s still inevitable.

However, that the firm’s available cash is unable to cover the principal and interest on the bank loan. The liquidity position of the firms, which is measured by current assets to current liabilities, is below the theoretical industry average. As long as liquidity is not maintained, many highly leveraged firms are not able to renegotiate their debt agreement if they are breached contract; rather they go for reorganization, acquisition, merger or liquidation. Thus, “the very low volume of liquidity and negative cash flow combined with high leverage leads for financial distress” (Outecheva 2007).

As soon as firms have reached a certain level of leverage but do not perform to their business plans, financial distress can happen even in a booming economic environment. High levels of leverage in the firms and increasing volatility make equity value vulnerable, so that each possible decline in the enterprise value may rapidly impair equity (Altman & Hotchkiss 2005).

When the firms enter financial distress, they face one of two possible conflicts. These can be defined either as a cash shortage on the assets side of the balance sheet, or as a debt overhang in liabilities. Both sets of circumstances however draw similar results, namely that cash flow is insufficient to cover current obligations. This forces firms into negotiations with creditors about the conditions of deferment on their debt repayment during the ensuing period of distressed restructuring (Charalambakiset at 2008).

This short introduction highlights very fundamental considerations, which are of utmost relevance in defining the debate at hand in the following research.

First of all, the financial distress of manufacturing share companies in Addis Ababa-Ethiopia over the recent decade and to investigatoe the determinants of financial distress that not only the problems faced by small and medium enterprises, but also large firms are not protected from financial distress. The causes of financial distress and bankruptcy can be varied when taking into consideration the instability, vulnerability, and ultimately the deep-rooted structural change taking place in the world economy (Outecheva 2007).

Traditional views of the causes of financial distress, which have over time been partially confirmed by empirical results Andrade and Kaplan (1998); Asquith et al. (1994); Whitaker (1999), provide some evidence that financial distress arises in many cases from endogenous risk factors, such as mismanagement, high leverage, and a non-efficient operating structure in place.

1.2 Statement of the Problem

In a broad sense financial distress could be understood as is used in a negative connotation in order to describe the financial situation of a company confronted with a temporary lack of liquidity and with the difficulties that ensue in fulfilling financial obligations on schedule and to the full extent. Financial distress usually involves at least two counterparts, a debtor and a creditor. The definition of who is a creditor can be indistinct. In a broader sense, these can be not only providers of external capital, but also other stakeholders of the company such as suppliers or employees. (Hui, H. and Jhao J. 2008).

According to Charalambakis et al.(2008). Due to the lack of access to the capital markets, the allocation of capital in manufacturing firms is very important. Capital assets involve a large amount of money. It should be planned to be sure funds are available. The result of capital budgeting decisions continues for many years. Unnecessarily high expense (depreciation and others) will occur, if the firm invests too much. In contrast, uncompetitive production and loss of market share due to insufficient model and inadequate capacity of equipment may arise, if the firm does not invest enough. An incorrect forecast of asset requirements can have serious consequences. Effective capital budgeting can improve asset acquisitions.

Financial distress is the situation when a company does not have capacity to fulfill its liabilities to the third parties (Andrade and Kaplan 1998). Increasing Non Performing Loan (NPL) of commercial banks and inability to afford raw materials for production is a typical phenomenon of firm financial distress. The status of financial distress companies are classified between solvent and insolvent. To be classified as a financially distressed, the companies is in the position

of minimum cash flow and most probably companies to make default payment and cannot fulfill financial liabilities to its vendors or clients. The consequence of financial distress the companies will get dead weight losses(Panowaro et at 2010).

Gruszczynski (2004) explains financial distress as a company under financial distress can incur costs related to the situation, such as more expensive financing, opportunity costs of projects and less productive employees. The firm's cost of borrowing additional capital will usually increase, making it more difficult and expensive to raise the much needed funds. In an effort to satisfy short-term obligations, management might pass on profitable longer-term projects. Employees of a distressed firm usually have lower morale and higher stress caused by the increased chance of bankruptcy, which would force them out of their jobs. Such workers can be less productive when under such a burden.

Financial distress literature dearth in the sub Saharan Africa context and the limited research is reported by (Zulkarnain2009). Thus, this study attempts to fill this gap of short of literature within the context of Africa. Secondly, the study is also unique in a sense that to the knowledge of the researcher there exists so far no literature of determinants of financial distress on manufacturing Share Company’s despite the fact that the corporations are prevalent in such countries. Third, it also contributes to the debate of the relationship of various determinants and financial distress. Fourth, it also surveys the practice of handling financial distress to preview and serves a catalyst role in Ethiopia. Finally as per the knowledge of the researcher there is no study conduct in manufacturing share companies in Addis Ababa-Ethiopia.

1.3 General Objective

The purpose of this study is to investigate the determinants of financial distress in manufacturing share companies in Addis Ababa-Ethiopia.

Having the aforementioned problem and general objective in mind, the researcher addressed the following specific research objectives:

i. To determine the relationship between the factors and financial distress in manufacturing share companies

ii. To identify the main determinants of financial distress in manufacturing share companies.

iii. To measure the extent to which these determinants exert impact on manufacturing share companies.

1.4 Hypothesis of the Study

To achieve the objective of this study, the research presented eight hypotheses concerning the determinants of financial distress choice on the Addis Ababa-Ethiopian manufacturing share companies was been tested.

Debt service coverage is used as a proxy for financial distress.

Debt service coverage: is the firm's ability of covering current obligations of fixed charge such as interest, dividend and other fixed charges payable currently.

This study examined only Debt service coverage as proxy of financial distress and relates to firm determinants of financial distress. It does not examine other firm level financial distress determinants because their impact is limited in manufacturing companies

Hypothesis: based on literature review the study hypothesizes:

H1: *There is a positive relationship between liquidity and firm's debt service coverage as a proxy of financial* distress.

If the more the firm is liquid; the less the probability of firm's financial distress (sign+). The higher the firm's liquid assets, the higher the ability of the firms is cover its fixed charges and the lower the probability of the firm to go for financial distress. Therefore, there is a positive relationship between firm's liquidity and debt service coverage as proxy for financial distress.

H2*: There is a negative relationship between leverage and firm's debt service coverage as a proxy of financial distress*.

If the more the firm's debt, the more the probability of the firm's financial distress. Bankruptcy is usually beginning with the default on debt servicing; thus, the higher the debt, the higher is the probability of default (sign -). If the higher the firms leverage, the lower the probability of its debt services coverage and the higher the probability of financial distress. Therefore, there is negative relationship between leverage and debt service coverage as proxy for financial distress.

H3: *There is a positive relationship between profitability and firm's debt service coverage as a proxy of financial distress.*

If the profitability of the firm increases, the financial distress decreases. On the other hand the more unprofitable company, the higher probability of failing (sign+). Therefore, there is a positive relationship between firm's profitability and debt service coverage as proxy for financial distress.

H4*: There is a positive relationship between solvability and firm's debt service coverage as a proxy of financial distress.*

If the firm has higher solvability, they have higher ability of debt service coverage (expected sign +). Therefore, there is a positive relationship between firm's solvability, which is measured in terms of its equity to total asset and debt service coverage as proxy for financial distress.

H5*: There is a positive relationship between firm size and firm's debt service coverage as a proxy of financial distress*.

If the firm is less firm size in terms of assets, the probability of the firm's financial distress is more (sign +). Therefore, there is a positive relationship between firm's size measured in terms of total assets holding and debt service coverage as proxy for financial distress.

H6: *There is a positive relationship between efficiency and firm's debt service coverage as a proxy of financial distress*.

If the firm has higher efficiency, they have higher ability of debt service coverage (expected sign +). Therefore, there is a positive relationship between firm's efficiency, which is measured in terms of its EBIT and debt service coverage as proxy for financial distress.

H7;*There is a significant positive relationship between* economic growth and *debt service coverage as a proxy of financial distress*.

If a manufacturing firms are get to bankrupt or distress the economic growth are affected. There

is positive relationship between debt service coverage and economic growth.

H8; *There is a negative relationship between* inflation and *debt service coverage as a proxy of financial distress.*

If the inflation is higher there is a probability of the firm's less debt services coverage is (expected sign -). Therefore, there is a negativerelationship between inflation and debt service coverage as proxy for financial distress.

1.5 Significance of the Study

Despite the renewed and increased interest in the issues of financial distress in the African continent, relevant empirical studies accumulated are still quite few Zulkarnain, 2009.

A decade ago, Lasfer, M. and Remer, L. S. 2001 cited by Arnold 2005. Remarked that, "African economies which have so far been largely neglected in the inter-national debate." while scholars in the developed economies produced a fairly sizable literature on financial distress still the literature of financial distress in developing nations and specifically on Africa is far behind from being adequate.

Studies conducted by (Pranowo et al (2010). John et al. (2010), and Zulkarnain (2009).Investigated the determinants of financial distress of firms in developing countries. However, to the best knowledge of the researcher no single study has focused on the manufacturing share companies in Ethiopia. Thus, this study have significant role to play in filling gap in understanding of the determinants of financial distress manufacturing share companies in Addis Ababa-Ethiopia. Such an understanding is important, because it equips

financial managers with applied knowledge of determining their financial distress. Additionally, this study was been used as an input to researchers for further research on determinant of financial distress.

1.6 Scope of the Study

The scope of the study is restricted to the determinants of financial distress of MSCs in Addis Ababa-Ethiopia and under the study include twelve manufacturing share companies (MSCs) here in Addis Ababa-Ethiopia that have at least five years data i.e., 2009-2013. The study focuses on the six organization factors and two external factors.

1.7 Limitation of the Study

This research focuses only Addis Ababa-Ethiopia manufacturing share companies and thus the results do not represent all manufacturing share companies in Ethiopia. As the survey conducted was only restricted to Addis Ababa region and participated merely some occupations results may vary if research is conducted in other parts of Ethiopia in addition to other occupations. Some companies are not willing to give the date thus,this has a bit reduced the sample size.

1.8 Structure of the Study

The thesis is structured in five chapters as follows; Following introduction in the first chapter, chapter two contains a review of the literature including. The theoretical review first section, which followed, by the review of the previous studies related to the area and conclusion and knowledge gap finally. The research design and methodology are presented in chapter 3. Specifically, this chapter shows the research sampling method followed by data collection and all outlined. In chapter four, the results and findings of the study are also discussed. Finally, the last

chapter enclosed the summary of findings, conclusions drawn and recommendations and areas where further research may be productive

Chapter Two

2. Literature review

This chapter discusses the literature concerning the financial distress determinants. This review of literature establishes framework for the study and highlights the previous studies, which in turn, helps in clearly identifying the gap in the literature. The discussion of the literature on financial distress determinants has four sections; the first section considers meaning of financial distress. This is followed by the general theory of financial distress. The third section a review of the empirical studies on the determinants of financial distress choice. Finally, conclusions on the literature review and knowledge gaps are presented in section four.

2.1. Theoretical Framework

This section deals about the theoretical framework supported by different authors regarding the financial distress. It is composed of meaning of financial distress and the various theories of financial distress.

2.1.1 Meaning of financial distress

Financial distress is defined *as "the inability of a firm to pay its financial obligations as they mature"*. Beaver (1966) was one of the first researchers to point out that financial distress can have different forms of appearance.

Gordon (1971) argued on his article that the development of the theory of financial distress as a process having specific dynamics. Gordon highlights that financial distress is only one state of the process, followed by failure and restructuring, and should be defined in terms of financial

structure and security valuation. The corporation enters this state when its power to generate earnings is becoming weak and the amount of debt exceeds the value of the company's total assets.

Gruszczynski (2004) explains financial distress as a company under financial distress can incur costs related to the situation, such as more expensive financing, opportunity costs of projects and less productive employees. The firm's cost of borrowing additional capital will usually increase, making it more difficult and expensive to raise the much needed funds. In an effort to satisfy short-term obligations, management might pass on profitable longer-term projects. Employees of a distressed firm usually have lower morale and higher stress caused by the increased chance of bankruptcy, which would force them out of their jobs. Such workers can be less productive when under such a burden.

Opler and Titman (1994) define financial distress more broadly as a costly event that affects the relationship to debt holders and non-financial stakeholders. As a consequence, a company gains an impaired access to new capital and bears the increasing costs of maintaining this stricken relationship.

Lubomír L (2002) state on his article there are three possible reasons why the firm can go bankrupt. The first one, neo-classical, is a result of a state when the allocation of assets is inappropriate. The assets are usually industry specific and the bankruptcy is a mean of their re-allocation. Within the(neo)classical approach, the bankruptcy procedures are the inevitable way to allocate resources efficiently. In this case the amount and size of bankrupted firms can give a first insight on the speed of restructuring. The second reason for bankruptcy might be just

financial. The firm has the right structure of assets but its financial structure is bad with liquidity constraints. This means that even if the firm is viable in the long run it has to go to bankrupt in the short run. The last reason of bankruptcy might be that the firm has the proper asset and financial structure but a bad management.

Asquith, *et al.* (1994). Observe that distressed firm's managers underperform peers. Inconsistencies between studies may result from using samples drawn over different time periods or comprised of different firms.

Hendel (1996) gives a probabilistic definition of financial distress as *"the likelihood of bankruptcy, which depends on the level of liquid assets as well as on credit availability"*.

Andrade and Kaplan (1998) identify two forms of financial distress: the first one is default on a debt payment, and the second one is an attempt to restructure the debt in order to prevent the default situation.

Financial distress is the situation when a company does not have capacity to fulfill its liabilities to the third parties Andrade and Kaplan (1998). Increasing non performing loan (NPL) of commercial banks and delisted of public companies in Indonesia is atypical phenomenon of corporate financial distress.

Whitaker (1999) criticizes a determination of financial distress in terms of a single event. He argues that default cannot be defined synonymously with financial distress because a company

bears the vast majority of losses and other adverse effects during the time preceding default or bankruptcy.

Purnanandam (2005) determines financial distress in terms of solvency. He develops a theoretical model of corporate risk management in the presence of financial distress costs. Financial distress is seen as an intermediate state between solvency and in solvency. A company is distressed when it misses interest payments or violates debt covenants.

2.1.2 Theories related to financial distress

This section deals about the theories supported by different authors regarding the financial distress.

2.1.2.1 A "wrecker's theory" of financial distress.

Opler and Titman (1994) show that financially distressed (highly leveraged) firms lose significant market share to their healthy competitors during industry downturns. In a sample of 31 high leveraged transactions (HLTs), Andrade and Kaplan (1997) isolate the effect of economic distress from financial distress and estimate the cost of financial distress as 10-20% of firm value. There are three important sources of deadweight losses due to financial distress – each one of them consistent with the interpretation of deadweight losses in my model. First, a financially distressed firm may lose valuable customers, suppliers and key employees.

Griffin and Lemmon (2002) cited byOpler and Titman 1994also find a negative relationship between financial distress and as proxied by Ohlson's (1980) O-score and subsequent returns, even after correcting for the stochastic structure of returns by means of a Fama-French 3 factors

model. In addition, they show that this relationship is driven by firms with a low book to market (BE/ME) ratio. The average return of low BE/ME firms in the highest quintile for Ohlson's O-score is only 6.36%, about half of the average return in the other portfolios and slightly lower than the risk free rate over that period. In the subset of firms with a high BE/ME ratio, the returns of distressed firms are not lower than would be expected by their BE/ME. In the quintile with the most distressed firms, the estimated return differential between high and low BE/ME firms is 14.44%. The results are robust to using the Altman (1968) Z-score indicator instead.

Da and Pengjie(2005) repeat and interpret these estimations. They show that all the important results can be traced to first-month reversals, mostly due to data problems with penny stocks, such as bid-ask bounces and illiquidity. Two recent working papers complete the picture.

Garlappi, et at (2005) form six months cumulative returns from portfolios sorted according to default risk. Using Standard and Poor's credit rating, they find an unconditional negative dependence of returns on default risk. Using instead the EDF measures generated by Moody's KMV data, they find a negative relationship in the sub-sample of firms with a low BE/ME ratio. This study is important because the authors use real world default risk indicators that were sold to tens of thousands of market participants.

Campbell, et at (2005) break new ground by constructing their own reduced form default risk indicator based on a logit model for bankruptcy and a broader concept of company failure. Sorting firms into ten different portfolios according to their estimated default risk, they show that the distressed firms strongly underperform financially healthy firms. The difference is magnified

if returns are corrected using a CAPM or a Fama-French three-factor model. The three-factor alpha of the highest percentile of the failure risk distribution corresponds to a return of almost -25% at an annual rate. For the highest 5%, it is still less than -15% annualised. The long-short portfolio that goes long the 10% of stocks with the lowest failure risk and short the 10% of stocks with the highest failure risk would earn a whopping annual 23%, almost exactly the same figure found by Dichev (as cited inCampbell, et at 2005). The study conditions on further variables and investigates the effect of momentum.

2.1.2.2 Agency theory

Agency theory initiated by Jensen and Meckling (1976) suggests that agency costs arise from the conflict of interest between debt-holders and equity-holders. Commonly, managers, being part of the owners, tend to collaborate with equity-holders, thus if the firm is approaching financial distress, equity-holders may encourage managers to pass decisions, which, in effect, extract wealth from debt-holders to equity-holders (Butler *etal*2005).

2.1.2.3 Trade off theory

The trade-off theory says that firms have optimal debt-equity ratios, which they determine by trading off the benefits of debt with the costs. In traditional trade-off models, the chief benefit of debt is the tax advantage of interest deductibility (Modigliani and Miller, 1963). The primary costs are those associated with financial distress and the personal tax expense bondholders incur when they receive interest income (Miller 1977).

The goal is to maximize the firm value for that reason debt and equity are used as substitutes. According to this theory, higher profitability decreases the expected costs of distress and let

firms increase their tax benefits by raising leverage; therefore, firms should prefer debt financing because of the tax benefit. As per this theory firms can borrow up to the point where the tax benefit from an extra dollar in debt is exactly equal to the cost that comes from the increased probability of financial distress (Ross 2002, p.586).

Garlappiet at (2005) also argue that increasing debt results in an increased probability of bankruptcy(financial distress). Hence, the optimal capital structure represents a level of leverage that balances bankruptcy costs and benefits of debt finance.

Based on the trade-off theory, financial distress has gained consideration as an important determinant of a firm's optimal capital structure Opler and Titman (1994) the trade-off theory suggests that a firm can capitalize on advantages from increasing its debt level through tax benefits (i.e., interest expense is tax deductible).

However, as a firm exceeds the debt level above a certain point, the firm's degree of financial distress begins to increase and costs associated with debt begin to overshadow benefits.
Therefore, the firm attempts to maintain its capital structure at a balanced and optimal level to avoid the greater costs of debt compared to the benefits of debt.

Jensen and Meckling (1976) extends the Modigliani and Miller(1963) theorem by including the possibility of financial distress costs. Thus, the idea of the trade-off theory is that an optimal capital structure at which the firm maximizes its value and minimizes its cost of capital exists; it can be attained when the benefits and costs of debt exactly offsets (Miller 1977).

Miller (1977), however, argues that bankruptcy costs are too small to affect optimal capital structure; he also argues that taxes are irrelevant to the firms' debt to equity choice.

2.1.2.4 Distress model

The financial distress models predicted that the financial failure of a business before it actually happened. Bankruptcy prediction models are useful to the stakeholders of a company in analysing the performance of the company after emerging from a bankruptcy or distress condition. Altman (1968) attempted to assess the issue; the quality of ratio analysis as an analytical technique with a set of financial and economic ratios to be investigated. The discriminant-ratio model proved to be extremely accurate in predicting bankruptcy correctly in 94% of the initial sample with 95% of all firms in the bankrupt and non-bankrupt groups assigned to their actual group classification. Also, Jensen and Meckling1976provide empirical evidence of the limited ability of financial ratios to detect and/or predict fraudulent financial reporting. Also, Appiah&Abor (as cited in Jensen and Meckling 1976) assessed the usefulness of financial ratios together with a suitable Z-score model using multiple discriminate analysis (MDA) and then applying it in order to measure the financial health and the risk of failure of UK manufacturing, distinguishing between failed and non-failed companies.

2.3. Measurement(proxy) for financial distress

2. 3.1. Debt Service Coverage

The debt-service coverage ratio is defined as earnings before interest and income taxes plus one-third rental charges, divided by interest expense plus one-third rental charges plus the quantity of

principal repayments divided by one minus the tax rate, Lico Junior (2000). The debt service is interest payment plus repayments of principal to creditors, that is, retirement of debt.

The fixed-payment coverage ratio measures the firm's ability to meet all fixed payment obligations, such as loan interest and principal, lease payments, and preferred stock dividends.

Gitman (1991). The degree of financial distress of a company is determined by the ability to service its debts. This ability is routinely assessed by financing banks which may rate the commercial debts on the basis of their own credit rating models, e.g. along the recent Basel accords Gruszczynski (2004)

2.4. Determinants of financial distress

Regardless of the model employed, the determinants of financial distress can be largely grouped into six classifications: liquidity, leverage, profitability, operational viability, firm size and efficiency.

2.4.1 Liquidity

Firm's liquidity is the ability of an asset to be converted to cash quickly at low cost. Liquid assets can be converted into cash quickly and cheaply Brealey et.al. (2000).

The liquidity of a firm is measured by its ability to satisfy its short-term obligations as they come due. Liquidity refers to the solvency of the firm's overall financial position the ease with which it can pay its bills. Because a common precursor to financial distress and bankruptcy is low or declining liquidity, these ratios are viewed as good leading indicators of cash flow problems Gitman ((1991).

Several studies have suggested that firms with low levels of liquidity are more likely to experience financial distress, because cash constrained firms are more vulnerable to exogenous negative shocks to cash flow (e.g. Altman (1968) among others). In the multiple regressions analysis that follows, the researcher use the ratio of current asset to current liability to proxy liquidity and expect that it was positively related to the financial distress. Theoretically, the causes of financial distress are problems of liquidity, which is the inability of current assets to cover current liabilities: which is the measure of current ratio. The lower this ratio indicates that the firm has lower amount of current funds to cover the current obligation. The firm unable to meet its current obligation may have high probability of financial distress. Therefore, liquidity is an important determinant of financial distress.

2.4.2 Leverage

Leverage is the portion of the fixed costs, which represents a risk to the firm. Operating leverage, a measure of operating risk, refers to the fixed operating costs found in the firm's income statement, whereas financial leverage is a measure of financial risk, refers to financing a portion of the firm's assets, bearing fixed financing charges in hopes of increasing the return to the common stockholders. The higher the financial leverage, the higher the financial risk, and the higher the cost of capital (Shim and Siegel 1998).

Another determinant of financial distress is firm leverage. Once again, the theoretical underpinning for leverage as a predictor of distress lies in the fact that leverage limits the ability of the firm to withstand negative shocks to cash flow. Following Altman (1968) the researcher uses the ratio of total liabilities to total assets to control for the impact of leverage on distress. The other causes of financial distress are increased leverage ratio, which is the measure of how

heavily the firm is indebted. The reason for risk is the prevalence of fixed cost. Leverage is the use of debt financing, and the leverage ratios are measures of the relative contribution of stockholders and creditors, and of the firm's ability to pay financing charges (Lico Junior 2000).

The debt ratio is an important factor for measuring firm's indebtedness. The higher this ratio indicates the greater the firm's degree of indebtedness and the more financial leverage it has. The times interest earned ratio and the fixed-payment coverage ratio are important components for measuring the risk.

The lower the ratio, the greater the risk to both lenders and owners; the greater the ratio, the lower the risk. This ratio allows interested parties to assess the firm's ability to meet additional fixed-payment obligations without being driven into bankruptcy. In general the higher the firms leverage, the lower the firm's ability to cover its debt services and this will leads to financial distress. Therefore, leverage is an important determinant of financial distress(Lico Junior 2000).

2.4.3 Profitability

The firms Profitability ratios are used to measure the firm's return on its investments Brealey et.al (2000). The research conducted on financially distressed firm suggest staking actions of adjusting the business to increase profitability (Chang-e 2006).

There were some researchers such as Hotchkiss (1995) who explored the achievement of bankrupt reorganization firms in US of America and focus on profitability.

Financial distress plays a significant role in a firm's operation and profitability through the influence of cost implications, such as administrative and legal costs associated with the

bankruptcy process (i.e., direct financial distress costs) or increased costs of debt i.e., indirect financial distress costs for example, (Betker1997) and (Beaver 1966).

Other determinant of financial distress is profitability. In competitive markets, firms need to generate positive profits in order to survive. Firm profitability has linked to financial distress and bankruptcy in two ways. First, firms with poor management will ultimately be driven out of the market by more able management teams. Second, in the absence of a large reserve cushion, the lack of profits will ultimately be associated with low levels of liquidity. Here again, the researcher follow Altman (1968) in using the ratio of gross profit to total sales to proxy for firm-level profitability.

2.4.4 Solvability

Solvability is the condition of being solvent; ability to pay all just debts. In other way is defied as whether something can be resolved and the degree of ease with which it can be resolved. The researcher used equity to total assets in order to see the sensitive to the probability of financial distress (Hotchkiss 1995).

2.4.5 Size

Other determinant of financial distress is the firm size. The researcher also includes the natural logarithm of total assets, since the size of total assets should be sensitive to the probability of financial distress (Hotchkiss 1995).

2.4.6 Efficiency

Firm's Efficiency or turnover ratio*s* measure how productively the firm is using its assets Brealey et al. (2000**)**. The firm efficiency is measured in terms of its asset turnover, average collection period and average payment period. These components indicate the firm's viability as well as speed of turning over its assets within the year, which determines the firm's financial distress.

Other determinant of financial distress is the firm's efficiencies, which limits the firm's ability of increasing its EBITD and reducing the wastage of effort or increasing the ability of firm's asset utilization to increase its sales. The researcher uses the ratio of earnings before interest tax and depreciation to total assets as a firm-level proxy for efficiency. The possible cause of financial distress is efficiency or turnover, the higher a firm's total asset turnover; the more efficiently its assets have been used. This measure is probably of greatest interest to management, because it indicates whether the firm's operations have been financially efficient(Brealey et al. 2000**)**.

2.4.7 Macroeconomic Determinants

Manufacturing companies has a major role in economic activity of every countries throught provision of financial services. In addition to banks influence on economic activities, macroeconomic factors also affect the performance of manufacturing companies in a given country. The following macroeconomic actors are reviewed from different manufacturing company area empirical studies (Kevin et at 2001).

Economic Growth (GDP): This is measured by the real GDP growth rate and it ishypothesized to affect manufacturing companies financial distress in both said mean negatively or positively. This is because the default riskis lower in upturn than in downturn economy (Kevin et at 2001).

Inflation (INF): High inflation rate is associated with higher costs as well as higherincome. If a manufacturing company income rises more rapidly than its costs, inflation is expected toexert a positive effect on financial distress. On the other hand, a negative coefficient isexpected when its costs increase faster than its income (Kevin et at 2001).

2.5. Review of empirical studies

This section deals with the empirical framework supported by different researchers regarding the financial distress determinants.

2.5.1. Empirical evidences on financial distress

Following from above theoretical standpoints, a number of empirical studies have identified firm-level characteristics that affect the financial distress of firms. Among these characteristics are: liquidity, leverage, profitability, operational viability, firm size and efficiency.

Julio P and Luis R (2005).The study provides international evidence on financial distress costs. To achieve this aim, we have developed a model where financial distress costs are determined, on the one hand, by making use of a more accurate indicator of the probability of financial distress and, on the other, by a set of variables that, according to financial theory, explain the magnitude of the costs borne by a firm in the case of financial distress. The methodology used by the study was used an international database the Composted Global Vantage (CG) as they data source. Unlike other approaches followed in previous research, the econometric methodology applied in this paper requires data for at least six year financial statement. The results reveal the relevance of the researchers improved indicator of the probability of financial distress, since it positively affects financial distress costs in all the countries analyzed. Furthermore, since the study was

used a model controls for the probability of financial distress, the study can test the trade-off between the benefits and costs of debt. This allows us to verify that the benefits debt outweigh the costs. The results also indicate that distress costs are negatively related to liquid assets; hence, their benefits more than offset their opportunity costs.

Florence M(2013).The study was undertaken with the aim of analyzing the causes of financial distress and its effects in firms funded by Industrial and Commercial Development Corporation in Kenya. The study analyzed the causes of financial distress using Weighted Mean Score and Factor Analysis. The period of study was from 2009 to 2012. It was established that the main causes of financial distress are endogeneous variables, which had the highest weighted mean score as compared to exogeneous variables. Similarly, it was noted that the most significant causes of distress were improper capital decision, inadequacy of capital, access to credit, shortage of skilled manpower, poor accounting records and poor internal management. Through Factor Analysis, Finance Factor was the main cause of financial distress in comparison with Management, Accounting System, Policy Changes and Liquidity Factors.

The study conducted by AndualemUfo (2011).The aim to identify determinants of financial distress in selected beverage and metal manufacturing firms in Ethiopia. The study estimates determinants of financial distress using panel data starting from 1999 to 2005. Using panel data regression, the researcher analyzed internal and some of external factors affecting firm's financial distress.The results show that profitability, firm age, liquidity and efficiency (Eff) have positive and significant influences to Debt Service Coverage (DSC) as a proxy of financial distress. On the other hand, leverage (Lev) has a negative and significant relation with DSC.

Other variables such as operational viability and good corporate governance have no significant impact on the status of firm's financial distress.Furthermore, the analysis indicated that operationally viable companies in some period of time should not be a guarantee that the companies going concern to fulfill its liabilities. Evaluating cash flow performance can recognize liquidity of companies, which can be a prominent point.On the other case, the response of financial managers to the sample questionnaires indicates that firm's liquidity, leverage, profitability, efficiency; firm size and low debt service coverage are the main causes of financial distress at highest degree. The variable operational viability causes firm's financial distress at higher level. On the other hand, the variable such as macroeconomic factors, industrial relations, good corporate governance implementation problems and firm age causes financial distress at lower level.

In the above empirical reviews shows that the study conducted by Julio P and Luis R 2005 and AndualemUfo 2011 they find financial distress are negatively related to liquid assets. AndualemUfo 2011 find that profitability, efficiency, leverage and liquidity have significant impact on financial distress. The researcher investigates the determinants of financial distress.

Lubomír L (2002). Studied the determinants of financial distress what drives bankruptcy in a transition economy.The main factors influencing the probability of bankruptcy are analyzed on Czech Republic 1993-1999 firm data. Basic models of the bankruptcy are compared: neoclassical, financial and corporate governance. The corporate governance hypothesis does not receive support in the ownership but the indicator of voucher privatization supports it. The initial conditions from early 90's were not the driving the financial distress. The voucher-scheme privatization results in poorer corporate governance. These firms are more likely to go bankrupt,

ceteris paribus. On the other hand, former large SOEs are less likely to bankrupt than firms with a similar debt structure this is an evidence of soft budget constraints.

Amiyatosh P (2004). The study develops a theory and evidences of corporate risk-management in the presence of dead weight losses caused by financial distress and test its implications using a comprehensive data set of over 3000 non-financial firms. Unlike extant theories that explain only the ex-ante risk management behavior of a firm, the result show that the shareholders optimally engage in ex-post risk-management activities even without a pre-commitment to do so. The researcher generates new cross sectional predictions by relating firm characteristics such as leverage and deadweight losses from financial distress to its risk-management incentives. The model predicts a positive relationship between leverage and hedging for moderately leveraged firms. This relationship reverses, however, for highly leveraged firms. Similarly the model produces a non-monotonic relationship between leverage and hedging for high market-to-book value firms. The empirical findings are consistent with these predictions. The empirical study presents the first large-sample evidence on the extent of hedging by non-financial firms and provides many new findings. The study finds that large and small firms hedge for different reasons. While both group sedge in response to the financial distress costs and exhibit economies of scale in hedging, large firms also hedge in response to underinvestment costs and tax-convexity, as predicted by the existing theories.

Pranowo et al. (2010) on their research identified the weakness on following are causes of financial distress for the firm, current ratio, efficiency and equity arestatistically significant and have positive influence on the financial distress, where as leverage has significant but negative

influence to financial distress. The result also indicates that the dummy good corporate governance has no significant impact on the debt service coverage.

John et al. (2010).The study was undertaken with the aim predicting financial distress and the performance of distressed stocks and also consider the measurement and pricing of distress risk. The study presents a model of corporate failure in which accounting and market-based measures forecast the likelihood of future financial distress. The best model is more accurate than leading alternative measures of corporate failure risk. The study then uses there measure of financial distress to examine the performance of distressed stocks from 1981 to 2008. They find that distressed stocks have highly variable returns and high market betas and those they tend to underperform safe stocks by more at times of high market volatility and risk aversion. However, investors in distressed stocks have not been rewarded for bearing these risks. Instead, distressed stocks have had very low returns, both relative to the market and after adjusting for their high risk. The underperformance of distressed stocks is present in all size and value quintiles. It is lower for stocks with low analyst coverage and institutional holdings, which suggests that information or arbitrage-related frictions may be partly responsible for the underperformance of distressed stocks.

In the above empirical reviews the result shows that the study conducted by Pranowo et al. (2010) they find liquidity, efficiency and equity are statistically significant and have positive influence on the financial distress, where as leverage has significant but negative influence to financial distress. The result also indicates that the dummy good corporate governance has no significant impact on the financial distress. The researcher investigates determinants of financial distress in manufacturing share companies.

Mohammad S (no date). The study has been undertaken aiming at identifying the causes of financial distress in SMEs of Bangladesh. The study has employed mixed methods and used both financial and statistical techniques for analyzing the data collected for the study. The study has identified some potential problem areas related to financial distress such as rate adequacy, sales trends, indebtedness, management capability, financial planning, etc. The study has also identified some most important causes of financial distress such as fund management & resource crunch, poor accounting system, poor financial control, poor productivity and profitability and management succession. The study has finally come out some strategic and policy related measures for both viable and financially distressed SMEs for preventing them from the exposition to financial and operating risk.

Zulkarnain (2009) study to formulate a model that predicts corporate financial distress and apply the model to trace the potential failure Malaysian financially distressed firms due to the Asian Crisis in 1997. Z score has evaluated the data with a new model: Distress-Grey area distress Grey area non-distress. He found5 out of 64 financial ratios significant to discriminate distress and non distress: (1) Total liabilities to total assets, (2) assets turnover, (3) inventory to total assets, (4) sales to inventory, (5) cash to total assets.

Harlan D and Marjorie B (2000). The study examines factors related to corporate financial distress across three continents. Using a multidimensional definition of financial distress they test three hypotheses to explain financial distress using historical financial data. A null hypothesis of a single global model was rejected in favor of a fully relaxed model, which created individual financial distress models for each region. This result suggests that despite other

indications of worldwide convergence, international differences in accounting rules, lending practices, management's skill levels, and legal requirements among others has kept corporate decline from becoming commoditized.

Matthias Kahl (2001).The study aims to analyze financial distress as a selection mechanism. The researchers follow the process of financial distress from its onset to its resolution for a sample of 102 firms that enter financial distress between 1979 and 1983. Only a little more than one-third of firms survive as independent companies. The main selection pressure comes from the acquisition market. Poor operating performance is not tolerated for long. The number of firms reporting negative operating income declines dramatically within a few years after the onset of financial distress, mainly due to the large number of firms that are acquired. A firm's short-run and long run survival probability is positively affected by its operating performance, and the effect appears to be relatively strong. The only other factor systematically increasing a firm's survival probability is the willingness of creditors to take an equity stake in the firm. The roughly one-third of firms that survive financial distress as independent companies appear to be economicallyviable. They perform about as well as the industry median firm after emerging from financial distress and have overcome their financial difficulties within a median time of less than 3 years. Overall, the evidence suggests that the financial distress process in the U.S. leads to more asset reallocation away from poorly performing firms and hence is more efficient than suggested by much of the existing literature, which claims that the U.S. financial distress environment allows inefficient firms to survive for a very long time.

Kevin et al(2001). The study was undertaken with the aim it is to shed light on the determinants of the financial distress costs of European small and medium enterprises (SMEs). Researchers propose an innovative formulation of the expected costs of financial distress expressed as the product of the expected Financial Distress Likelihood times the total amount of the financial distress costs if insolvency does occur. The model is estimated using panel data methodology on samples from eight European countries (representing all European legal traditions). The results indicate that the amount of ex-post costs depend on the available collateral, the incentives of the firms' stakeholders to realize value and the institutional framework that conditions the bargaining position of different stakeholders in the resolution of financial distress. The total effect of these divergent forces can produce diverse outcomes, depending also on the average length of time taken by a SME to settle financial distress and the interaction of debt variables with the vested interests of different types of ownership.

Outecheva (2007) made an empirical research to public companies in USA which are under financial distress. The empirical result he develop an integral concept of financial distress which can be used as a theoretical basis for developing more complex and sophisticated models. The researcher generally classified two important factors: First, financial distress implies that the value of a firm’s equity in such situation lies below the value of debt (under funding). The firm does not have enough coverage to borrow additional debt through the bank. Second, percentage of firms recovered from financial distress varies from 10% to 34% dependent on the sample selection length of time series and economic condition.

In the above empirical reviews shows that the financial distress are have main impacts on different sectors and different authors like Zulkarnain (2009) found 5 out of 64 financial ratios significant to discriminate distress and non distress: (1) Total liabilities to total assets, (2) assets turnover, (3) inventory to total assets, (4) sales to inventory, (5) cash to total assets. Matthias Kahl (2001) the evidence suggests that the financial distress process in the U.S. leads to more asset reallocation away from poorly performing firms and hence is more efficient than suggested by much of the existing literature, which claims that the U.S. financial distress environment allows inefficient firms to survive for a very long time. These study identify the main determinants of financial distress in manufacturing share companies in Addis Ababa-Ethiopia.

2.6 Conclusions and knowledge gap

The review of the literature reveals the existence of gap of knowledge in respect to the determinate of financial distress, particularly in the context of Ethiopia. As per the review of the literature most of the empirical studies that have been conducted with the aim of identifying the determinate of financial distress, belong to developed countries. There are some studies that are conducted in developing countries but as per the knowledge of the researcher there is limited studies are conducted in the determinate of financial distress. There is one research conducted in financial distress and its determinants in Ethiopia as per the knowledge of the researcher this research was used date 1999- 2005, the area the researcher tested also specific and it was used limited samples. The knowledge gap the researcher used more recent data 2009-2013, sample size was used more than the privies study and the area was tested are general use all manufacturing share companies running their operation more than five years was included in the study.

Moreover, the literature review also reveals the existence of controversial conclusions that results from different studies made so far. Furthermore, so far as the review of the literature discloses, very scanty work has been done with the objective of identifying the determinants of financial distress, in SSA in general and Ethiopia in particular.

In addition, the empirical literature revealed that most of the prior studies had used qualitative research approach via administrative questions to examine the determinants of financial distress. Therefore, it is better to use a quantitative research approach than a quantitative research approach to investigate the factors that affecting the determinants of financial distress, on manufacturing share companies in Addis Ababa-Ethiopia.

In general, the lack of sufficient research on the determinants of financial distress, in the context of Ethiopia and the existence of knowledge gap in the area begin this study. Therefore, the objective of this research thesis is to examine the factors that affect the determinants of financial distress, on manufacturing share companies in Addis Ababa-Ethiopia and to fill the knowledge gap that exists in the area by adopting a quantitative method.

Chapter Three

3 Research Methodology

The preceding chapter has indicated that the literature on financial distress determinants empirically is limited. Especially from Ethiopian perspective, manufacturing sector in particular, it has been shown that there is limited comprehensive study in the determinants financial distress. The purpose of this chapter is to present the underlying principles of research methodology and the choice of the appropriate research method for the study.

3.1 Methodology of the study

This part of the study deals with the methodologies applied for undertaking the study. It consists of research approach, study design, data source and type, sample selection and method of data analysis.

3.2 Research Approach

Depending on the nature of the research problem and the research perspective, a research method could be based on the philosophy of quantitative or qualitative or a combination of these two approaches. As Creswell (2003) noted, quantitative research employs a review of the existing literature to deductively develop theories and hypotheses to be tested i.e., in this approach, the research problem is translated to specific variables and hypotheses. Quantitative research approach tends to assume that there is a cause and effect relationship between known variables of interest. In line with this, quantitative research tests the theoretically established relationship between variables using sample data with the intention of statistically generalizing for the

population under investigation and it uses statistical methods in describing patterns of behavior.

Well-designed and implemented quantitative research has the merit of being able to make generalizations, for a broader population, based on findings from the sample. To enhance the generalization of findings, quantitative research methods follow, at least theoretically, standardized procedures in sample selection, instrument design, implementation and analysis.

This standardization in turn increases the replicability of procedures and the reliability of findings and also can mitigate the impact of interviewer and interviewee biases. However, quantitative research is based on the assumption that research procedures, including instrument design, sample selection and implementation, can be standardized and would lead to reliable outcomes. In reality this may neither be easy nor true since the research problem may require exploration of new ideas, which may not be achieved by following structured procedures (Yesegat 2009).

Similarly, Creswell (2003) describes qualitative approach as it uses the philosophical assumption of social constructivism worldview that provides an understanding of social reality based on the subjective interpretation. Besides, the third approach is mixed research approach that seeks a pragmatic knowledge claim philosophy that consists of both quantitative and qualitative approaches.

McKerchar 2008 (cited in Yesegat 2009), in general, the choice among the three research approaches is guided by mainly the research problem apart from the underlying philosophy of each research method. That is, whether the research problem is based on a framework developed

deductively through a review of the literature and prefigured information to be collected in advance of the study or to allow it to emerge from participants in the project or both.

Thus, in order to achieve the objectives stated in the preceding section, considering the nature of research problem and the research perspective, this study will be mainly employ quantitative research approach on the determinants of financial distress on manufacturing share companies in Addis Ababa-Ethiopia over the period of 2008-2013. In this study, the empirical methodology is adopted mainly from Naveed et al. (2010) with some modifications.

Study Design

This study is basically regression analysis. This design can help to identify factors that determine financial distress determinants. As a preliminary purpose in this analysis, the method designed to take in to account the stated specific objectives.

Research Method

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

The significance of the impact of the independent variables on dependent variables is, at the same time, highlighted in using multiple regressions. Multiple regressions are further utilized to

examine the associative relationships between variables in terms of the relative importance of the independent variables and predicted values of the dependent variables.

For the initial construction of the decomposed model an exploratory study was carried out through a search of the available literature to identify the exact components of the model.

Data Source and Type

To comply with the research objectives, the researcher mainly uses secondary sources of data. The secondary data was collected from Ethiopia Revenue and Custom Authority (ERCA). This is due to different reasons, firstly it have higher quality in terms of relevance and free from researcher bias. Moreover, it have advantage of permanence of data which means secondary source of data is both permanent and available in a form that may be checked relatively easily by others, thus it will enhance the reliability of data (Stewart and Kamins, 1993 as cited byYuqi Li 2007).

Secondary data had obtained from annual reports and financial statements of manufacturing Share Company. For the purpose of reviewing relevant literatures different sources of information was been used. Those are international Journals on finance, books, annual and quarter reports of Manufacturing Share Company Addis Ababa Ethiopia.

The type of data that had been collected in the study was panel data, thus it was address a broader range of issues and tackle more complex problems with panel data than would be possible with pure time series or pure cross-sectional data alone. Second, it is often of interest to examine how variables, or the relationships between them, change dynamically (over time).

Sample Selections

The researcher applied purposive sampling technique for the selection of manufacturing share companies in Addis Ababa-Ethiopia. The analysis was based on consolidated data from the 2009-2013 financial statements and annual reports twelve manufacturing share company in Addis Ababa-Ethiopia. Taking research needs and the compatibility of data into account, the researcher selected the sample data according to the following criteria: excluding those manufacturing share company establish after 2009 because the researcher needs annual report and financial statement of five years.

Thus, there are a total of 25 manufacturing share companies operating in Addis Ababa-Ethiopia until now. However, there are only twelve manufacturing share companies which are able to fulfill the above mentioned criterion i.e, at least five years of work experiences and availability of data. Those manufacturing share companies selected for the study were. Since, they had provided detailed information on the determination of financial distress determination.

The study is focus on the ability of non-financial companies to fulfill short term such as: loan repayments, interest burden, account payable and dividend payout for the period of 2009-2013. In order to test the hypothesis, financial ratios of twelve manufacturing share companies are analyzed using panel data regression.

3.3 Method of Data Analysis

Data that was collected from the aforementioned sources was analyzed though regression analysis. Correlation analysis are among the ways into which data are analyzed in order to observe the relationship between the variables. Finally, regression Analysis had been used to examine the relationship between the determinants of financial distress and explanatory variables such as leverage, liquidity, profitability, solvability, size, efficiency, inflation and economic growth.

3.4 Regression Analysis

The regression analysis was used to examine the relationship between the financial distress of Manufacturing Share Companies in Addis Ababa-Ethiopian and explanatory variables such as liquidity, leverage, profitability, size, solvability and efficiency inflation and economic growth.

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

Otherwise random effect estimation model is used and it is the models to use when researchers want to control for omitted variables that change over time but are constant between cases. It allows using the variation between cases to estimate the effect of the omitted independent variables on dependent variable.

Model Specification

The nature of data used in this study enables the researcher to use panel data model, which is deemed to have advantages over cross section and time series data methodology. Panel data involves the pooling of observations on a cross-section of units over several time periods. A panel data approach is more useful than either cross-section or time-series data alone.

As Brook (2008) stated the advantages of using the panel data set; first and perhaps most importantly, it can address a broader range of issues and tackle more complex problems with panel data than would be possible with pure time-series or pure cross-sectional data alone.

Random Effect Model

The reason why the above financial model used the random effect model is that, it is primarily based on the Hausman specification test, which are the scientific tests done for which type of model must be used for specific panel data regression. Therefore, the random effect model is used based on Hausman specification test. It is often said that the random effects model is more appropriate when the entities in the sample can be thought of as having been randomly selected from the population, but a fixed effect model is more plausible when the entities in the sample effectively constitute the entire population (for instance, when the sample comprises all of the stocks traded on a particular exchange).Since there are fewer parameters to be estimated with the random effects model and therefore degrees of freedom are saved, the random effects model should produce more efficient estimation than the fixed effects approach (Brook 2008).

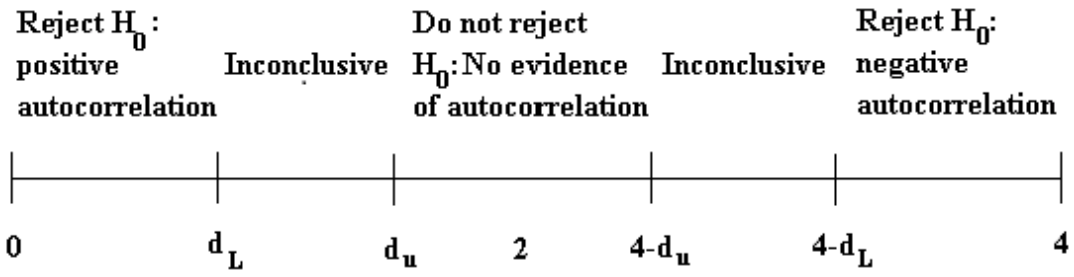
Heteroscedasticity Test

It is a test made to check whether error terms variance is constant (homoscedasticity) or not (heteroscedasticity). In this study heteroscedasticity test is tested by popular white test method for its presence.

Test for Autocorrelation

This assumption states that errors or disturbance terms are uncorrelated (linearly independent). If disturbance terms are correlated with each other, it is the sign of autocorrelation (Brook, 2008). The simplest and most popular test to detect the existence of autocorrelation is Durbin Watson (DW test). Brook (2008, p 147) reveals the selection of rejection, non rejection and inclusive regions in the following diagram. The figure shows that DW test has two critical values: upper critical values (dU) and lower critical values (dL).

Figure 3.1 Rejection and Non-rejection regions for Durbin Watson test



Source: Literature review

Normality Test

As any linear function of normally distributed variables is itself normally distributed, (Gujarat, 2004), a normal distribution is not skewed and is defined to have a coefficient of kurtosis of 3. If

residuals are normally distributed the histogram is bell shaped and the value of Bera-Jarque statistic is not significant at 5% significance level (Brook, 2008). The usual test to check for normality is the Bera-Jarque, which states that the kurtosis of normal distribution is 3 and its excess kurtosis is zero is used in this study.

Test for Multicollinearity

This assumption assumes that explanatory variables are not correlated with one another. In another word the problem of multicollinearity exists when explanatory variables are highly correlated. To detect the existence of multicollinearity among explanatory variables the study used correlation matrix. Kennedy (2008) noted that any correlation coefficient exceeding 0.7 causes multicollinearity problem leading to less reliable results.

In line with the previous determinants of financial distress researches, the study used Panel data multiple regression analysis (PDMRA) with Random Effect Model to find the relationship between the explanatory variables and firms financial distress Pranowo (2010). The following are the regression model used for testing

In our evaluation, use Debt Service Coverage (DSC) $\leq$ 1.2 is a proxy of Financial Distress (Jeff Ruster, 1996). This means fund availability divided by due date all of company's liabilities. The compu``tation of DSC can be explained at equation below.

Hypothesis 1-8:

DSC= (EAT+ (DEPR+AMORT) + (INTEREST) –Tax)/ (principal + Interest and

or coupon)..... (eq3.1)

Debt service coverage (DSC) as a proxy of Financial distress

In line with the above model developed by Pranowo (2010), the researcher developed, tested and reformulated the following model for financial distress:

FD =βo+β1LEVxt+ β2LIQxt+ β3PROFSxt + β4SOLV +β5EFFxt + β6 FSIZE +β7INF

β8EG+e..... (eq3.2)

The research considers eight determinants of debt service coverage as independent variables of financial distress. They are (1) the ratio of the liquidity of the firm **(**LIQxt) **(**2) the ratio of the firms leverage (LEVxt), which indicates whether the firm is highly levered or not (3) the ratio of firm's profitability (PROFSxt (4) The solvability(SOL). (5) The size of the firm,(FSIZE) (6) the efficiency of the firm (EFFIC). (7) The inflation (INF). (8) The economic growth (EG) The last two is macro factors.

• LIQxt is the firm's holding of liquid assets to cover short term debts;

• PROFSxt is the profitability of the firm;

• SIZExt is the natural logarithm of the firm size measured in terms of volumeof assets;

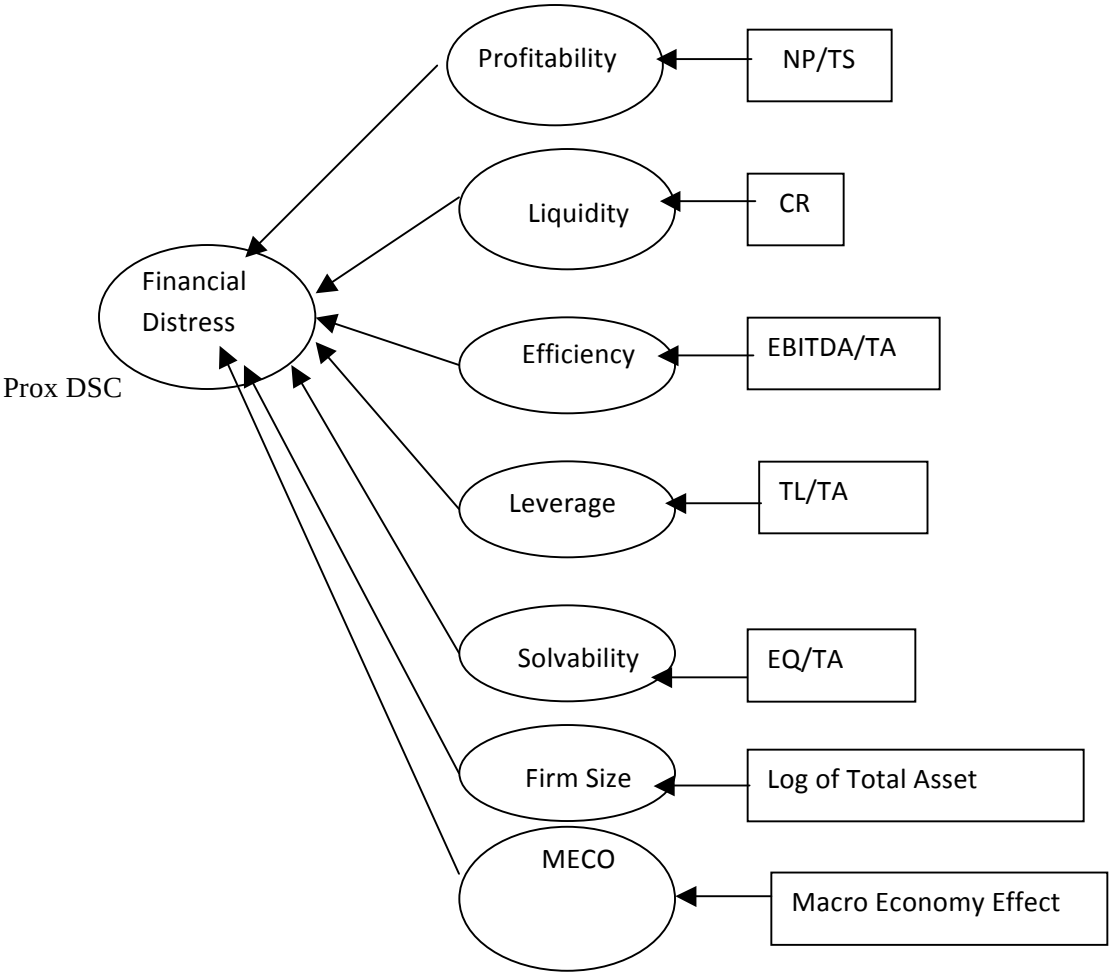
• EFFxt t is efficiency of the firm;

• LEVxt is the level of the firm leverage

• SOLVxt is the solvability of the firm

.INFxt and EG are macro factor of the firm

Figure 3.2. Framework of the analysis



Source: Pranowo et al. (2010)

Note:

Profitability: Net profit to Total Asset

Current Ratio: Current Assets to current liabilities

EBIT: Earnings Before Interest, and Tax

TA: Total Assets of Company

Leverage: Due date of loan and other liabilities to fund availability

EQ: Equity is paid in capital which is book value of capital

Log: Logarithm of Firm

Table 3.1: Determinant measurements in previous studies

Determinants	Definition (proxy)	Expected IMPACT on DSC as a proxy of FD
Leverage	Total Liability / Total Asset	-
Liquidity	Current Ratio	+
Profitability	Net Profit / Total Sale	+
Firm size	Log of Total Asset	+
Solvability	Equity/ Total Asset	+
Efficiency	EBIT / Total Asset	+
Economic growth	Annual rate of GDP	+
Inflation	Annual rate of inflation	-

Source: Literature review

3.5 Method of Data Analysis

In order to observe the key recent developments in Ethiopia related to financial distress the study were guided by some of models of financial distress. It uses the model developed by (Pranowoet at 2010)to observe the various factors that cause financial distress.

The study also document and analyze the results of review of financial distress and debt service coverage practice among those manufacturing share companies Addis Ababa-Ethiopia. In order to investigate the relationship between debt service coverage and independent variables in manufacturing share companies a random effect multiple regression model used.

Chapter Four

4. Data Analysis and Interpretation

This chapter deals with data analysis and interpretation. It has four sections. The first is about descriptive statistics, the second section is about on correlation analysis among the determinants of financial distress. The third section is panel data random effect model regression analysis. Lastly, conclusion presented.

To empirically investigate on the determinants of financial distress and achieve the objectives stated in the first chapter, all manufacturing share companies, their year of service greater than five years, were included. Based on the stated year of service and others reason twelve manufacturing share companies in Addis Ababa-Ethiopian financial data over the period of 2009-2013 was collected. Therefore, sixty(5*12) observations were used to empirically analyze the determinants of financial distress in manufacturing share companies within the Ethiopian context.

To analyze the collected data, the investigator first used descriptive statistics and then correlation to make sure about the relationship between independent variables (liquidity, leverage, economic growth, efficiency, size of the firm, profitability, solvability, and inflation.) Finally, after applying various tests on the data, multiple regression analysis was employed. Multiple regressions were conducted in order to know the contribution of predictor variables in explaining the dependent/regressed variables (debt services coverage). The outputs of correlation and regression were evaluated using 1%, 5% and 10% significance levels of confidence interval, and finally the results were presented by using the appropriate tables

4.1 Descriptive Statistics

The distribution of data set for dependent and independent variables used in the study is explained by descriptive statistics. The central idea of descriptive statistics is for a given study is measurement of location and variability. The central value of the variables denoted by location is measured mean where as the spread of the data from mean denoted by variability is measured by standard deviation. Illustrated below in table 4.1 is the summary of descriptive statistics for the study.

Table 4.1 Summary of descriptive statistics

	Mean	**Std. Dev**	**Maximum**	**Minimum**
DSC	0.740296	0.95036	3.744571	-1.2655
EFFIC	0.224619	0.217739	0.849344	-0.09737
EG	10.33898	1.502529	12.6	8.7
FSIZE	8.51868	0.471265	9.470026	9.470026
INF	16.27627	10.34815	33.2	8.1
LEV	0.572854	0.21534	0.937459	-0.09737
PROF	0.116027	0.101997	0.422444	-0.07991
LI	2.282559	1.179205	11.07971	0.278639
SOL	0.538129	0.330769	1.349467	0.000291
Observation	60	60	60	60

Source: manufacturing share companies survey and own computation

Table 4.1 above provides a summary of the descriptive statistics of the dependent and explanatory variables for 60 observations, and it indicates the results over the period from 2009

to 2013 in Ethiopian Addis Ababa manufacturing share companies. This shows the average indicators of variables computed from the financial statements.

As shown in table 4.1, the dependent variable, **debt services coverage (DSC)** measured by (EAT+ (DEPR+AMORT) + (INTEREST) –Tax)/ (principal + Interest and or coupon) for sixty observations shows a mean of 0.740296 in the study period (2013) it express that the manufacturing share company has cover there current obligation by 0.74, with a maximum value of 3.744571 and a minimum value of -1.2655 indicating there is financial distress in manufacturing share companies as the researcher stated In our evaluation, use Debt Service Coverage (DSC) $\leq$ 1.2 is a proxy of Financial Distress (Jeff Ruster, 1996). Standard deviation is 0.95036, which implies large difference in debt service coverage in manufacturing sector.

Efficiency which is measured EBIT to total asset of the firm, measures whether they are more enough to be operationally as well as financially sustainable and cover their operational costs or not. The mean value of the variable is 0.224619, whereas the minimum and maximum values is 0.849344 and 0.849344 respectively. The standard deviation from the mean is 0.217739.the standard deviation implies the manufacturing firms are more efficient in order to cover their debt.

Similarly, the mean of **economic growth** (the annual GDP rate) was 10.33 percent with the standard deviation of 1.5 percent. The maximum value of economic growth was 12.6 percent and the minimum value of growth was 8.7 percent. This higher economic growth standard deviation might be due to the inclusion of Ethiopian manufacturing companies.

The mean value of **firm size** is 8.51868. Therefore, with regard to firm size as shown in the table above, there exists significant variation across the sample manufacturing share companies for the reason that the value of the standard deviation is 0.471265. Hence the highly variated firm size among manufacturing share companies may have significant impact on debt service coverage in manufacturing share companies that we are going to see in the regression results.

Table 4.1 also shows the rate of **inflation** over the study period. The average inflation rate mounts up to almost 16.27627 per annum. The inflation rate among sample firms indicate a great disparity, with a 8.1 minimum value, which means DSC deterioration, to a 33.2 maximum value and with standard deviation of 10.34815.

The mean of **leverage** (TL to TA) was 57.28 percent with the standard deviation of 21.53 percent. Debt ratio was high in this study. In the US, the mean of debt ratio is around 56 percent, while in the UK debt is around 54 percent (Rajan&Zingales, 1995). Theoretically, firms in developed countries are highly levered compared to firms in emerging markets, but here the result was reverse. The reason for this high leverage might be the lack of well developed stock markets or the market inefficiency in the developing countries; companies may not raise equity funds by issuing stocks in the market, and the nature of manufacturing sector is also the prominent reason.

The average **profitability** as measured by net income to total sales for Addis Ababa-Ethiopian manufacturing share companies during the study period is about 0.11 and the value of the standard deviation is 0.10 which implies the presence of moderate variations among the values of profitability across the manufacturing share companies included for this study. Besides, on

average, these manufacturing share companies have the **liquidity** ratio of 2.282559. Maximum and minimum values were 11.07971 and 0.278639 with standard deviation of 1.179205. The variability of returns that is, business risk, measured by the standard deviation of returns had the mean value of 2.282559.

The firm **solvability** shows a mean of 55.81 percent with a maximum of 134.9 percent and a minimum of 0.02 percent. The standard deviation is 33 percent indicating greater deviation or variability in the firm's financial distress in the manufacturing share companies during the period of investigation (2013).

4.2. Test Results for the multiple regression model Assumptions

This section deals about the test results for the multiple regression model assumptions.

Test for Hetroscedasticity

One of the important assumptions of the multiple regression reveals that the variance of the disturbance term is constant. This is called the assumption of homoscedasticity. If disturbance terms (errors) do not have constant variance, they are said to be hetroscedastic (Gujarat, 2003). As presented below in table 4.2, in this study the F-statistic and the Chi-Square version of the test statistic shows that there is no evidence for the presence of hetroscedasticity as p-values are greater than 0.05.

Table 4.2 HeteroskedasticityTest: White

F-statistic	1.281994	Prob. F(8,51)	0.2737
Obs*R-squared	10.04567	Prob. Chi-Square(8)	0.2618
Scaled explained SS	12.97974	Prob. Chi-Square(8)	0.1125

Source: manufacturing share companies survey and Owen computation

Test for Autocorrelation

The other assumption of regression model assumes that there is no pattern in the errors or disturbance terms i.e. the covariance between the error terms over time or cross-sectionally is zero (Brook, 2008, p 139). This is called autocorrelation. One ways that autocorrelation is detected is using Durbin Watson (DW) test, the first order auto correlation test, that is the relationship between error term and its immediate previous value. Accordingly to say that there is no autocorrelation, the DW test statistic should be closer to 2.

Table 4.3 Test of autocorrelation: Durbin Watson

Variable	DW test statistics result
Debt service coverage as a proxy for Financial distress	1.938140

Source: manufacturing share companies survey and Owen computation

As seen in the above table, DW shows the result of 1.938140 revealing that the assumption is not it is closer 2 violated or there is no evidence for the existence of autocorrelation between error terms.

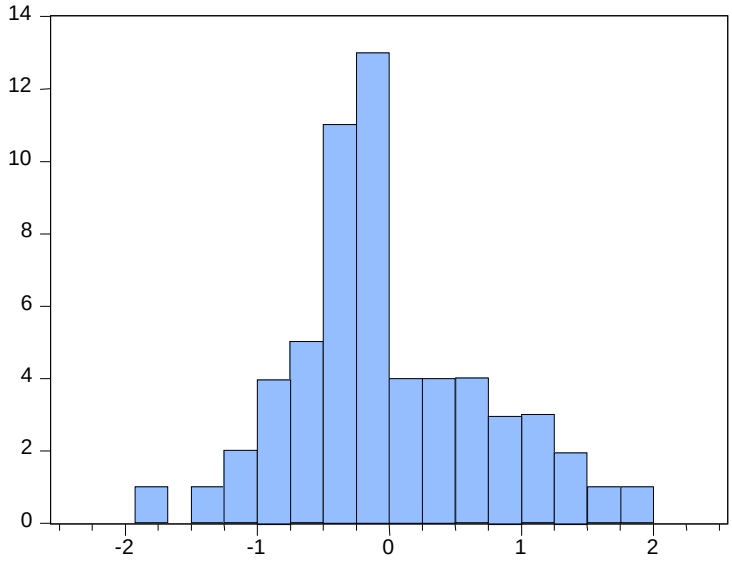
Normality Assumption Test

According to (Brooks 2008) before running regression analysis, it should be noted that there are four classic assumptions in undertaking the regression analysis and one of them is normality of data. Therefore, normality test becomes relevant. (Brooks 2008) also noted that in order to conduct hypothesis test about the model parameter, the normality assumption must be fulfilled. The normality assumption is about the mean of the residuals is zero. Therefore, the researcher used graphical methods of testing the normality of data as shown below.Therefore the normality test of multiple regression panel data random effective model tests whether disturbance terms are normally distributed or not. Shown below in figure 4.1 is the normality test for the study.

A normal distribution is not skewed and is defined to have a coefficient of kurtosis of 3. Bera-Jarque formalizes this by testing the residuals for normality and testing whether the coefficient of skewness and kurtosis are zero and three respectively. The Bera-Jarque probability statistics is also expected not to be significant (Brook 2008). Therefore, the normality test for this study (DSC dependent variable) as shown in figure 4.1. the kurtosis is 3.28, and the Jarque-Bera statistic had a p-value of 0.16, implying that the N(0,ı2) and E(˚it) = 0 assumptions. Similarity, Bera-Jarque probability is not significant for DE and LTD models too.

The coefficient of kurtosis is 3.39, and the Bera-Jarque statistic has a p value of 0.16 implying that the errors are normally distributed as P value is in excess of 0.05.

Figure 4.1. : Normality test for residuals



Series: Standardized Residuals	
Sample 2009 2013	
Observations 59	
Mean	0.007689
Median	-0.086132
Maximum	2.298327
Minimum	-2.407112
Std. Dev.	0.853491
Skewness	0.748662
Kurtosis	3.395646
Jarque-Bera	3.559100
Probability	0.168714

Source: manufacturing share companies survey and Own computation

Multicollinearity Test

Multicollinearity is an assumption of a linear relationship between explanatory variables that creates biased regression model. This problem occurs when the explanatory variables are very highly correlated with each other (Brook, 2008). Kennedy (2008) noted that the problem of correlation between explanatory variables exists when coefficient of correlation among the variables are greater than 0.70. As illustrated below in table 4.4, frequency of financial distress in manufacturing firm has a correlation coefficient of 0.49 which is relatively higher than the other variables coefficients. However, still as it is less than 0.70, it can be said that the problem of multicollinearity is nonexistent. The result in general shows low coefficient of correlation indicating multicollinearitynon existence among independent variables which would not jeopardize regression. The regression analysis is therefore more reliable as indicated by low coefficient of correlation.

Table4.4 independent variables correlation matrixes

Covariance Analysis: Ordinary

Date: 10/28/14 Time: 17:06

Sample: 2009 2013

Included observations: 60

Correlation	EFFIC	EG	FSIZE	INF	LEV	LI	PROF	SOL
EFFIC	1.000000							
EG	0.047652	1.000000						
FSIZE	-0.144275	-0.058441	1.000000					
INF	-0.032512	-0.041212	0.010435	1.000000				
LEV	0.010385	0.071745	0.415481	0.112150	1.000000			
LI	-0.085637	-0.047446	-0.466871	-0.028464	-0.441878	1.000000		
PROF	0.354066	0.032181	-0.009720	0.056472	0.033572	0.013963	1.000000	
SOL	-0.315044	0.046815	0.499574	0.023990	-0.387500	0.343687	-0.215739	1.000000

Source: Manufacturing share companies survey and Own computation

4.3 Results of Regression Analysis

Regression result output is presented in the forth coming paragraphs. The empirical model used to test the determinants of financial distress, as indicated in chapter three, is as follows:

FD = βo + β1LEVxt + β2LIxt + β3PROFSxt + β4SOLV + β5EFFxt + β6 FSIZE + β7 INF + β8 EG + £ .....

The regression model estimation result is presented below in table 4.5. The table reveals that the R-squared statistics and the adjusted R-squared statistics of the model is 65.82% and 57.75%

Brook (2008,p 109) noted that a simple way to determine whether the regression line fits the data well is to look at the value of R^2. A value of adjusted R^2 close to 1 indicates that the model explains nearly all of the variability of dependent variable about its mean value, while a value close to zero indicates that the model fits the data poorly. Accordingly the adjusted R^2 of 57.75% implies that 57.75% of the variability in the dependent variable can be explained by the changes in the listed independent variables. The remaining 42.25% is explained by other factors not included in the study model. The outputs of correlation and regression were evaluated using 1%, 5% and 10% significance levels, and finally the results were presented by using the appropriate regression result.

Table 4.5 Regression Results

Dependent Variable: DSC

Method: Panel EGLS (Cross-section random effects)

Date: 10/25/14 Time: 20:22

Sample: 2009 2013

Periods included: 5

Cross-sections included: 12

Total panel (unbalanced) observations: 60

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.700139	3.303102	1.422947	0.1610
EFFIC	0.206398	0.530674	0.388935	0.6990
EG	0.113835	0.061900	1.839014	0.0719***
FSIZE	0.554854	0.216392	2.564120	0.0241**
INF	-0.013500	0.009048	-1.492094	0.1420
LEV	-1.062132	0.619552	-1.714354	0.0927***
PROF	0.045083	0.052835	0.853290	0.3976
LI	3.926007	1.298824	3.022740	0.0039*
SOL	0.167939	0.066824	2.513171	0.0299**

	Effects Specification	
	S.D.	Rho
Cross-section random	0.556191	0.3924
Idiosyncratic random	0.692038	0.6076

Weighted Statistics			
R-squared	0.658271	Mean dependent var	0.365648
Adjusted R-squared	0.577595	S.D. dependent var	0.793924
S.E. of regression	0.709514	Sum squared resid	25.17050
F-statistic	2.785336	Durbin-Watson stat	1.908140
Prob(F-statistic)	0.012482		

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

Source: Manufacturing share companies survey and own computation

The coefficient of determination adjusted R-square (R2) indicates that 57.75% behavior of financial distress variables DSC can be explained by the independent variables (Solvability (solv) Profitability (prof), liquidity (liq), efficiency (eff), Leverage (leve), firm size (fsize), Inflation (inf) and Economic Growth (eg)). Overall, F-statistic 2.785336 with p-value 0.012482 indicates that the regression model is feasible.

The result of panel data random effect regression model as presented in Table 4.5 indicates that **Efficiency (effic)** variable indicate has a positive relationship with DSC by coefficient 0.206398 and p-*value*s 0.1610. This means if we add one unit efficiency will increase DSC 0.206398. Efficiency is earning before interest and tax to total assets, this ratio indicates how big generated fund can be created by operating of the company's assets. EBIT is income before interest expense and corporate tax plus allocation funds from depreciation and amortization which are noncash expenses. Operational cash flow is profit plus depreciation, because depreciation and amortization are parts of source of fund in cash flow. The result shows Efficiency is insignificantly positive relationship with DSC in stated confidence interval.

Economic Growth (eg) With regard to macroeconomic factors, the real GDP growth is positive and significant factor of DSC. As discussed in the methodology part there is a clear anticipation to have a positive relationship between the current Ethiopian stimulated economic growth and DSC as a proxy financial distress. The study justified a positive and insignificant impact of Ethiopia real GDP growth and DSC in 1% and 5% level of confidence interval but it's significant in 10% level of confidence interval. This is because, as we know, stimulated economy could create a new and potential demand for manufacturing business.

Firm size (Fsize) is the natural logarithm of total asset, this indicate how large the company's in terms of its asset size in order to generate return to cover its debt services coverage. TA is the current asset plus fixed assets of the firm. Firm size (Fsize) is significant positive relationship to DSC with regression coefficient 0.554854 and p-value 0.0241. This means if one unit size increase will make DSC higher to 0.554854. The more size, DSC will be more. On the other hand, a company, which has high assets tends to not get financially-distress easier due to high conversion of the assets to cash. The result shows firm size is positive and insignificant in 1% level of confidence interval but it's positive and significant in 5% level of confidence interval.

Inflation (inf) has a negative relation with DSC, with coefficient -0.013500 and p-value 0.1420. Inflation is measured by consumer price index (CPI) inflation in national level. The result shows inflation negative and insignificant in stated level of confidence interval.

Leverage (lev) has a negative relationship and significant with DSC with *p-value* 0.0927 and coefficient -1.062132. This means if one unit leverage increase will make DSC lower to -1.062132. The more leverage, there is higher probability of financial distress. In other word DSC will be less. On the other hand, a Company which has a lot of loan tend to get financially-distress easier due to liabilities of the loan repayment: principal, interest or coupon of bank loan. The result shows leverage is negative and insignificant in 1% and 5% level of confidence interval but it's negative and significant in 10% level of confidence interval.

Profitability (prof) is the ratio of net profit to total sales, this indicate how large the ratio of net profit to sales generated by operating activities in order to cover the company's debt and other fixed charges. Profitability has positive relationship with DSC, with regression coefficient

0.045083 p-value 0.3976 So, the result shows positive and insignificant in the stated level of confidence interval.

Liquidity (li) has a positive relation with DSC, with coefficient 3.926007 and p-value 0.0039. Liquidity is measured by current ratio or current asset to current liability. The result shows liquidity positive and significant in 1% level of confidence interval.

Solvability (sol) variable indicate has a positive relationship with DSC by coefficient 0.167939 and p-*value*s 0.0299. This means if we add one unit equity will increase DSC 0.167939. solvability, measure equity to total assets, this ratio indicates The condition of being solvent; ability to pay all just debts. The result shows solvability is positive and insignificant in 1% level of confidence interval but it's positive and significant in 5%level of confidence interval.

On average from the year 2009 to 2013, out of 12 manufacturing share companies 10 are fully financially distressed firms, with the DSC of less than 1.20.

Conclusion

This chapter has presented the results of the methods adopted in the study, quantitative method, to investigate the determinants of financial distress. Data obtained through survey of manufacturing share companies and their document review is regressed to see their determinants of debt service coverage as a proxy of financial distress. In line with this result, to address the research problems, it is fundamental to examine the regression results of the aforementioned method adopted. The next chapter,show conclusion and recommendation of the study.

Chapter Five

5. Summary, Conclusion and Recommendations

The purpose of this last chapter is to sum up the whole thesis but in comprehensive manner. Accordingly, the first part presents an overview of the thesis and its major findings, and finally the chapter ends up with recommendations.

5.1. Summary and Conclusion

The objective of this study is to examine the determinants of financial distress in manufacturing share companies Addis Ababa-Ethiopia as measured by DSC. This study used secondary data during the period 2009-2013 and the sample of twelve manufacturing share companies that were operating. Descriptive statistics and regression analysis were performed to describe the determinants of financial distress in manufacturing share companies Addis Ababa-Ethiopia. This chapter presents a conclusion of the study by summarizing the study's findings and discussing their implications, and providing suggestions for future research.

The study investigates the impact of firm level characteristics on performance of the manufacturing sector of Addis Ababa-Ethiopia over the period of five years from 2009 to 2013. For this purpose, efficiency, economic growth, inflation, firm size, leverage, liquidity, solvability and profitability are selected as explanatory variables while DSC is taken as dependent variable. The results of regression analysis reveal that liquidity, firm size, solvability, leverage, and economic growth are most important determinants of financial distress in manufacturing share companies Addis Ababa-Ethiopia whereas DSC has statistically insignificant relationship with, efficiency, profitability and inflation.

5.2 Implications of the Results

i. The adjusted value of R square (0.57) indicates that 57% the dependent variable is explain by the independent variables. Therefore, it implies that internal and external factors are important determinants of financial distress in manufacturing share companies Addis Ababa-Ethiopia to the extent on average 57%.

ii. Positive coefficient of variable liquidity specifies the positive relationship. However, the relationship between DSC and liquidity is statistically significant (+). The higher the firm's liquid assets, the higher the ability of the firms is cover its fixed charges and the lower the probability of the firm to go for financial distress. As the findings shows that liquidity and do have positiveimpact on financial distress, and it provides further implication on the effective risk management practices in the companies.

iii. The coefficient of variable firm size is positive and statistically significant at 1% level. This predicts that performance of large size manufacturing companies are better than small size companies in order to solve financial distress. The positive relationship between firm size and DSC implies that firm **s**ize is used to capture the fact that larger manufacturing companies are better placed than smaller once in harness economies of scale in transactions and enjoy a higher level of DSC.

iv. Leverage is negatively and significantly related with the DSC. This predicts that the performance of highly levered Ethiopian manufacturing share companies are going to be less DSC and implies total asset is better than total debt in Addis Ababa-Ethiopianmanufacturing share companies. The leverage ratio level of the manufacturing share companies affects their DSC negatively, which supports the hypothesis formulated

for the study. Thus, from the result it is implied that highly DSC in manufacturing companies are more likely relied on internally generated funds and total asset than total debt capital as the source of financing.

v. The positive and significant relationship between solvability and DSC of manufacturing share companies in Addis Ababa- Ethiopia implies that a sound capital position is able to ability to pay all just debts and has more time and flexibility to deal with problems arising from unexpected losses, thus achieving increased solvability. Hence indicates that well capitalized manufacturing share companies face lower costs of going bankrupt.

vi. The positive and statistical significant relation between economic growth and DSC of manufacturing share companies in Addis Ababa-Ethiopia implies that manufacturing share companies with high rate of economic growth in terms of their GDP are also in a better position of being less probability of financial distress.

vii. The other explanatory variables efficiency, and profitability are with a positive coefficient sign. However, efficiency and profitability are not statistically significant with the large p-values. Inflation is negative coefficient sign but the result of p-value is higher is not statistically significant. Therefore, efficiency, profitability and inflation are not considered as powerful explanatory variables to define the determinants of financial distress in manufacturing share companies in Addis Ababa-Ethiopia over five years.

5.3. Recommendations

Based on the major findings obtained from the result, the researcher provided the following recommendations.

This work is an attempt to study the internal and external factors affecting the determinants of financial distress manufacturing share companies in Addis Ababa-Ethiopia.

i. The negative relationship between leverage and DSC implies that investors in Ethiopian manufacturing industry might be highly risks averse and low-trusting. Thus, the managements of manufacturing companies should do more in eliminating the information asymmetries with investors. Otherwise it may lead to bankruptcy by loading more debt on these companies.Minimizing the firms leverage through financial reorganization.
ii. Maintaining and improving liquidity by improving cash collection and The failure of cash collection leads for unbalanced asset structure.

Further research directions

The relatively low overall explanatory power adjusted (R2) in this study reveals that there might be imperfect representations of theories in using proxies or the existence of other factors affecting the firms' financing decision than those hypothesized by this study. These factors might encompass the ownership structure of the firm, awareness of public about macro economic factors (inflation, and economic growth). Therefore, further research should investigate the aforementioned factors using alternative proxies of variables.

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Appendices

Appendix 1

Dependent Variable: DSC

Method: Panel EGLS (Cross-section random effects)

Date: 10/25/14 Time: 20:22

Sample: 2009 2013

Periods included: 5

Cross-sections included: 12

Total panel (unbalanced) observations: 60

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.700139	3.303102	1.422947	0.1610
EFFIC	0.206398	0.530674	0.388935	0.6990
EG	0.113835	0.061900	1.839014	0.0719
FSIZE	0.554854	0.216392	2.564120	0.0241
INF	-0.013500	0.009048	-1.492094	0.1420
LEV	-1.062132	0.619552	-1.714354	0.0927
PROF	0.045083	0.052835	0.853290	0.3976
LI	3.926007	1.298824	3.022740	0.0039
SOL	0.167939	0.066824	2.513171	0.0299

	Effects Specification	
	S.D.	Rho
Cross-section random	0.556191	0.3924
Idiosyncratic random	0.692038	0.6076

Weighted Statistics			
R-squared	0.658271	Mean dependent var	0.365648
Adjusted R-squared	0.577595	S.D. dependent var	0.793924
S.E. of regression	0.709514	Sum squared resid	25.17050
F-statistic	2.785336	Durbin-Watson stat	1.908140
Prob(F-statistic)	0.012482		

Appendix 2

Covariance Analysis: Ordinary

Date: 10/28/14 Time: 17:06

Sample: 2009 2013

Included observations: 60

Correlation	EFFIC	EG	FSIZE	INF	LEV	LI	PROF	SOL
EFFIC	1.000000							
EG	0.047652	1.000000						
FSIZE	-0.144275	-0.058441	1.000000					
INF	-0.032512	-0.041212	0.010435	1.000000				
LEV	0.010385	0.071745	0.415481	0.112150	1.000000			
LI	-0.085637	-0.047446	-0.466871	-0.028464	-0.441878	1.000000		
PROF	0.354066	0.032181	-0.009720	0.056472	0.033572	0.013963	1.000000	
SOL	-0.315044	0.046815	0.499574	0.023990	-0.387500	0.343687	-0.215739	1.000000

Appendix 3

Correlated Random Effects – Hausman Test

Equation: equi

Test cross-section random effects

Test Summary	Chi-Sq. Stasitc	Chi-Sq. d.f.	Prob
	1.432047	8	0.5498