

**FINANCIAL DISTRESS AND ITS DETERMINANTS IN
SELECTED BEVERAGE AND METAL MANUFACTURING
FIRMS IN ETHIOPIA**



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**A Thesis Submitted to the School of Graduate Studies of the Addis Ababa University In
Partial Fulfillment of the Requirements for the Degree of Masters of Science in
Accounting and Finance**

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Declaration

I, the undersigned, declare that this thesis is my original work, has not been presented for a degree in any other university and that all sources of materials used for the thesis have been dully acknowledged.

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Certification

This is to certify that **Ato Andualem Ufo Baza** has carried out his research work on the topic
entitled

**“Financial Distress and Its Determinants in Selected Beverage and Metal
Manufacturing Firms in Ethiopia”**

under my supervision. This work is original in nature and it is suitable for submission for the
award of degree for **Masters in Accounting and Finance.**

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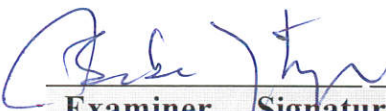
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ADDIS ABABA UNIVERSITY
SCHOOL OF BUSINESS AND PUBLIC
ADMINISTRATION

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ACRONYMS

BDNS: Business Development Network Service

CASHAV: Cash availability

DSC: Debt Service Coverage

DW: Durbin-Watson Statistic

EAT: Earning After Tax

EBIT: Earnings Before Interest and Tax

EFF: Efficiency of Firm

FD: Financial Distress

FSIZE: Firm Size

GCG: Good Corporate Governance

HLTs: Highly Levered Transactions

LEV: Firm Leverage

LIQUID: Firm Liquidity

LOG: Natural Logarithm

NBE: National Bank of Ethiopia

NPL: Non Performing Loan

OPERVIA: Operational Viability of firm

PROFIT: Profitability of Firm

TA: Total Assets of firm

TD: Total Debt of firm

ABSTRACT

In this paper attempts are made 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 fulfil its liabilities. Liquidity of companies which can be a prominent point can be recognized by evaluating cash flow performance.

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.

CHAPTER ONE

1.1 INTRODUCTION

Financial distress is defined as *“the likelihood of bankruptcy, which depends on the level of liquid assets as well as on credit availability”* Hendel (1996). 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”* Wruck (1990).

Nowadays, most of the manufacturing firms in Ethiopia experience financial distress situation, due to low level of debt service coverage. The financial reports of most of manufacturing firm shows that on average the debt service coverage ratio of less than fifty percent. This indicates 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 firm 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 Charalambakis, Espenlaub, & Garrett 2008.

When the firms enter financial distress, they are quickly confronted with the dilemma of raising capital to fund their restructuring. Given that, few are liable to trust this risky investment, especially when taking into consideration that a financial boost is not a guarantee to provide a lasting solution to the problems at hand.

This short introduction highlights two 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 selected beverage and metal manufacturing firms in Ethiopia over the recent decade and to investigate 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); Theodossiou et al. (1996) and 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 Problem Statement

It is only over a few decades quite a few issues have been carried out as financial distress in developed, developing and transitional economies Zulkarnain (2009). The issues of financial distress were so diverse and approached from various disciplines perspective including but not limited to political theory, legal theory, management, economics, and accounting and finance Pindado (2001). As a result any attempt of studying financial distress inherently necessitates defining its scope.

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 Gordon (1971). 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. Very often, financial distress is determined in terms of failure, default, bankruptcy, or distressed restructuring, dependent on the underlying methodology and the objectives of the overall research.

It is a set of process mainly concentrate on the momentary perspective, when the adverse process has reached its lowest point and the decision about insolvency or distressed restructuring has to be made Gilson (1990). It is thus, distortions may arise because the examination of the deepest point of financial distress, also known as default, ignores the fact that the largest losses and increasing financial inflexibility happen several periods before this event occurs Ward and Foster (1997). In a narrow sense, however, it is defined as an inability of the company to meet its current financial obligations; the examination of the phenomenon of financial distress can be limited to the analysis of companies with external financing only Wruck (1990).

The phenomenon of financial difficulties in Ethiopian manufacturing companies had been occurred when global financial crisis in 2008, raw material price shock in 2009, and Ethiopian currency (Birr) devaluation in 2010. These three different cases lead firm's financial distress of the manufacturing companies in Ethiopia. In 2009, when Ethiopian government reduced subsidy for raw material price locally and increased tax burden, this made cost of production increased and squeezing profitability. This made many companies in as effect of a big losses and shortage of cash. The indication can be recognized by increasing non performing loan (NPL) in commercial banks. The same phenomena had been occurred in 2008, the business activities were contraction in international market due to global financial crisis and NPL increased again too panowaro (2010). Thus, manufacturing companies are very sensitive with external factors.

Financial distress is the situation when a company does not have capacity to fulfil 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 fulfil financial liabilities to its vendors or clients. The consequence of financial distress the companies will get dead weight losses.

The steps of integral firm financial distress beginning of early impairment when revenue decreased more than twenty percent as a symptom companies was financial distress, deterioration when the profit decreased more than twenty percent and cash flow problem when operational cash flow negative.

The intent of this paper is to investigate the key determinants of financial distress in the beverage and metal manufacturing firms in Ethiopian context.

1.3 The Objective of the Study

1.3.1 The General Objective of the Study

The purpose of this study is to investigate the determinants of financial distress in the selected beverage and metal manufacturing firms in Ethiopia. The study attempts to empirically test the impact of hypothesized threatening factors on firm's financial distress. Six factors are selected for study namely: liquidity, leverage, profitability, operational viability, firm size and efficiency.

1.3.2 The Specific Objectives of the Study

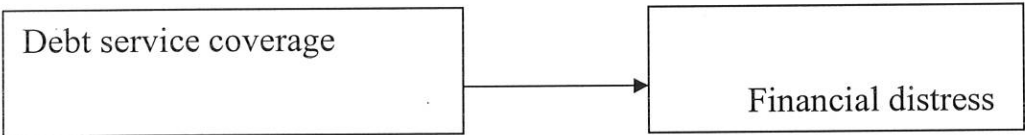
Following from the overall purpose of the study, the specific objectives of the study are to:

- 1) Present the tentative relationship between debt service coverage and financial distress in beverage and metal manufacturing sector;
- 2) provide an overview of key recent development in Ethiopia related to financial distress;
- 3) Present and analyze the results of the review of financial distress on beverage and metal manufacturing companies in Ethiopia.

1.4. The Research Hypothesis

In the finance debate of the relationship of debt service coverage and financial distress the prevalent competing model are the neoclassical model, financial model, and corporate governance model Lizal (2001). In Neoclassical model(in this case bankruptcy is a good thing since it frees the bad allocated resources, it is restructuring case when the bankrupt has a wrong mixture of assets), financial model(when the bankrupt has a right mixture of assets but a wrong financial structure) and corporate governance model(when the bankrupt has a right mixture of assets and financial structure but a bad management, in this case the bankruptcy is inefficient way of solution of the bankrupt’s problem, the efficient way is to fire the management.

This research emphasizes only on debt service coverage of the firms as proxy for financial distress.



Hypothesis: based on literature review the study hypothesizes:

H1: there is a positive relationship between liquidity and firm's debt service coverage as proxy for 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 to 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 proxy for 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 covering its debt services 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 proxy for 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 operational viability and firm's debt service coverage as proxy for financial distress.

If the firm is less operationally viable, the probability of the firm's financial distress is more (sign +). Therefore, there is a positive relationship between firm's operational viability 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 proxy for 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 proxy for 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 turnover and debt service coverage as proxy for financial distress.

1.5 Definitions of Terms

Financial distress: is the situation when a company's inability to fulfil its debt obligation to the third parties and that leads to either restructuring or bankruptcy.

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.

1.6 Delimitation of the Study

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 beverage and metal manufacturing firms.

1.7 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 (Pranowo (2010)). A decade ago, Kami Rwegesira (2000) 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 (Brown bridge (1998)). Financial distress literature dearth in the sub Saharan Africa context and the limited research is dominated by commissioned reports (Brown Bridge (1998)). 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 beverage and metal manufacturing companies 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.

1.8. Organization of the Research Report

There are five chapters in this study. Chapter 1 provides the background to the research and introduces the research problem and six hypotheses for investigation. It also includes a brief overview of the research objectives, significance and limitation.

Chapter 2 reviews the literature about the six disciplines of this research, which is, firm profitability, firm liquidity; firm size, firm leverage, operational viability and firm efficiency. This then leads to the immediate discipline of determinants of financial distress in manufacturing firms.

Chapter 3 presents data sources, types, the research methodology as well as the model specification and econometric models.

Chapter 4 presents the analysis of the data. The analysis was facilitated through the use of stata10 software with the utilisation of selected quantitative analysis techniques.

Chapter 5 presents the major conclusions and recommendations of this research. In addition limitation of the study and future study area mentioned next to key recommendation points.

CHAPTER TWO

LITERATURE REVIEW

2.1 Meaning of Financial Distress

As a rule, the term “financial distress” 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 Gordon (1971).

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.

Similar definitions of financial distress can be found in Andrade and Kaplan (1998) and Brown, James and Mooradian (1992). These authors interpret financial distress as a crucial event whose occurrence separates the time of a company’s financial health

from the period of financial illness and requires undertaking corrective actions in order to overcome the troubled situation.

Brown, James and Mooradian (1992) classify a company as financially distressed if it is going to implement restructuring measures with the purpose to avoid a default or as a response to the anticipated default on a debt contract.

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.

Asquith et al. (1994) choose the interest coverage ratio in order to define financial distress. The firm is classified as distressed if in any of two consecutive years its EBITDA is lower than 80% of the firm's interest expense. This marker incorporates the fact that a company facing financial distress usually experiences a decline in profitability, is overleveraged or has insufficient cash flows to cover current obligations.

Denis and Denis (1995) identify financial distress when a company experiences losses (negative pre-tax operating income or net income) over at least three consecutive years. Results of their empirical analysis of the dividend policy in financial distress show that after a company enters into financial distress, it usually experiences cash flow problems and is unable to pay dividends. Therefore, rapid and aggressive

dividend reductions together with consecutive negative income can be used in order to determine financial distress situation.

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 fulfil 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 a typical 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.

The idea that financial distress is a separate economic category and, moreover, it should be seen as an overall process that combines single states of corporate decline is applied in the model Turetsky and MacEwen (2001). They define financial distress as a series of subsequent stages characterized by a special set of adverse financial events. Each stage of financial distress has a distress point and continues until the next distress point is reached. Technically, each stage of financial distress is defined as an interval between two distress points. The onset of financial distress begins with a volatile decrease from positive to negative cash flow. The following dividend reduction signalizes the change to the next stage leading to default. Technical default on debt precedes troubled debt restructuring which usually tends to reduce the risk of potential bankruptcy. Thus, for the first time, researchers succeeded in describing financial distress as a continuous process with a clear structure and a categorization of the distress events.

Platt and Platt (2002) highlight the lack of a consistent definition when a company enters financial distress and try to summarize different operational definitions of financial distress in one selection mechanism. A company is considered to be financially distressed if one of the following events occurs: it experiences several years of negative net operating income or the suspension of dividend payments, financial restructuring or massive layoffs.

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 insolvency. A company is distressed when it misses interest payments or violates debt covenants.

Gestel et al. (2006) characterize financial distress and failure as the result of chronic losses which cause a disproportionate increase in liabilities accompanied by shrinkage in the asset value.

A condition where a company cannot meet or has difficulty paying off its financial obligations to its creditors. The chance of financial distress increases when a firm has high fixed costs, illiquid assets, or revenues that are sensitive to economic downturns.

To define the concept of financial distress is necessary to understand the emergence of financial difficulties, financial difficulties have not sudden, but on the gradual deterioration of business conditions caused, enterprises from the gloom and doom, the general experience of the sound operation operating losses technical Insolvency bankruptcy of insolvency the five stages of bankruptcy law. Therefore, the concept of financial distress should include the following elements: first, a serious loss of business and a serious shortage of cash flow issues, and second, cannot pay preferred stock dividends, insolvency. Third, the bankruptcy matters.

The definition of financial distress, including bankruptcy, of this study resembles the definition of Altman. Financial distress is the cessation of operation, not payment of current obligations due to cash flow problems, the firm's total liabilities are in excess of total assets, and the formal declaration of bankruptcy.

2.2 The Status of Manufacturing Sectors in Ethiopia

The enactment of commercial code in 1960's provided the economy a legal framework in which share companies could be incorporated. The infant market economy growth was, however, halted soon when the military government took power from imperial regime and declared to follow a command economy resulting suppression of private sector development Tekalegn Nega (2010).

Since 1991, however, Ethiopia has embraced the market economy strategy that favoured private sector development and implemented policies that began a gradual and slow shift from a state controlled economy. Consequently, corporate formation has become better but dominated by private limited companies. Most of the share companies formed during this period often had five (minimum number required in the law) or a few more members. It is only since roughly 2005 that shared companies started selling shares to the wider public and thereby started creating bigger shareholding base Fekadu (2010) as Tekalegn Nega suggested.

In the year 2008 and 2009 Ethiopia have seen an unprecedented growth in the number of companies under formation through initial public offer of shares (IPOs). While this has helped the companies to mobilize large amount of capital from the public, it has also brought about the desperation of corporate ownership among several thousands of shareholders in each of this companies Fekadu (2010).

The industry sector is expanding by 9.9 percent and contributing 12.9 percent of real GDP in the year 2008/09, manufacturing which make up 43 percent of the industry sector value added registered an annual growth rate of 9.4 percent NBE (2009). The manufacturing industry covers about 145 state-owned and 643 private manufacturing industries of all sizes. These industries are mainly engaged in the production of food products and beverages, tobacco products, textiles, wearing apparel, tanning and leather dressing footwear, luggage and handbags, manufacturing of wood and its products, manufacturing of rubber and plastic products, manufacturing of chemicals and chemical products, manufacturing of other non-metallic mineral products, manufacturing of basic iron and steel, manufacturing of fabricated metal products, assembling of motor vehicles, trailers and semitrailers, BDNS (2004).

2.3. Theoretical Literature and Conceptual Framework

In the finance debate of the relationship of debt service coverage and financial distress the prevalent competing model are the neoclassical model, financial model, and corporate governance model Lizal (2001). In Neoclassical model(in this case bankruptcy is a good thing since it frees the bad allocated resources, it is restructuring

case when the bankrupt has a wrong mixture of assets), financial model (when the bankrupt has a right mixture of assets but a wrong financial structure) and corporate governance model (when the bankrupt has a right mixture of assets and financial structure but a bad management, in this case the bankruptcy is inefficient way of solution of the bankrupt's problem, the efficient way is to fire the management.

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.

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.

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 third predictor of financial distress in past studies is firm profitability. In competitive markets, firms need to generate positive profits in order to survive. Firm profitability was 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.

The fourth determinants of financial distress are operational viability of the firm, which limits the going concern of the firm. In most cases in Ethiopia firms operational viability is constrained by high cost of raw materials and high tax levy at early stages, which leads to low cash flow and this in turn, will leads for defaulting of their loan payment to banks and to financial distress. The researcher uses the natural logarithm of earnings before interest and tax to measure the cash flow of the firm as proxy for operational viability.

The fifth 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.

Lastly, the 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.

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.

The second 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.

Thirdly, 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.

2.4 Empirical Literature

The empirical evidences on the causes of the financial distress are discussed below on the subtopic of determinants of financial distress as follows;

2.4.1 Determinants of Financial Distress

Chang-e (2006) agrees that the factors influencing financial distress in Chinese public enterprises by using the logic regression method, and the factors include assets-liability ratio, total assets ratio and assets structure. Chang-e explained two types of financial distress: the first is technicality insolvency because of capital reorganization failure; and the second is that an enterprise has no cash and has to go bankrupt because of business failure. The failure of cash collection causes unbalance of assets structure. Moreover, the business failure is result from operational risk and financial risk. The return rate on assets deputizes operational risk while the debt ratio deputizes financial risk.

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.

Theodossiou et al. (1996) analyzed factors that influence the decision to acquire a financially distress firm in US using qualitative criteria of distress such as: debt default announcement, debt renegotiation efforts and inability to meet debt obligation. The result suggest that financial leverage, profitability, managerial effectiveness, the firm's growth and size are important explanatory variables in financial distress model. Moreover, sales generating ability of the firm, inefficient management, and proportion of productive assets to total assets and return on productive assets are positively related to the probability of acquisition of a financial distress firms. Insider control and financial leverage, on the other hand are negative related to the probability of acquisition.

Degree of financial distress is expressed either by the binomial variable with the following states: (1) the company in financial distress, (2) the company financially sound, or by the trinomial ordered variable with the inconclusive state between (1) and (2). The attempted models explain the distress variable (binomial or trinomial) for 1997 by the financial indicators evaluated on the basis of financial statements from previous years (1995 and 1996). The models applied to the data are binomial logit model and trinomial ordered logit model.

Some evidence to the idea that in the second half of the nineties the financial condition of companies in Poland was determined by the degree of liquidity, profitability and the level of financial leverage Gruszczynski (2004).

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. The data has been evaluated by Z score with a new model: Distress-Grey area distress Grey area non distress. He 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.

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 are statistically significant and have positive influence on the financial distress, whereas 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.

2.4 .2 Firm Level Financial Distress

Financial distress determinants at firm level are generally classified as internal factors to the firm and external factors to the firm. The poor management and debt service coverage are primarily seen as internal factors of financial distress and macro economic conditions and pressure from suppliers and creditors are factors external to the firm.

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.

Firms facing financial distress are viable as going concerns, but are currently having difficulty repaying debts. In contrast, firms facing economic distress are characterized by low or negative operating profitability and have questionable going concern value

even in the absence of leverage. It is possible that the firms we characterize as economically distressed are those subject to greater uncertainty regarding their future viability Kahl (2002).

2.4. 2.1 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).

Almeida and Philippon (2000) analyzed the Risk-Adjusted Cost of Financial distress. The research has been done in United States for public companies which have issued corporate bonds and got difficulties to pay coupon and the principal. Other variables which have been evaluated: Capital structure and corporate valuation practice in related with financial distress in direct cost and indirect cost. The empirical result is indicated that distress costs are too small to overcome the tax benefits of increased

leverage. The marginal tax benefit is constant up to a certain amount of leverage and then it start declining because firms do not pay taxes in all states of nature and because higher leverage decrease additional marginal benefits.

Altman (1983) set up a new model in predicting financial distress of companies by revisiting the Z-Score model (1968). He used financial and economic ratio was analyzed in a corporate financial distress. The prediction use discriminating function by linear regression model where Z is overall index and other financial variables to be independent variables such as: working capital/total assets retain earning/total assets, earnings before interest and tax/total assets, market value equity/book value of total liabilities and sales/total assets. The empirical result of distress and non-distress companies Z-Score very accurate to predict failure model and useful to suggest the causes of financial distress.

Janes (2003) analyzed relationship between accruals report and debt covenants. The evaluation concern lenders make prediction of financial distress based on high accruals. He examine whether firm's accounting accruals provide information that is useful in predicting financial distress and the causes as reflected in the initial tightness of debt covenant. Test of the relation between accruals and financial distress indicate that accruals provide information for prediction financial distress and the result indicate that lender do not fully consider the relation between accruals and financial distress when setting the initial tightness of debt covenant.

2.4.1.1.1 Firm 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).

The dependence of the risk of default on the change in liquidity can be illustrated by the results of an empirical investigation of firm longevity by Turetsky and McEwen (2001). They examine the factors influencing the shift from the upper to the lower level of the downward spiral. Results show that the volatile decrease in cash flows from positive to negative has an enormous impact on subsequent default: a one-unit increase in liquidity measured by the current ratio reduces the risk of default by approximately 47%.

Pranowo et.al. (2010) analyzed financial distress by mapping 220 non financial companies which are listed on Indonesia Stock Exchange for the period of 2004-2008 into the steps of integral financial distress. The result is indicated that deterioration is the most affect to financial distress for Indonesia public companies and mapping into five different industrial sectors.



However, it is still important to explore this topic further due to some aspects. Due to the limited literature concerning the dynamic of financial distress in the developing countries, it is therefore interesting to study corporate financial distress in emerging market economy such as Indonesia. Furthermore, previous studies are based mainly on financial ratios. In fact, the ability to fulfil short term liabilities will depend on the cash flow performance. Thus, financial distress should not be analyzed by financial ratios at balance sheet only, but also by analyzing profit and loss and cash flow of the companies Pranowo (2010).

The liquidity of the firm is important determinants of financial distress. Some studies shows financial distressed firm will take various salvation actions, such as improving the assets liquidity through business retrenchment Chang-e (2006).

The occurrence of default symbolizes the peak of the distress development. Default describes an event when the company cannot repay the debt or interest to creditors at maturity and, consequently, violates the conditions of the agreement with the debt holder, which can be a reason for legal action. The researchers subdivide the event of default into two categories: payment default on an interest or principal amount and technical default on financial covenant in the debt of the company Gilson et al. (1990).

The principal difference between insolvency and default is the reference of the latter to the date of maturity. A company can be insolvent for a long time. However, only on the date of maturity can it become classified as defaulted on its debt. If the firm faces this event, the negotiation and the private debt restructuring or bankruptcy is the consequence.

The event of default contains an important message to all recipients of the company's financial information. It resolves a part of the uncertainty about the severity of financial distress. Before default, investors have incomplete information about the true magnitude of the adverse processes inside the distressed company; the intensity of financial distress as well as the time until default and the probability whether default will happen.

The information asymmetry accompanied by investors' risk aversion leads to a decreasing demand for the securities of the distressed company and, as a result, restricts the ability to obtain external financing in order to overcome its financial difficulties.

2.4.1.1.2 Firm 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).

The firms Leverage ratio show how heavily the firm is in debt. When a firm borrows money, it promises to make a series of interest payments and then to repay the amount that it has borrowed. If profits rise, the debt holders continue to receive a fixed interest payment, so that all the gains go to the shareholders. Of course, the reverse happens if profits fall. In this case shareholders bear all the pain. If times are sufficiently hard, a firm that has borrowed heavily may not be able to pay its debts. The firm is then bankrupt and shareholders lose their entire investment. Because debt increases returns to shareholders in good times and reduces them in bad times, it is said to create financial leverage.

In general, the more debt a firm uses in relation to its total assets, the greater its financial leverage. Financial leverage is the magnification of risk and return introduced through the use of fixed-cost financing, such as debt and preferred stock. The more fixed-cost debt a firm uses, the greater was its expected risk and return Gitman (1991).

Ogawa (2003) argues that corporate debt can affect investment by creating debt overhang. Debt overhang is defined as deterrence of new investment due to the presence of debt outstanding. It occurs when the face value of debt outstanding is greater than its market value. In this case some of the benefits from new investment

will go to the existing creditors rather than to the new investors. An increase of debt to net worth raises external finance premium due to the associated increase in the probability of bankruptcy.

Shleifer (1993) and Vishny (1997) found that complex capital structures make it difficult to isolate certain aspects of the causes of financial distress. This may result in inefficient excess liquidation due to coordination problems and information asymmetries.

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.

Due to the significant importance of the financial distress, understanding its determinants has had wide examination in the financial economics literature. Through the course of the investigation, the literature shows recognition that a firm's leverage is a main factor that negatively impacts the level of financial distress Opler and Titman (1994); Andrade and Kaplan (1998).

This relatively widely accepted notion has been challenged in the literature which contends that a firm's leverage positively, not negatively, impacts the degree of financial distress Jensen (1989) and Ofek (1993). Such mixed and inconclusive arguments involving leverage calls for further investigations and the current study aims to enrich the literature, especially by providing specific findings with regard to the lodging industry. Study findings suggest that leverage increases the degree of financial distress Lee et al. (2010).

Opler and Titman (1994) show that the financial distress of highly leveraged companies has its seeds in an industrial downturn. The performance decline is exogenous and driven by customers, competitors, and the management. Therefore, in periods of economic recession, exogenous risk factors are primary sources of financial distress, while managerial incompetence can be rather seen as a response to external shocks.

Initial under capitalization and assuming debt too early are the two important exceptions from the factors cited as reasons for failure of firms in the 1960's to the 1980's such as product timing, product design, inappropriate distribution or selling strategy, unclear business definition, over reliance on one customer, problems with the venture capital relationship, ineffective team, personal problems, one-track thinking, and cultural/social factors Janes (2003).

Entry into financial distress is defined as the first year in which cash flow is less than current maturities of long-term debt. Cash flow is defined as net income plus non-cash charges. Inadequate cash flow is a necessary but not sufficient condition for payment default. As long as cash flow exceeds current debt obligations, clearly, the firm has the funds available to pay its creditors. However, inadequate cash flow to cover current debt obligations does not imply that the firm defaults. Firms have numerous options to obtain the cash needed to avert default, including utilizing cash reserves, reducing inventory levels, extending trade creditors, drawing upon bank lines of credit, restructuring debt payments prior to default, raising equity, and selling assets. If inadequate cash flow continues, eventually these options are exhausted and the firm defaults Whitaker and Richard (1999).

Conceptually, firms facing primarily financial distress are viable as going concerns, have business models that are without fundamental problems, but have high leverage and currently face difficulty repaying debts. Firms facing primarily economic distress also have difficulty repaying debts, but are also characterized by very low or negative operating performance and a business model with fundamental problems.

Several studies on financial distress acknowledge the distinction between financial distress and economic distress and employ proxies that are associated with one or the other. For example, Hotchkiss (1995) cites negative operating performance prior to filing as evidence of economic distress. Denis and Denis (1995) associate higher leverage with greater financial distress and less economic distress. Studies that more

explicitly isolate the effects of financial versus economic distress include Andrade and Kaplan (1998) who study the effects of “pure financial distress” using a small sample of 31 highly levered transactions (HLTs).

They consider these HLTs financially rather than economically distressed in part because many firms in their sample exhibit above industry operating margins.

2.4.1.1.3 Firm 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 suggests taking 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, Betker (1997) and Beaver (1966).

As a rule, the identification of sources of financial distress is attributed to the extended empirical research. Thus, Karels and Plakash (1987) divide all possible causes of financial distress into two groups: internal risk factors and external shocks. Internal risk factors can be attributed to poor management. Potential forms of the

appearance of bad management are the absence of a sense of a need for change, inadequate communication, overexpansion, unintentionally improper handling of projects, or fraud. Exogenous shocks are independent of managerial skills. They can be classified into inefficiencies in regulatory development, turbulences in the labor market, or natural disasters Karels and Prakash (1987).

Similarly to Karels and Plakash (1987), but providing more detail in distinguishing between external and internal risk factors, Bibeault (1983) examines the proportion of every risk factor within each group. Bibeault reveals five significant sources of external risk: economic change, competitive change, government constraints, social alterations, and technological change Bibeault (1983).

Management inadequacy is also reported by Altman (1983) as the main source of financial distress. One of the highest percentages of default was recorded in 1980 when bad management accounted for over 94% of all business failures Altman (1983).

2.4.1.1.4 Firms Efficiency

Firm's Efficiency or turnover ratios 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.

The firm's financial distress is the early stage of business failure and the symptoms of financial distress are the firm is desperately short of cash, the firm's suppliers are pushing for faster payments but the borrowings are at or close to the maximum and the firm's monthly accounts, show that the business is losing money consistently.

In addition to leverage, the literature suggested that capital intensity is another determinant of financial distress through a role that alleviates the degree of distress because higher capital intensity implies a higher degree of fixed assets that could be used as collateral in case a firm experiences a financially distressing condition Charalambakis, Espenlaub & Garrett (2008). However, another group of people argues that capital intensity represents operating leverage and tends to increase a firm's business risk Brealey and Myers (2000). This is because more fixed costs normally incur to a firm with a high level of fixed assets and such firm tends to show its Profitability to fluctuate more than others due to the fact that a high proportion of fixed costs exist regardless of sales level. Study findings suggest that the capital intensity reduce financial distress for publicly traded U.S. lodging companies Lee et al. (2010).

2.5. Financial Distress as an Integral Process

In each of these stages different adverse processes and mechanisms occur, Altman and Hotchkiss (2005). The examination of these mechanisms is challenging and can be made in the context of the corporate failure framework based on the empirical research of Hambrick and D'Aveni (1988) and Kraus and Haghani (2004).

A deeper understanding of the adverse mechanisms in every stage of the downward spiral is needed in order to be aware of what happens in financial distress, why the value deterioration process becomes so irreversible (the fall in value can amount to 70% of the original pre-distressed value of the company or even more), Andrade and Kaplan (1998), and to choose adequate actions in response to distress situations.

2.5.1 Dimensions of Financial Distress

The dynamic nature of financial distress assumes that while moving in and out of financial trouble, the company passes through separate stages, each of which has specific attributes and, consequently, contributes differently to corporate failure. Financial distress is time-varying which incorporates that once entering it, the company does not stay in the same state until it is liquidated or until it recovers. Changes in financial conditions affect the transition from one state of financial distress to another Hill and Perry (1996). If financial conditions become aggravated, the company most probably will face bankruptcy; if the performance of the company improves, it has a chance to overcome its financial difficulties and recover without defaulting.

Therefore, an analysis of the coherence of change of financial conditions with the financial status of the firm should exploit three main dimensions of the distress dynamics: behaviour over the *time window*, the impact on different *financial states*, and characteristic features of *performance at different distress stages*.

Corporate failure is shown as a three-dimensional process containing the time frame, financial states, and process stages. The time window covers the period from the first signs of slight deterioration in performance through accelerated impairment down to the deepest point and subsequent recovery. This is the so-called financial distress cycle. The determination of the average length of the failure process is complicated because of difficulties in the measurement of the onset of financial distress. In fact, the onset of financial distress cannot be accurately identified. Ex-ante predictions are unable to estimate the date when bankruptcy occurs by more than three years in advance Platt and Platt (2002).

Predicting default more than three years before bankruptcy significantly reduces the accuracy of the forecasting models Altman (1968).

An ex-post analysis of financial distress shows that the first observable signs of the deterioration of corporate health appear five to six years prior to bankruptcy. The existence of earlier signs of declining performance is questionable. Even if they exist, they are unobservable, very weak, mostly of strategic and not of a financial nature and, therefore, difficult to measure. Financial theory usually ignores these factors

because of their low significance. Adverse developments usually become observable about one to two years before default, when the company becomes severely distressed Hambrick and D'Aveni (1988). It takes on average two to three years after default to restructure the debt of the company and achieve a pre-distressed level of performance Kraus and Haghani (2004).

Financial states represent the second dimension of the corporate failure process. The fall of a company into distress usually happens because of a shift in liquidity. However, a reduction of liquid resources does not necessarily have a negative influence on a firm's solvency position. Typically, in the early stages of financial distress the company continues to be solvent, which makes it difficult to recognize the existence of negative processes inside the company. Event studies show that further decline in liquidity causing transition to the next distressed but solvent state might be indicated by an analysis of the change in cash flows in comparison to the total assets Hill and Parry (1996).

Deepening financial distress triggers the illiquidity of the firm's assets; the value of the firm deteriorates below some lower threshold. In this case, the financial state of the company is not stable anymore. Since financial distress does not necessarily lead to default, also in this period the company remains solvent which implies that it is possible.

2.6 The Role of Financial Distress

Despite the different and sometimes controversial opinions about the role of financial distress in the economy, it is unlikely that one would doubt that financial distress is a not too rare event and must be accepted as a natural process which may affect many companies over their life cycle. However, some of these companies can recognize financial distress at early stages and make conscious efforts in order to avoid default and bankruptcy, while some of the firms are unable to deal with financial difficulties.

Makridakis (1991) argues that financial distress has an enormous learning effect helping companies to adapt to a rapidly changing environment and to learn permanently what to do in order to eliminate the negative consequences of stress situations.

Kahl (2002) also supports the idea that financial distress is an efficient process whose benefits outweigh its costs. Developing a dynamic model of liquidation decision, he shows that creditors benefit from financial distress because they learn about the distressed Company's economic viability. If a firm defaults, the creditors obtain control rights and the option to liquidate immediately or, keeping leverage high, to pursue distressed restructuring. At each point in time the claimholders can revise their decision and liquidate the company if it should not recover fast enough.

Thus, the role of financial distress is twofold: on the one hand, it facilitates learning about the firm's ability to survive, and, on the other hand, this process accelerates the liquidation if the firm cannot improve its performance within a reasonable period of time.

Another important advantage of financial distress is that it triggers an effective change in the managerial control over the company, pushing the firm to alter its operational strategy in order to raise declined efficiency. Some researchers insist upon the unique function of financial distress in improving the firm's bargaining power and resolving the financial contracting problem Ofek (1993).

Financial contracts are originally incomplete and cannot incorporate all possible scenarios which can happen in the future. Since the main goal of financial contracting is to provide the platform for an optimal allocation of resources in order to attain a socially efficient outcome, financial distress and bankruptcy help to distinguish between economically viable and inefficient companies which should be liquidated. A company is economically viable if it is worth more as a going concern than if it were shut down. Therefore, financial distress can be seen as a selection mechanism which terminates unprofitable companies Smith and Stromberg (2004).

Kahl (2001) has also examined the role of financial distress as a selection mechanism. He challenges the question of whether financial distress efficiently selects between troubled companies which should be liquidated and the firms which should survive as

independent entities. Results of his research show that the poor operating performance of economically weak companies is not tolerated for long by the market.

As a rule, after entering financial distress, the “bad” firms with poor future prospects end in liquidation or are acquired by other market players. Firms with an originally better performance have higher rates of success and need a shorter time to regain financial health. Therefore, financial distress is an efficient selection mechanism which helps to reallocate resources in the economy from the poorly performing companies towards better uses, while “good” assets are kept within the surviving firm Kahl (2001).

Wruck (1990) points out that financial distress creates shareholder value and improves corporate performance. Especially for companies with a high level of debt, financial distress provides gives a chance to improve their longevity by forcing them to refocus their corporate strategy and to change their organizational structure, which leads to an increase in organizational efficiency in comparison to the pre-distressed period.

In addition, Jensen (1989) shows that high leverage, being a catalyst of financial distress, can also protect the value of the company. Firstly, the high amounts of debt holding by creditors are often reorganized under a new management crew. Hence, financial distress creates strong incentives for the creditors to monitor the operating activity of the management and reduces conflicts of interest.

Secondly, the financial distress in highly leveraged companies forces quicker reorganization. And, thirdly, the restructuring activity stops shrinkage and preserves the value of the company from further deterioration.

To summarize, it is wrong to consider financial distress only as a negative protracted process associated with deadweight losses, layoffs, and broken organizational structures.

In a broader economic sense, financial distress can be seen as an instrument of natural selection which is regulated by bankruptcy law and helps to differentiate between economically viable and inefficient firms needing to be liquidated.

As responses to financial distress the firms should think of the two sides of the balance sheet. The first is asset restructuring, which is concerning the asset side of the balance sheet and includes: selling major assets, merging with another firm, reducing capital spending and R&D spending and the second is financial restructuring which is concerning the right hand side of the balance sheet and includes: issuing new securities, negotiating with banks and other creditors, exchanging debt for equity, filing for bankruptcy Wruck (1990).

CHAPTER THREE

THE DATA AND METHODOLOGY

Given the objective of estimating the determinants of financial distress, the methodology employed in the study including model specification and the econometric approach is discussed in this chapter.

3.0 The Data: Sources and Types

3.1 Sample Selection

Before directly undertaking the estimation of our model, it is important to highlight the sources and types of the data used in the study. In Ethiopia there are 116 share companies which are registered as of August 2009 of which 68 companies are incorporated within the last four years, and therefore are excluded from sampling frame Fekadu (2010). Similarly the research excludes all financial firms (banks, micro financing and insurance) because the regulatory environment is quite different from other industrial sectors. Then, half of the remaining sampling frame was selected based on how large their paid up capital is. In order to the lists of corporate organizations were secured from Ministry of Trade and industry and missing data were collected at firm level. For government owned corporation data was collected from both the firm and the regulatory agency (privatization and public enterprises supervising Agency).

The data in the research consist of financial statement of eight beverage and three metal manufacturing firms in Ethiopian for the period of 1999-2005. The study is focus on the ability of beverage and metal manufacturing firms to fulfil short term such as: loan repayments, interest burden, account payable and dividend payout for the period of 1999-2005. In order to test the hypothesis, financial ratios of eleven companies are analyzed using panel data regression model.

The primary data were collected using sample quesstionarries dispatched randomly to finance managers, accountants and executive members of eleven firms.

The questionnaires distributed to one from each firm's executive from eleven firms are analysed using table as tools and the responses presented in form of percent in the table. The results of the response of the question are used to compare the results of financial data panel regressions with the output of response of questionnaires.

3.2 Methodology

3.2.1 Model Specification

In line with the previous determinants of corporate 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 hypothesis 1-6:

$$\text{DSC} = (\text{EAT} + (\text{DEPR} + \text{AMORT}) + (\text{INTEREST}) - \text{Tax}) / (\text{principal} + \text{interest and or coupon}) \dots\dots\dots (\text{eq3.1})$$

Financial distress is a function of (Debt service coverage);

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

$$\text{FD} = \beta_0 + \beta_1 \text{LEV}_{\text{xt}} + \beta_2 \text{LIQ}_{\text{xt}} + \beta_3 \text{PROFS}_{\text{xt}} + \beta_4 \text{OPERVIA} + \beta_5 \text{EFF}_{\text{xt}} + \beta_6 \text{FSIZE} + \varepsilon \dots\dots\dots (\text{eq3.2})$$

The firm with the DSC of below 1.00 is financially distressed, firms with DSC below 0.5 is fully distressed and DSC of above 1.00 is financially viable

Stata10 software used for calculation.

3.2.2 Econometric Methodology

The rationale behind the above random effects multiple regression models is that, unlike the fixed effects model, the variation across entities is assumed to be random and uncorrelated with the predictor or independent variables included in the model:

The random effects model is: $Y_{it} = \alpha + \beta X_{it} + \omega_i t \dots\dots\dots (\text{eq3.3})$

The model above is the random effect model equation. The model developed by the researcher on (Eq3.2) is on the bases of the Radom effect model on (Eq 3.3) and the debt service coverage model of Pranowo 2010. An advantage of random effects is that you can include time invariant variables. In the fixed effects model these variables are absorbed by the intercept. The reason why Radom effect model chosen is discussed below in detail.

3.2.2.1 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).

3.3 Variable Description

3.3.1 Dependent Variables

In this study, DSC, FD is used as dependent variables to measure firm financial distress.

- DSC is $\text{earning after tax plus depreciation and amortization expense minus tax plus interest} / \text{principal plus interest or coupon}$;

- Financial distress(FD) is a function of debt service coverage, and is determined by liquidity, leverage, profitability, operational viability, firm size, efficiency and error term;

3.3.2 Independent Variables

The research considers six characteristics 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 operational viability. (5) The size of the firm, (6) the turnover of the firm's asset.

- 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 volume of assets;
- EFFxt t is efficiency of the firm;
- LEVxt is the level of the firm leverage
- OPERVxt is the operational viability of the firm

3.4 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 Pranowo (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 beverage and metal manufacturing firms in Ethiopia. In order to investigate the relationship between debt service coverage and financial distress in the beverage and metal manufacturing firms a random effect multiple regression model used.



CHAPTER FOUR

ANALYSIS OF EMPIRICAL RESULTS

4.1. THE EMPIRICAL RESULT

In this section, the researcher presents the important finding of the analysis. Data is analyzed by panel data regression Random Effect Model. The result of financial ratio indicate, profitability, efficiency(eff) and liquidity(liquid) are statistically significant and have positive influence on the financial distress, whereas leverage(leve) has significant but negative influence to financial distress. The financial variable, firm size is very small but significant positive influence on financial distress. The result also indicates that the operational viability and good corporate governance (gcg) have no significant influence on the DSC. In the regression the following proxy were used to measure different variables. The operational viability is measured in terms of logarithm of cash flow from the operation and the good corporate governance is measured based on five criteria such as responsibility, transparency, accountability, fairness and independence. Profitability is measured in terms of gross profit to total sales, liquidity is measure in terms of current assets to current liabilities, and efficiency is measured in terms of EBITD to total asset, leverage is measured in terms of total debt to total assets and natural logarithm of total asset is used to measure firm size. See Table 4.1 for complete results.

Table 4.1. Panel Data Regression Random Effect Model Result

Random-effects GLS regression	Number of obs	=	76
Group variable: firms	Number of groups	=	11
R-sq: within = 0.7630	Obs per group: min =		6
between = 0.9413	avg =		6.9
overall = 0.9013	max =		7
Random effects u_i ~ Gaussian	wald chi2(7)	=	316.52
corr(u_i, X) = 0 (assumed)	Prob > chi2	=	0.0000

dsc	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
profit	.7778155	.2222335	3.50	0.000	.3422458	1.213385
eff	.7198798	.229787	3.13	0.002	.2695056	1.170254
liquid	.0623445	.010382	6.01	0.000	.0419961	.0826928
leve	-.4762632	.0771539	-6.17	0.000	-.6274821	-.3250443
fsize	.0558841	.0287628	1.94	0.052	-.00049	.1122583
opervi	.0192333	.0118305	1.63	0.104	-.003954	.0424207
gcg	-.0026728	.0069413	-0.39	0.700	-.0162775	.010932
_cons	-1.132389	.4616602	-2.45	0.014	-2.037226	-.2275517
sigma_u	.06476254					
sigma_e	.07073068					
rho	.45603781	(fraction of variance due to u_i)				

Source: regression result of panel data.

The coefficient of determination R-square (R²) indicates that 76.30% behaviour of financial distress variables DSC can be explained by the independent variables (Profitability, liquidity, efficiency (eff), Leverage (leve), firm size, operational viability and good corporate governance). Overall, F-statistic 316.52 with p-value 0.0000 indicates that the regression model is feasible.

The result of panel data random effect regression model as presented in Table 4.1 indicates that **liquidity** has a positive relation with DSC, with coefficient 0.0623445 and p-value 0.0000. Liquidity is measured by current ratio or current asset to current liability.

Profitability is the ratio of gross profit to total sales, this indicate how large the ratio of gross profit to sales generated by operating activities in order to cover the company's debt and other fixed charges. Profitability is very significant positive relationship to DSC with regression coefficient 0.7778155. This means, every time the companies improve one ratio profitability, will improve DSC to 0.7778155. Hence, by improving profitability DSC of company will be increase to 0.7778155 with *p-value* 0.000. Therefore, profitability is very significant positive relationship with DSC.

Other variable **Leverage** has a negative relationship and significant with DSC with *p-value* 0.000 and coefficient -0.4762632. This means if one unit leverage increase will make DSC lower to -0.4762632. The more leverage, 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.

Efficiency variable indicate has a significant positive relationship with DSC by coefficient 0.7198798 and *p-values* 0.002. This means if we add one unit efficiency will increase DSC 0.7198798. Efficiency is earning before interest tax and depreciation to total assets, this ratio indicates how big generated fund can be created by operating of the company's assets. EBITD is income before interest expense and corporate tax plus allocation funds from depreciation and amortization which are non-cash expenses. Operational cash flow is profit plus depreciation, because depreciation

and amortization are parts of source of fund in cash flow. Therefore, Efficiency is significantly positive relationship with DSC.

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. TA is the current asset plus fixed assets of the firm. Firm size (Fsize) is very small but significant positive relationship to DSC with regression coefficient 0.0558841. This means if one unit size increase will make DSC higher to 0.0558841. 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.

Other variables such as operational viability and implementation of good corporate governance (gcg) do not have any relationship with DSC with p-value 0.104 and 0.700. The reason because, DSC is computed based on cash flow performance. Thus, operational viability has not confirmed yet to create organizations going concern due to cash flow fluctuation.

On average from the year 1999 to 2005, out of 11 manufacturing firms 9 are fully financially distressed firms, with the DSC of less than 0.50. The beverage manufacturing firms are primarily financially distressed; which are 6 firms out of 9 distressed firms. The remaining three companies are metal manufacturing firms.

4.2 The Properties of the Panel Data Regression Model.

4.2.1 Tests for Autocorrelation

According to Baltagi, cross-sectional dependence is a problem in macro panels with long time series. This is not much of a problem in micro panels (few years and large number of cases). The null hypothesis in the B-P/LM test of independence is that residuals across entities are not correlated. Panels (iid) corr (independent) rhot type durban-watson test (DW) tests shows that there is no autocorrelation problem in the model. See table 4.2 below.

Table4.2 panel tests for autocorrelation problem
Cross-sectional time-series FGLS regression

Coefficients: generalized least squares
Panels: homoskedastic
Correlation: no autocorrelation

Estimated covariances	=	1	Number of obs	=	76
Estimated autocorrelations	=	0	Number of groups	=	11
Estimated coefficients	=	8	Obs per group: min	=	6
			avg	=	6.909091
			max	=	7
			wald chi2(7)	=	777.76
			Prob > chi2	=	0.0000

dsc	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
profit	.9177531	.1723939	5.32	0.000	.5798674	1.255639
eff	.8445023	.1778558	4.75	0.000	.4959113	1.193093
liquid	.0529561	.0086854	6.10	0.000	.035933	.0699793
leve	-.4800109	.0693894	-6.92	0.000	-.6160115	-.3440103
fsize	.0692916	.0183235	3.78	0.000	.0333781	.105205
opervi	.0002053	.0111451	0.02	0.985	-.0216387	.0220493
gcg	-.0022535	.0032756	-0.69	0.491	-.0086736	.0041667
_cons	-1.116937	.2810325	-3.97	0.000	-1.667751	-.5661236

4.2.2Tests for Hetroskedasticity

The variance of the error term is constant known as homoscedasticity. The hetroskedasticity test made shows that the error term has constant variance. The table 4.3 below the Breusch and Pagan lagrangian multiplier test for hetroskedasticity the prob>chi2 is equal to 0.0017 indicates that there is no hetroskedasticity problem. Therefore, the null hypothesis there is hetroskedasticity is rejected. See table 4.3 below.

Table 4.3. Breusch and Pagan Lagrangian Multiplier Test for Hetroskedasticity.

Breusch and Pagan Lagrangian multiplier test for random effects

dsc[firms,t] = xb + u[firms] + e[firms,t]

Estimated results:

	var	sd = sqrt(var)
dsc	.0774336	.2782689
e	.0050028	.0707307
u	.0041942	.0647625

Test: Var(u) = 0
chi2(1) = 9.84
Prob > chi2 = 0.0017

4.2.3 Tests for Multicollinearity problem using correlation matrix

The result of test of multicollinearity problem using correlation matrix shows that the model has no multicollinearity problem. The model is reformulated and all variables that cause multicollinearity problems are dropped out from the model and the model is specified. For checking multicollinearity problem correlation matrix is used.

Table 4.4. The Correlation matrix for testing multicollinearity. See table 4.4 depicted below.

	dsc	profit	eff	liquid	leve	fsize	opervi	gcg
dsc	1.0000							
profit	0.6747	1.0000						
eff	0.5707	0.8477	1.0000					
liquid	0.5759	0.0254	-0.1526	1.0000				
leve	-0.6523	-0.1069	0.0625	-0.7149	1.0000			
fsize	0.0502	-0.4927	-0.4103	0.1856	-0.1202	1.0000		
opervi	0.4917	0.4280	0.5637	0.0719	-0.0697	0.2666	1.0000	
gcg	-0.1072	-0.0001	-0.0685	0.0506	0.2245	0.0644	-0.0011	1.0000

4.3 Fitness of the Random Effect Model

Data is analyzed using the panel data regression Random Effect Model. The result of financial ratios indicate, profitability, efficiency(eff) and liquidity(liquid) are statistically significant and have positive influence on the financial distress with p-value 0.000, 0.002 and 0.000, whereas leverage(leve) has significant but negative influence to financial distress with 0.000. The financial variable firm size (Fsize) has very small but significant positive relationship with DSC. The above factors are determinants of financial distress and the model is correctly specified debt service coverage as proxy of financial distress.

Table4.5. Fitness of Random Effect Model

. hausman fixed

	—— Coefficients ——		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) .		
profit	.7256655	.7778155	-.0521501	.1282198
eff	.5719943	.7198798	-.1478855	.1418454
liquid	.0668977	.0623445	.0045533	.0063746
leve	-.5033271	-.4762632	-.0270639	.0296322
fsize	.0859889	.0558841	.0301047	.0330301
opervi	.0219268	.0192333	.0026934	.0051822

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\begin{aligned} \text{chi2}(6) &= (b-B)'[(V_b-V_B)^{-1}](b-B) \\ &= 9.83 \\ \text{Prob}>\text{chi2} &= 0.1318 \end{aligned}$$

Prob>chi2= 0.1318, the model fits or is specified correctly and the random effect is appropriate. If this value is less than 0.05 the fixed effect model is used.

4.4 Analysis of Sample Questionnaires Response

In order to mitigate the limitation of secondary data, and to assess the opinion of firms managing directors on causes of financial distress, sample of questionnaires were dispatched to executives/ financial managers of eight beverage and three metal manufacturing firms in Ethiopia. According to the response of the respondents for the question presented with regard to financial distress determinants is summarized in the following table. **Table 4.6.**Response rate for sample questionnaires

Determinants of financial distress	Response (percentage), the degree that mentioned variables are main causes of financial distress			
	Highest	High	Medium	lower
Liquidity	73%	18%	9%	0%
Leverage	64%	27%	9%	0%
profitability	55%	27%	9%	9%
Efficiency	64%	18%	9%	9%
<i>Imp. of GCG based on 5 criteria</i>	0%	27%	9%	64%
Operational viability	46%	27%	18%	9%
Firm size	55%	18%	9%	18%
<i>Macro economic variables</i>	18%	18%	9%	55%
<i>Equity</i>	9%	9%	36.5%	45.5%
<i>Firm age</i>	0%	18%	36.5%	45.5%
<i>Low Industrial relation</i>	0%	9%	18%	73%
<i>Status of financial distress</i>	9%	9%	36.5%	45.5%
Low debt service coverage	55%	18%	18%	9%

From the table above we can understand that the main causes of financial distress that influence at highest level is liquidity (problem of Liquidity) which is responded by 8(73%) respondents. This response is given for the question that, to what degree did low liquidity/low ability to cover current obligation/ leads firms for financial distress?

Secondly, financial distress is influenced at highest level by leverage and efficiency both of which are responded by 7(64%) respondents. The response is given for the questions, to what degree did high level of debt leads firms for financial distress? And to what degree did low ability of firms asset to generate sales/EBITDA/EBIT/leads firms for financial distress? The first question is given for respondent to assess the influence of leverage on financial distress and the second question is forwarded to assess the influence of low efficiency of firm's asset on financial distress.

It is clear that the reason for risk is the prevalence of fixed costs, which is financial leverage. The levered firms are more exposed for financial distress than those of unlevered firms. If the firm is highly levered, the benefit from the leverage overshadowed by the costs. In such cases the restructuring of leverage is the salivation way from the financial distress. This is done by selling the old debts and replacing with a new debt agreement.

Thirdly, the main causes of financial distress at highest level are profitability, firm size and low debt service coverage all of which are responded by 6(55%) respondents each. This response is given for the question, to what degree did low gross profit to total sales/net income to total sales/ leads firms for financial distress? To what degree did low

total asset size leads firms for financial distress? And to what degree did low debt service coverage leads firms for financial distress? The first question is forwarded to assess the influence of low profitability ratio measured in terms of gross profit to sales on financial distress, the second question is used to assess the firm size sensitivity to financial distress and the third question is used to assess the influence of low debt service coverage on the firm's financial distress.

Fourthly, the main causes of financial distress at highest level is operational viability which is responded by 5(46%) respondents out of 11 (100%) of the total respondents.

This response is given for the question, to what degree did low operational cash flow/negative cash flow/ leads firms for financial distress? The question is forwarded to assess the influence of operational viability on firm's financial distress.

Finally, financial distress is influenced by equity, firm age and status of financial distress at relatively medium level all of which are responded by 4 (36.5%) respondents each.

This response is given for the following questions; to what degree did low ability of firm's asset to increase equity (lower EQ/TA) leads firms for financial distress? To what degree low firm age/low age from establishment to date / level of debt leads firms for financial distress? And to what degree early impairment/deterioration status or losing income continuously/ leads firms for financial distress? The three questions are forwarded to assess the influence of equity, firm age and status of financial distress respectively on firm's financial distress.

On the other hand, macroeconomic variables, low industrial relations and implementation of good corporate governance based on the five criteria such as accountability, fairness, responsibility, transparency, independence were also responded by the respondents as factors that influence at lower level. There are three questions forwarded to assess the above three factors individually and it is responded by the respondents as follows;

The question that, to what degree did macroeconomic variables like global financial crises leads firms for financial distress? Are given response by 6 (55%) respondents for it influence at lower level on firm's financial distress. The question that, to what extent the industrial relations have its influence on the financial distress/failure? At lower level (lower extent) is responded by 8(73%) respondents. It is clear that the industrial relation has a significant influence on the firm's profitability and performance but the financial managers as well as managing directors response to this question is at low level. For instance, the labour strike may cause financial distress by leading to the early impairment (sickness of the firm's viability of operation or low performance).

The implementation of good corporate governance based on five criteria such as accountability, transparency, responsibility, fairness and independence jointly responded by 7(64%) respondents as causes of financial distress but at lower level. This were the criteria of corporate governance implementation measures but the managers response for the question that, to what degree did low level of accountability and lack of fairness/ lack of good governance/ leads firms for financial distress? And to what degree did low level of responsibility and transparency/ lack of fairness leads firms for financial distress? The

response for both questioning that the respondents given are it influences financial distress at low level.

As the corporate governance model of financial distress suggests that when the bankrupt has a right mixture of assets and financial structure but a bad management, in this case the bankruptcy is inefficient way of solution of the bankrupt's problem, the efficient way is to fire the management. As we understand from this model, it indicates that corporate governance problem is the causes for firm's financial distress. On this specific case as response of the managers shows that it is the causes of financial distress, but it influences at lower level.

As the response to the sample questionnaires which is distributed to the financial managers of eleven firms shows that financial distress is caused at highest degree by low liquidity, high leverage, low profitability, low asset turnover and low firm size in which it is measured in terms of total assets. The responses for these factors are significantly higher than the responses given for the other factors such as macro economic variables, industrial relation, equity, firm age and status of financial distresses; which are insignificant factors that contribute for the causes of financial distress. The implementation of good corporate governance which is measured in terms of accountability, responsibility, transparency, fairness, and independence are no significant influence but have lower influence on firm's financial distress.

On the other hand, the response shows that the dependent variable, low debt service coverage has highly significant influence on the financial distress of the firm.

The response of finance managers and /executives as well as the regression output shows that liquidity, profitability, efficiency, leverage and firm size are the main determinants of financial distress. The operational viability of the firm is also having some influence on firm's financial distress but other variables are almost insignificant influence on financial distress. The result of findings using panel data regression is sufficiently predicts the causes of financial distress, because the result of sample questionnaires responses indicates the output of the regression.

To sum up, as the responses given by the respondents show that liquidity, leverage, efficiency, profitability, firm size and low debt service coverage are the main causes of financial distress in the selected beverage and metal manufacturing firms in Ethiopia at highest level. The variable operational viability causes financial distress highly, next to the factors mentioned in this paragraph. On the other hand, equity, firm age and status of financial distress influence firm's financial distress at medium level. There are also other variables like; macroeconomic variables, good corporate governance, and low industrial relation have lower influence on financial distress.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

This paper attempt to analyze financial variables which affect to financial distress of some selected beverage and metal manufacturing firms in Ethiopia for the period of 1999-2005. By using Panel Data Regression Random Effect Model, the researcher found that financial variables which significantly influence the firm's financial distress are:

- (1) Efficiency: measured by the ratio of EBITD to total asset
- (2) Liquidity: measured by current assets to current liabilities.
- (3) Profitability: measured by firms gross profit to total sales
- (4) Leverage: measured by total debt to total asset

The other financial variable, firm size: the natural logarithm of total assets of the firm is a factor that is significantly influences the firm's financial distress. The above financial variables which significantly influence the firm's financial distress in this research are main research finding the researcher contributed to the theory as well as practice in context of beverage and metal manufacturing firms in Ethiopia.

Based on the responses to the sample questionnaires distributed to the finance managers and executive members of selected beverage and metal manufacturing companies, the researcher found that the following variables are the main causes of the firm's financial distress. These are; liquidity, leverage, efficiency, profitability, firm size and low debt service coverage. There are also other variables but have lower influences on financial distress.

As the responses given by the respondents show that liquidity, leverage, efficiency, profitability, firm size and low debt service coverage are the main causes of financial distress in the selected beverage and metal manufacturing firms in Ethiopia at highest level. The variable operational viability causes financial distress highly, next to the factors mentioned in this paragraph. On the other hand, equity and status of financial distress influence firm's financial distress at medium level. There are also other variables like; macroeconomic variables, firm age, good corporate governance, and low industrial relation have lower influence on financial distress

5.2 RECOMMENDATIONS

The causes of financial distress identified above needs some of ways of remedial measures. Most of the pervious researches were emphasizes on only identifying the causes of financial distress by taking different proxy measures as causes. What makes this research special is, it finds the ways of salivation for financial distress.

The followings are some of the remedial measures suggested by the researcher. Financially distressed firms should have to take reorganization measures like;

- (1)Minimizing the firms leverage through financial reorganization;
- (2) Improving the efficiency of the firms asset though retrenchment and replacing;
- (3) Increasing the firm's profitability by completely changing the business;
- (4) Maintaining and improving liquidity by improving cash collection. The failure of cash collection leads for unbalanced asset structure.

As solution for firm's financial distress, it is also advisable to beverage and metal manufacturing firms in Ethiopia should have to think of the two sides of the balance sheet. The first is left hand side of balance sheet restructuring kwon as asset restructuring, which is concerning the asset side of the balance sheet and the restructuring measures here includes selling major assets of the firms, merging financially distressed firms with another firm which are financially viable, reducing

capital expenditures and large costs like research and development spending and the second is financial restructuring which is restructuring concerning the right hand side of the balance sheet and the restructuring activities in this side includes; issuing new debt or equity securities, negotiating with commercial banks, suppliers and other creditors, exchanging debt for equity, filing for formal bankruptcy.

The limitations in this study are the following; in the panel regression, equity to asset which is used as proxy for firm's equity in model is dropped in reformulated model because of serious multicollinearity problem. The variable equity in the model of Pranowo is very small but significant but in this model insignificant and causing multicollinearity problem, this is the reason for the researcher dropped equity variable from the model.

In addition to this, firm's age the new variable introduced by the researcher to the model, but makes the model fails to be specified on both fixed and random effect model, this variable is also excluded from by model because of causing model specification problem.

The other variable which is dropped from this model is the status of financial distresses; which are early impairment, deterioration, cash flow problem and negative cash flow, dummy variables assigned for these factors causes endogeneity problems.

Therefore, the Hausman model specification test made by the researcher indicates that the variable in the model is properly specified and has no linearity, hetroskedasticity, and autocorrelation and multicollinearity problem.

The finding of additional variables that causes firm's financial distress by using large sample size of manufacturing firms in Ethiopian context will be used as area for further study.

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APPENDICES

Appendix I

Panel Data used for Regression

Firms	Year	DSC	profit	Equity	eff	liquid	leve	Fsize	Opervi	Age
1	1999	0.774831	0.463396	0.478075	0.383485	1.998053	0.522618	17.90568	16.68302	76
1	2000	0.763394	0.412064	0.563408	0.390548	1.88058	0.480812	17.82068	16.59518	77
1	2001	0.70657	0.367372	0.59652	0.363003	1.858421	0.456431	17.83548	16.5168	78
1	2002	0.731401	0.394684	0.547107	0.379823	1.785905	0.452893	17.93196	16.7047	79
1	2003	0.728977	0.378075	0.551427	0.378111	1.765997	0.448572	17.92409	16.68861	80
1	2004	0.733755	0.362835	0.572136	0.360469	1.858068	0.427864	18.03483	16.76975	81
1	2005	0.765158	0.372301	0.528141	0.392341	2.004835	0.471859	18.09248	16.94827	82
2	1999	0.157439	0.029485	0.611605	0.024541	5.477591	0.389557	18.78705	14.24733	54
2	2000	0.144017	0.078213	0.485481	0.056986	2.192101	0.51647	18.85489	15.73201	55
2	2001	0.132179	0.110004	0.178944	0.066833	1.116484	0.344123	19.04396	16.1635	56
2	2002	0.13165	0.135226	0.410608	0.086023	0.700513	0.586583	19.0722	16.48988	57
2	2003	0.062231	0.059369	0.300188	0.049588	0.673901	0.698112	19.14159	15.91926	58
2	2004	0.059203	0.041252	0.373335	0.051215	0.6539	0.622225	18.94402	15.70911	59
2	2005	0.119097	0.04972	0.452425	0.052015	1.215686	0.54509	19.26479	16.12787	60
3	1999	0.375816	0.289315	0.689847	0.165641	0.773643	0.310742	18.41983	16.4219	1
3	2000	0.138246	0.142057	0.640971	0.063426	0.591599	0.358085	18.46952	15.11297	2
3	2001	0.103662	0.150582	0.520858	0.062699	0.51578	0.477851	18.40814	14.97607	3
3	2002	0.174177	0.261661	0.4819	0.133084	0.490351	0.553908	18.30812	16.00062	4
3	2003	0.125158	0.154446	0.434127	0.093107	0.520541	0.563801	18.28301	15.44735	5
3	2004	0.161092	0.113609	0.32021	0.081239	1.126301	0.681299	19.00132	16.2595	6
3	2005	0.138512	0.071194	0.264912	0.064327	1.697954	0.735868	19.3968	16.45978	7
4	1999	0.040297	0.021147	0.599994	0.015166	1.468878	0.399996	19.10687	9.401043	3
4	2000	0.083691	0.062759	0.542841	0.044657	1.219141	0.456169	19.14948	15.72587	4
4	2001	0.013786	0.037799	0.172903	0.012167	1.210374	0.82335	19.96935	14.98641	5
4	2002	0.02233	0.053168	0.173651	0.021698	1.229633	0.826907	20.07933	16.00114	6
4	2003	0.01499	0.026311	0.224392	0.01092	1.43222	0.773764	19.86174	14.56398	7
4	2004	0.017162	0.022653	0.306113	0.016181	1.060656	0.695711	20.06476	15.58635	8
4	2005	0.042564	0.062265	0.295835	0.03679	1.105758	0.70437	20.65224	17.27395	9
5	1999	0.385809	0.389679	0.265522	0.408504	1.081303	0.73756	17.51654	16.45742	79
5	2000	0.309118	0.274219	0.291197	0.299708	1.164509	0.710236	17.51942	15.98683	80
5	2001	0.344624	0.312449	0.295944	0.338846	1.232166	0.704628	17.62346	16.28933	81
5	2002	0.346428	0.348278	0.25411	0.345559	1.200981	0.705862	17.7596	16.48558	82
5	2003	0.388095	0.280751	0.365957	0.337771	1.267023	0.630961	17.5015	16.12525	83
5	2004	0.385075	0.337656	0.382283	0.334734	1.281641	0.616585	17.76055	16.44729	84
5	2005	0.423279	0.37135	0.39407	0.366082	1.310604	0.606261	17.83488	16.64744	85
6	1999	0.200271	0.31001	0.194272	0.185536	1.168633	0.809466	16.96834	13.75568	32
6	2000	0.475405	0.265317	0.815663	0.09565	2.578612	0.183708	17.46615	12.55128	33
6	2001	0.204261	0.190116	0.694113	0.068388	1.9055	0.30713	17.59116	12.11985	34

6	2002	0.319045	0.242496	0.717123	0.109505	2.127597	0.282332	17.56685	14.43743	35
6	2003	0.607109	0.239251	0.781766	0.174854	3.011212	0.21837	17.5807	15.3734	36
6	2004	0.761859	0.259356	0.785025	0.225429	3.090079	0.213322	17.77025	16.00866	37
6	2005	0.67493	0.227595	0.787409	0.200205	3.057587	0.21224	17.97394	16.11883	38
7	1999	0.277766	0.253364	0.275154	0.293087	1.073925	0.724088	18.82169	17.4731	67
7	2000	0.588621	0.434071	0.464687	0.406609	1.257737	0.534123	19.17485	18.21537	68
7	2001	0.555119	0.397469	0.51053	0.373382	1.61842	0.490894	19.19722	18.14849	69
7	2002	0.475873	0.395982	0.762153	0.284918	1.466703	0.407568	19.3901	18.06566	70
7	2003	1.056285	0.397657	0.635921	0.282133	4.130271	0.180148	19.3181	17.97774	71
7	2004	1.142032	0.413837	0.815557	0.3134	3.920683	0.184099	19.40883	18.18733	72
7	2005	1.106626	0.421031	0.814275	0.305621	3.972262	0.185062	19.48082	18.23706	73
8	1999	0.710065	0.194472	0.932434	0.06578	5.92395	0.067372	18.98057	15.9573	4
8	2000	0.53881	0.247934	0.896045	0.079069	4.56175	0.104434	19.03666	16.2699	5
8	2001	0.738796	0.192181	0.931435	0.070836	7.674013	0.068893	19.03365	16.12563	6
8	2002	0.668911	0.136941	0.939129	0.055612	9.235989	0.061101	19.04848	15.81953	7
8	2003	0.743538	0.21211	0.915143	0.090202	7.182939	0.08505	19.1086	16.51997	8
8	2004	0.882999	0.274893	0.904869	0.121872	6.492738	0.094652	19.20268	16.97841	9
8	2005	0.965456	0	0.885178	0.162825	5.524603	0.113922	19.3072	17.41316	10
9	1999	0.252756	0.215534	0.363182	0.229413	1.648705	0.636818	17.82338	15.97588	35
9	2000	0.19853	0.203154	0.250839	0.215626	1.253695	0.749161	18.28367	16.61385	36
9	2001	0.144255	0.167022	0.313931	0.125752	1.363638	0.686069	18.08035	15.36504	37
9	2002	0.34459	0.249229	0.412066	0.304432	1.567671	0.587934	17.97529	16.74491	38
9	2003	0.273625	0.222641	0.438981	0.221484	1.648705	0.561019	18.00562	16.34784	39
9	2004	0.331512	0.206652	0.366659	0.302761	1.470145	0.633341	18.09905	16.7545	40
9	2005	0.266343	0.214839	0.286012	0.278724	1.316431	0.713988	18.34745	16.96448	41
10	1999	0.201808	0.24905	0.238679	0.095475	2.297477	0.761321	17.57965	14.31957	7
10	2000	0.164095	0.272367	0.268811	0.077368	1.826955	0.731189	17.53522	13.62637	8
10	2001	0.196637	0.307109	0.255775	0.094426	1.579535	0.744225	17.68785	14.05092	9
10	2002	0.158334	0.253753	0.250202	0.081783	1.854983	0.749798	17.70988	14.32443	10
10	2003	0.276992	0.301082	0.248872	0.139817	1.916922	0.751128	17.73547	14.75304	11
10	2004	0.274521	0.372933	0.197653	0.188683	1.637269	0.802347	17.96546	15.75688	12
10	2005	0.347534	0.333172	0.18314	0.281644	1.580198	0.81686	18.08564	16.64116	13
11	1999	0.185132	0.250765	0.474776	0.144096	1.546195	0.525224	17.36691	15.35336	28
11	2000	0.21839	0.27846	0.501278	0.158598	1.676733	0.498722	17.45588	15.49114	29
11	2001	0.315036	0.342275	0.469062	0.24622	1.73658	0.530938	17.52231	16.02689	30
11	2002	0.222536	0.236802	0.487916	0.158201	1.837108	0.512084	17.57124	15.45837	31
11	2003	0.287551	0.213932	0.605146	0.162378	2.357177	0.394854	17.44231	15.4494	32
11	2004	0.458642	0.387017	0.450807	0.361187	1.744633	0.549193	17.67031	16.48474	33
11	2005	0.293456	0.364319	0.343181	0.275047	1.467946	0.656819	17.94309	16.47062	34

Source:own computation using financial statments& other company records

Appendix II: All regression outputs

HAUSMAN SPECIFICATION TEST FOR MODEL FITNESS FINAL

. hausman fixed

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) .		
profit	.7256655	.7778155	-.0521501	.1282198
eff	.5719943	.7198798	-.1478855	.1418454
liquid	.0668977	.0623445	.0045533	.0063746
leve	-.5033271	-.4762632	-.0270639	.0296322
fsize	.0859889	.0558841	.0301047	.0330301
opervi	.0219268	.0192333	.0026934	.0051822

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\chi^2(6) = (b-B)'[(V_b-V_B)^{-1}](b-B)$$
$$= 9.83$$
$$\text{Prob}>\chi^2 = 0.1318$$

BREUSCH AND PAGAN LAGRANGIAN MULTIPLIER TEST FOR HETROSKEDASTICITY

Breusch and Pagan Lagrangian multiplier test for random effects

$$dsc[firms,t] = xb + u[firms] + e[firms,t]$$

Estimated results:

	var	sd = sqrt(var)
dsc	.0774336	.2782689
e	.0050028	.0707307
u	.0041942	.0647625

Test: var(u) = 0

$$\chi^2(1) = 9.84$$
$$\text{Prob} > \chi^2 = 0.0017$$

Tests for multicollinearity problem using correlation matrix

	dsc	profit	eff	liquid	leve	fsize	opervi	gcg
dsc	1.0000							
profit	0.6747	1.0000						
eff	0.5707	0.8477	1.0000					
liquid	0.5759	0.0254	-0.1526	1.0000				
leve	-0.6523	-0.1069	0.0625	-0.7149	1.0000			
fsize	0.0502	-0.4927	-0.4103	0.1856	-0.1202	1.0000		
opervi	0.4917	0.4280	0.5637	0.0719	-0.0697	0.2666	1.0000	
gcg	-0.1072	-0.0001	-0.0685	0.0506	0.2245	0.0644	-0.0011	1.0000

Autocorrelation Tests based on Durban Watson (DW)

Cross-sectional time-series FGLS regression

Coefficients: generalized least squares
Panels: homoskedastic
Correlation: no autocorrelation

Estimated covariances	=	1	Number of obs	=	76
Estimated autocorrelations	=	0	Number of groups	=	11
Estimated coefficients	=	8	Obs per group: min	=	6
			avg	=	6.909091
			max	=	7
			wald chi2(7)	=	777.76
			Prob > chi2	=	0.0000

dsc	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
profit	.9177531	.1723939	5.32	0.000	.5798674	1.255639
eff	.8445023	.1778558	4.75	0.000	.4959113	1.193093
liquid	.0529561	.0086854	6.10	0.000	.035933	.0699793
leve	-.4800109	.0693894	-6.92	0.000	-.6160115	-.3440103
fsize	.0692916	.0183235	3.78	0.000	.0333781	.105205
opervi	.0002053	.0111451	0.02	0.985	-.0216387	.0220493
gcg	-.0022535	.0032756	-0.69	0.491	-.0086736	.0041667
_cons	-1.116937	.2810325	-3.97	0.000	-1.667751	-.5661236

. sum

Variable	Obs	Mean	Std. Dev.	Min	Max
firms	77	6	3.183014	1	11
year	77	2002	2.013115	1999	2005
dsc	77	.3785697	.2846163	.0137864	1.142032
profit	76	.2419149	.1207847	.0211472	.4633958
equity	77	.4861284	.2224185	.1729034	.9391285
eff	77	.1869522	.1262358	.0109197	.4085041
liquid	77	2.135935	1.72031	.4903508	9.23599
leve	77	.5085471	.2202952	.0611014	.8269072
fsize	77	18.39809	.8091785	16.96834	20.65224
opervi	77	15.93089	1.398243	9.401043	18.23706
age_in_year	77	38.09091	28.83765	1	85
gcg	77	15	3.183014	10	20
d1	77	.4935065	.5032363	0	1
_est_fixed	77	.987013	.1139606	0	1

Appendix III. Sample Questionnaires and response rates

Addis Ababa University
Faculty of Business & Economics
Graduate Program (MSC) in Accounting and Finance
Questionnaires for Finance Officer&managers

Sample Survey questionnaire to study “Causes of Financial Distress, a case of selected beverage and metal manufacturing firms in Ethiopia.

The purpose of the study is to investigate determinants of Financial Distress, the case of selected beverage and metal manufacturing firms in Ethiopia.

Responding this questionnaire may not take much time .Any information provided would only be used for academic purpose.

As a result it would be kept confidential & utmost secrecy would be maintained. I thank you in advance for your cooperation.

Andualem Ufo

Position of the respondent_____

Qualification_____

Experience in Accounting &finance/management/related job_____

Sex _____

Age_____

Instruction: Please encircle the option you thought appropriate for the close ended questions.

If financial distress is caused by the following determinants you are required to agree on the following idea from highest (**main causes**) extent up-to they are **not causes** of financial distress. (**4=highest, 3=high, 2=medium, 1 =lower, 0=no degree of leading for financial distress**).

	4	3	2	1	0
1. To what degree did high level of debt leads firms for financial distress?	4	3	2	1	0
2. To what degree did low liquidity/ability to cover current obligation/ leads firms for financial distress?	4	3	2	1	0

3. To what degree did low operational cash flow/negative cash flow/ leads firms for financial distress?	4	3	2	1	0
4. To what degree did low ability of firms asset to generate sales/EBITDA/EBIT/leads firms for financial distress?	4	3	2	1	0
5. To what degree did low ability of firms asset to increase equity (lower EQ/TA) leads firms for financial distress?	4	3	2	1	0
6. To what degree did low gross profit to total sales/net income to total sales/ leads firms for financial distress?	4	3	2	1	0
7. To what degree did low total asset size leads firms for financial distress?	4	3	2	1	0
8. To what degree low firm age/low age from establishment to date / level of debt leads firms for financial distress?	4	3	2	1	0
9. To what degree macroeconomic variables like global financial crises leads firms for financial distress?	4	3	2	1	0
10. To what degree early impairment leads firms for financial distress?	4	3	2	1	0
11. To what degree did deterioration status/losing income continuously/ leads firms for financial distress?	4	3	2	1	0
12. To what degree did low level of transparency/ lack of good governance/ leads firms for financial distress?	4	3	2	1	0
13. To what degree did low level of accountability and lack of fairness/ lack of good governance/ leads firms for financial distress?	4	3	2	1	0
14. To what degree did low level of responsibility and lack of independence/lack of good governance/ leads firms for financial distress?	4	3	2	1	0
15. To what degree did low debt service coverage leads firms for financial distress?	4	3	2	1	0
16. To what extent the industrial relations have its impact on the financial distress/failure?					

Response rate for Sample Questionnaires

The response rates shown below, represents that the following are the causes of financial distress.

Determinants of financial distress	Response (percentage), the degree that mentioned variables are main causes of financial distress			
	Highest(4)	High(3)	Medium(2)	Lower(1)
Liquidity	73%	18%	9%	0%
Leverage	64%	27%	9%	0%
Profitability	55%	27%	9%	9%
Efficiency	64%	18%	9%	9%
Imp. of GCG based on 5criteria	0%	27%	9%	64%
Operational viability	46%	27%	18%	9%
Firm size	55%	18%	9%	18%
Macro economic variables	18%	18%	9%	55%
Equity	9%	9%	36.5%	45.5%
Firm age	0%	18%	36.5%	45.5%
Gov Industrial relation	0%	9%	18%	73%
Status of financial distress	9%	9%	36.5%	45.5%
Low debt service coverage	55%	18%	18%	9%

N.B: Bolded are significant factors and italicized are not significant factors.