# Earnings Management and Financial Distress: An Analysis of Indian Textile Companies

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## Abstract

Earnings management has been a topic of concern amongst practitioners and regulators in recent times. It has received considerable attention from academic researchers across the globe. This study aims to explore the linkage between earnings management and financial distress by using a sample of 30 financially distressed textile firms in India during the period 2010-2019. Modified Jones Model has been used to estimate discretionary accruals, a proxy for earnings management. Altman's Z-Score has been used to detect the level of financial distress. Multiple regression analysis has been used to investigate the association between earnings management and financial distress after considering certain control variables. The findings portray that even financially distressed firms are engaged in income-decreasing earnings management practices. Firms' profitability, liquidity and growth opportunities are found to have a significant positive impact on earnings management whereas Cash Flow Coverage (CFC) and leverage are found to have a significant negative association with earnings management. These findings may be useful for lenders and investors as they need to be aware that even firms experiencing financial distress might indulge in earnings management activities.

*Keywords:* Altman's Z-Score, discretionary accruals (DAC), Earnings management, financial distress, Modified Jones Model

## Introduction

The corporate world has substantiated several accounting frauds and financial scandals in the past few decades. The unexpected breakdown of some of the large commercial enterprises has resulted in enormous loss of stakeholders' wealth, which, in turn, has reduced stakeholders' trust in the financial information disclosed by firms. As a result, regulating bodies across the globe have become vigilant about the manipulation of financial information and wilful distortion of facts about the financial performance of an entity. The key reason behind these scandals is earnings management thereby making it an area of concern among academic researchers and practitioners in recent times.

Earnings management is practiced by companies worldwide. The burden on companies to exceed the earnings benchmark is the driving force for earnings management throughout the world. Firms also engage in earnings management to smoothen out the fluctuations in their financial performance. Loopholes and flaws in the accounting system and accounting principles provide a plethora of opportunities to managers to manipulate the reported numbers. Alternative explanations for financial events that is possible for accounting standards like Generally Accepted Accounting Principles (GAAP) and flexibility in the adoption of accounting policies gives rise to a window of opportunity for earnings management. The financial health of the company also acts as a catalyst for managing its earnings. The downfall in the financial health of the company motivates managers to reshape its earnings and cash flows to camouflage the real financial position. This is done to prevent hostile takeovers and acquisitions, and to evade infringement of debt covenants. While earnings management leads to a positive financial image of the company in the short run, it drives the company to financial distress and bankruptcy, and ultimately liquidation, in the long run. Thus, financial distress has become a matter of concern for the government and stakeholders as it can lead to significant losses for investors, creditors and other stakeholders, and can bring about a severe impact on the entire economy.

Interest in the domain of earnings management and financial distress has resulted due to increase in the number of corporate scams around the world in the last few decades. There are several reasons attributed to financial problems faced by companies and they end up causing financial instability, which finally results in corporate failure. As per New Generation Research's Bankruptcy data, the biggest corporate bankruptcies were WorldCom, Enron, CIT group, etc. In India, a government agency for investigating significant corporate fraud, Serious Fraud Investigation Office (SFIO) has reported about 79 cases involving 594 companies in the last 3 years. In this context, the Satyam Computers case that occurred in 2009 is possibly India's largest corporate fraud that brought a loss of about Rs. 14,162 crores to investors, jolting the Indian capital markets regulators. In developing countries where the implementation of laws is feeble and corruption is high, the intensity of earnings management is higher than in countries where rule of law is strong. This leads to higher earnings management and more corporate failures in developing countries.

In this study, we focus on the practice of earnings management by financially distressed enterprises. More specifically, we attempt to detect whether financially distressed companies use earnings management as a tool to present a better picture of their financial position through published reports. This can mislead the stakeholders and can bring an adverse effect on the economy and society as a whole. The findings of the study will be useful for present and potential investors and lenders to assess the financial position of a company precisely by employing the techniques used in this research paper. Mildly distressed companies can also engage in earnings management activities to obscure their true financial condition. The results will also aid the regulators and policymakers to monitor and augment the quality of reported financial information.

## Literature Review

There is a vast body in accounting literature studies on earnings management practices in firms. There are also numerous research studies in the area of financial distress. However, there are only a handful of studies based on earnings management practices in financially distressed firms. Research studies on earnings management got underway in 1985 with the dissemination of Healy's dissertation followed by DeAngelo's research in the year 1986. Research studies in the field of financial distress commenced from 1960 and several financial distress models were developed. Beaver (1966) pioneered the use of univariate analysis and Altman (1968) developed a multivariate model to predict financial distress.

The existing literature on earnings management behaviour of financially distressed firms provides varied results regarding their earnings management practices. DeAngelo, DeAngelo and Skinner (1994), based on 76 US-listed firms that suffered persistent losses in the period 1980-1985, highlighted that the managers of the firms suffering from severe distress disclosed high negative discretionary accruals in order to enter into renegotiation with their lenders and to obtain government

assistance. Similarly, Jaggi and Lee (2002) also stated that the managers of distressed firms indulged in income decreasing earnings management practices when debt restructuring, or debt renegotiation took place. When they were able to get waivers for infringing debt covenants, they resorted to income increasing earnings management practices. Contrarily, Rosner's (2003) study sheds light on the fact that distressed firms exhibit opportunistic income increasing earnings management behaviour to hide their actual financial health. DeFond and Jiambalvo (1994) found that firms showed positive discretionary accruals in the year preceding default, which implies that managers engage in opportunistic earnings management activities to avert default. Analysing different accrual-based earnings management models, Dechow, Sloan and Sweeney (1995) put forth that for a random sample of firm-years, the models produce properly specified results, but the power of test for earnings management of economically credible magnitude is low. Further, the models provide mis-specified results when applied on a sample experiencing utmost financial performance. Nonetheless, the modified Jones model was found to be the most efficient model in estimating discretionary accruals.

Beneish, Press and Vargus (2001) proclaimed that the trading behaviour of the managers of the distressed firms helps to discern whether the firms have managed their earnings. They argued that the managers have private information about the after-effects of default, so they exercise their discretion to manage earnings upward in order to sell their equity-contingent wealth at a high price. Kothari, Leone and Wasley (2005) analysed 100 companies and observed that the discretionary accrual models give mis-specified results when applied on stratified random samples. However, they recommended that incorporating a constant term in the discretionary accruals prediction models reduces the mis-specified problems. Charitou, Lambertides & Trigeorgis (2007) stated that US companies filing for bankruptcy shifted their earnings downward before filing for bankruptcy and the pressure exerted by qualified audit opinions forced managers to resort to conservative earnings management practices. Along with this, the increase in top management turnover in distressed firms pushes new managers to use big bath techniques to manage earnings during the same period.

Ting, Yen and Huang (2009) attempted to establish a relationship between earnings management behaviour, default risk and top management compensation, and found that earnings management practices in firms enhance their default risk. However, an increase in top management compensation helps in alleviating default risk and the use of discretionary accruals to misstate the reported financial statements. Chen, Chen & Huang's (2010) research provides an insight into the fact that the Chinese distressed companies use earnings management as a tool to obscure their actual financial position to refrain from continuous Special Treatment (ST) status and to reduce the risk of becoming delisted in the year prior to being assigned the ST status and also in the successive year. Hsiao, Lin and Hsu (2010) appraised 93 distressed and 186 healthy firms for the period ranging from 1997 to 2007 and revealed that the distressed firms were more engaged in opportunistic earnings management practices than the healthy firms. Similar results were also evinced by Habib, Bhuiyan and Islam (2013) in their research. Bisogno and Deluca (2015) empirically investigated 40 failed Italian non-publicly listed small and medium-sized family-owned enterprises and put forth that the distressed companies portrayed a better financial position by manipulating their reported statement with an eye to continue obtaining finance from banks.

Some researchers have focused on both real-based and accrual-based earnings management practices in financially distressed firms. Using a sample of 2,801 UK firms out of which 268 were bankrupt, Lara, Osma and Neophytou's (2009) research portrayed that the failed firms manipulated both the accruals and real operations during the period of four years preceding bankruptcy. Qin and Ren (2017) documented that in distressed firms, the increase in income deflating discretionary accruals is due to the reversal of income inflating total accruals in the prior years and also owing to the shift from accrual-based earnings management practices to income inflating real activity based earnings management practices. Muljono and Suk (2018) analysed 256 publicly listed Indonesian companies for a period covering 10 years from 2005 and unveiled that financial distress has a positive influence on the magnitude of real earnings management and negative influence over accrual-based earnings management. When the financial health of the company is better, the management manipulates the real activities but as the health of the company deteriorates, it loses its competitive position and is unable to conduct real activity-based manipulations. Thus, the company switches over to discretionary accrual-based manipulation. Hassanpour and Ardakani's (2017) study was undertaken to assess the relationship between pre-bankruptcy financial distress and earnings management in 133 firms listed in the Tehran Stock Exchange during 2010-2014. A significant positive relationship was found between pre-bankruptcy financial distress and earnings management. They also concluded that management adopted real activities-based manipulation techniques when they required instant results. Conversely, Hrp, Sadalia and Fachrudin (2017) found a significant negative relationship between financial distress and earnings management while evaluating 42 Indonesian banking companies during the period 2011-2014.

In the Indian context, there are very few studies focusing on the earnings management behaviour of financially distressed firms. Agrawal and Chatterjee (2015) examined 150 financially distressed Indian companies from 2009 to 2014 and depicted that the less distressed firms were more involved in earnings management whereas the more distressed firms evinced a lower level of earnings management practices. Nagar and Sen (2016) in their research asserted that the firms in their early stage of distress involve in the manipulation of real activities and classification shifting to enhance liquidity and profitability. While during the period of severe distress, the firms resort to income increasing earnings management techniques. Chhillar (2016) aimed at analysing the influence of capital structure on earnings management and how these two play a role in signalling the initial stage of financial distress. The study propounded that a high level of debt financing demands high quality of earnings which leads to lower level of earnings management practices. However, in the declining stage of a firm, the level of earnings management practices increases as the proportion of debt in the capital structure reduces. Additionally, she proposed that distressed firms showed a higher level of earnings management with the view to conceal poor financial performance, avoid infraction of debt covenant and to get better terms in negotiating debt contracts. Ghosh's (2017) research made an attempt to appraise the corporate credit quality transition by employing cohort and hazard rate approach. The study highlighted that the probability of default estimated by the hazard rate approach in each category of rating is slightly lower than the result presented by the cohort approach. Panigrahi (2019) applied Altman Z-Score model to evaluate the financial status of certain pharmaceutical companies for a period of 5 years from 2013 to 2017 and depicted that pharmaceutical companies have a sound financial condition as the average Z-Score of the companies was 5.90 which is much above the threshold level (i.e. 1.8).

## Research Gap

Several research studies that have explored various aspects of earnings management in financially distressed firms have been reviewed to identify the areas that have remained unexplored in the earlier literature and to shed some light on those areas. Survey of previous research studies disclose that most studies addressing the issue of earnings management in financially distressed firms are based on the international scenario and very few studies in this respect have been conducted in the Indian scenario. Moreover, to the best of our knowledge, there is no study that has dealt with the association between earnings management and financial distress in the textile industry in India. So, this paper focuses on the relationship between earnings management and financial distress in the textile industry in India.

## Objectives of the study

Companies that are experiencing deterioration in their financial health try to conceal their true financial position by distorting their reported figures in order to mislead their stakeholders. The main aim of this study is to examine the extent of earnings management practices in financially distressed firms. More specifically, the objectives of the study are as follows:

• To determine the magnitude of discretionary accruals used as a proxy for earnings management of selected Indian textile companies during the study period.

• To ascertain the degree of financial distress of the selected Indian textile companies during the period under study.

• To explore the linkage between financial distress and earnings management with reference to select Indian textile companies during the study period.

• To investigate the association between the control variables (viz. profitability measured by return on assets, liquidity measured by current ratio, leverage as a measure of capital structure, firm size, cash flow coverage, growth and firm age) and earnings management.

## Database and Methodology

### Sample selection:

The study has focused on financially distressed companies. Companies which have defaulted on their debt instruments or are expected to be in default soon and have been assigned a 'D' rating by the Indian credit rating agencies, namely, CRISIL (Credit Rating Information Services of India Limited), ICRA Ltd (Investment Information and Credit Rating Agency of India Limited) and CARE (Credit Analysis and Research) for the period 2010-11 to 2017-18 have been selected for this study. The study covers a period of ten years from 2010 to 2019. This study entirely rests upon secondary database. The data set that has been used in this study has been collected from Capitaline Database Package 2000 and CMIE Prowess database has also been referred to some extent. The study is confined to financially distressed companies belonging to the textile industry. The initial sample comprised 40 companies but due to the non-availability of data for the period under study, 10 companies were removed, and the final sample comprised 30 companies.

### Computation of earnings management:

Discretionary accruals are an important measure for earnings management which has been considered widely by researchers across the globe. The majority of the existing earnings management literature relies on the Modified Jones Model put forth by Dechow et al. (1995) for estimating discretionary accruals. Hence, the same model has been applied in this study for estimating discretionary accruals which are used as a proxy for earnings management.

The first step is to estimate the total accruals of each firm for every year for a particular industry. Total accruals can be calculated by following the cash flow statement approach and balance sheet approach. However, the cash flow statement approach is mostly preferred by the researchers, so this approach has been applied in this study.

$$TAC_{i,t} = NI_{i,t} - CFO_{i,t} \quad ………(1)$$

Where, $TAC_{i,t}$ = Total accruals in year t for firm i

$NI_{i,t}$ = Net income in year t for firm i

$CFO_{i,t}$ = Cash flow from operations in year t for firm i

In the second step, the non-discretionary accruals need to be estimated by applying the following regression equation as specified in the Modified Jones Model.

$$TAC_{i,t}/A_{i,t-1} = \alpha_1 (1/A_{i,t-1}) + \alpha_2 [(\Delta REV_{i,t} - \Delta REC_{i,t})/A_{i,t-1}] + \alpha_3 (PPE_{i,t}/A_{i,t-1}) + \varepsilon_{i,t} \quad ……….(2)$$

Where, $\Delta REV_{i,t}$ = Revenues in year t less revenue in year t-1 for firm i

$\Delta REC_{i,t}$ = Receivables in year t less receivables in year t-1 for firm i

$PPE_{i,t}$ = Gross plant, property and equipment in year t for firm i

$A_{i,t-1}$ = Total assets in year t-1 for firm i

$\varepsilon_{i,t}$ = Error term in year t for firm i

The coefficients as provided by the above regression equation are used to calculate non-discretionary accruals for each firm for each year. Discretionary accruals can then be estimated by subtracting non-discretionary accruals from total accruals.

$$DAC_{i,t} = TAC_{i,t}/A_{i,t-1} - NDA_{i,t}/A_{i,t-1} \quad ……….(3)$$

Where, $DAC_{i,t}$ = Discretionary accruals for year t for firm i

$NDA_{i,t}$ = Non-discretionary accruals for year t for firm i

### Appropriate regression analysis for the panel data to validate earnings management practices:

To choose the appropriate linear regression analysis model i.e. Random Effects Model or Fixed Effect Model for the panel data for estimating discretionary accruals following the Modified Jones Model, the Durbin-Wu-Hausman (DWH) Test has been applied. The null hypothesis for the Hausman Test specifies that no correlation exists between unique errors and regressors in the model. It signifies that the estimates of both the Fixed Effects and Random Effects models are unbiased; however, the Random Effects model is considered to be more efficient than the Fixed Effects model. If the p-value is small (i.e. < 0.05), then the null hypothesis is rejected which implies that the Fixed Effects model is appropriate; if the null hypothesis is accepted (i.e. p>0.05), then it endorses the suitability of Random Effects model.

***Measurement of financial distress:***

Altman's Z-Score model is the most globally recognized and well-researched financial distress prediction model developed by Edward Altman (1868). Using a sample of 33 failed and 33 healthy firms, the accuracy rate of the model was 95%. Hence, this model has been used in this study. It is a measure of the overall financial health of the company. A lower value of Z-Score evinces a higher level of financial distress while higher the value of Z-Score lower is the level of financial distress. A Z-Score value of more than 2.99 signifies non-bankruptcy and a Z-Score below 1.81 implies that the firm may go bankrupt in the following two years. A Z-Score lying between 1.81 and 2.99 indicates that the firm lies in a grey zone. The Z-Score can be determined as follows:

$$Z\text{-Score} = 1.2(WC/TA) + 1.4(RE/TA) + 3.3(EBIT/TA) + 0.6(MVE/BVL) + 1.0(Sales/TA)$$

Where, WC = Working Capital, i.e. current assets minus current liabilities

      RE = Retained earnings

      EBIT = Earnings before interest and tax

      MVE = Market value of equity

      BVL = Book value of liabilities

      TA= Total assets

***Establishing the linkage between Earnings Management and Financial Distress:***

Once the discretionary accruals and the Altman's Z-Scores for the 30 textile firms were derived by following the above-mentioned methods, the relationship between earnings management and financial distress was explored. To establish the linkage between earnings management and financial distress, multiple regression analysis was used. The control variables are also considered in this model. They have been added to the models to enhance the strength of the association. In this respect, two regression models have been considered in this study. In the first regression model, the actual Z-Score and the control variables have been taken into account, and in the second model, to distinguish between high distressed and low distressed firms, the dummy variable for Z-Score has been considered. Such differentiation is done on the basis of the median value of the Z-Scores for the sample firms. The average Z-Score for each firm has been computed considering the Z-Score value for each year under study. Then the same has been compared with the median value of these Z-Scores. Firms having Z-Score value lower than the median value are regarded as high distressed firms and firms with Z-Score value higher than the median value are identified as low distressed firms.

**Regression model-1:**

$$DAC_{i,t} = \beta_0 + \beta_1 Z\text{-Score}_{i,t} + \beta_2 ROA_{i,t} + \beta_3 CR_{i,t} + \beta_4 Leverage_{i,t} + \beta_5 Firm\ Size_{i,t} + \beta_6 CFC_{i,t} + \beta_7 Growth_{i,t} + \beta_8 Firm\ Age_{i,t} + \varepsilon_{i,t} \qquad ..........(4)$$

Where, for firm i in year t

      DAC = Discretionary accruals

      Z-Score = Altman's Z-Score value

      ROA = Return on assets computed as (net income/total assets)*100

      CR = Current ratio computed as current assets/current liabilities

      Leverage = Ratio of long-term debts to total assets

Firm Size = Firm size measured by natural log of total assets

CFC = Cash flow coverage computed as (cash flow from operations + cash and cash equivalents)/interest

Growth = Growth of the firm measured by market value of equity/book value of assets

Firm Age = Age of the firm measured by natural log of (year of study minus year of incorporation)

$\varepsilon$ = Other factors not captured by the model

**Regression model-2:**

$DAC_{i,t} = \beta_0 + \beta_1 Z\text{-Score Dummy}_{i,t} + \beta_2 ROA_{i,t} + \beta_3 CR_{i,t} + \beta_4 Leverage_{i,t} + \beta_5 Firm\ Size_{i,t} + \beta_6 CFC_{i,t} + \beta_7 Growth_{i,t} + \beta_8 Firm\ Age_{i,t} + \varepsilon_{i,t}$ ........(5)

Where, Z-Score Dummy = Dummy variable for Z-Score which carries the value 1 if the firm is high distressed firm and 0 if it is low distressed firm.

The dependent variable and the other independent variables remain the same as the equation (4).

***Appropriate regression analysis for the panel data to examine the linkage between earnings management and financial distress:***
To choose the appropriate regression analysis based on panel data for regression model-1, Hausman Test is applied which decides the appropriate model between Fixed Effects and Random Effects model. But, in the case of regression model-2, to choose the appropriate regression analysis for panel data, Breusch-Pagan Lagrange Multiplier (LM) Test is applied which identifies the appropriate model between Pooled Model and Random Effects Model. Here, the Fixed Effects model is not considered as Z-Score Dummy, a time-invariant variable. The null hypothesis of the Breusch-Pagan LM Test is that there is no random effect i.e. the variance across entities is zero. If the p-value is less than 0.05, then the null hypothesis is rejected which signifies that the Random Effect model is appropriate; if the null hypothesis is accepted (p-value>0.05), then it implies that Pooled Model is appropriate.

***Research variables***
**Dependent variable:**
Discretionary Accruals (DAC) – Discretionary accruals as computed by the Modified Jones Model is the dependent variable which is used as a proxy for earnings management.

**Independent Variables:**
Altman's Z-Score – Altman's Z-Score is an independent variable used to measure the level of financial distress of the firms.

Control variables – To control for other factors that are likely to affect the level of earnings management, some control variables have been included which are explained as follows:

1.  ROA – Return on assets (ROA) has been considered as a measure of the profitability of the firms. Profitability is expected to influence the level of earnings management since firms with poor performance are expected to manipulate their earnings figures to present a better picture of their financial position (Bekiris et al., 2011; Hutchinson et al., 2008).
2.  CR – Current ratio (CR) has been regarded as a measure of the liquidity of the firms (Chatterjee, 2019). Generally, a positive relationship is expected between CR and earnings management as the users of CR are sensitive to it, so managers attempt to maintain or increase it, which makes it a part of earnings management behaviour (Moradi et al., 2012).
3.  Leverage – It has been taken as a measure of the capital structure of the firms (Chatterjee, 2019; Bekiris et al., 2011). It is expected that highly leveraged firms are motivated towards managing their earnings to meet debt covenants (Hrp et al., 2017). Contrarily, it is argued that in a high leveraged firm, the level of monitoring increases which restricts the flexibility for managers to distort the reported earnings (Muljono & Suk, 2018).

4. Firm Size – Firm size can have an impact on the level of earnings management (Habib et al., 2013; Mohammadi & Amini, 2016). Some studies have claimed that large firms have a robust governance structure and lower level of information asymmetry, so they are less inclined towards earnings management behaviour (Campa & Donnelly, 2014). Conversely, it is argued that based on agency theory, higher agency cost is witnessed by large firms which open doors for more opportunistic practices (Bassiouny et al., 2016). Moreover, higher pressure is exerted by investors and financial analysts over large firms, so they engage in distorting their reported earnings (Ali et al., 2015; Moradi et al., 2012).

5. CFC – Cash Flow Coverage (CFC) is likely to exert influence on the extent of earnings management practices in firms (Agrawal & Chatterjee, 2015). Generally, an inverse relationship is expected between cash flow from operations and earnings management as firms having adequate operating cash flows are less involved in earnings management practices (Becker et al., 1998; Jiang & Anandarajan, 2009).

6. Growth – Growth opportunities of the firms are expected to affect the quality of earnings. It is argued that the investment opportunities of a firm having low growth opportunities are limited and accordingly, have excess free cash flows. Subsequently, the managers tend towards earnings management practices (Hutchinson et al., 2008). However, the managers of firms having high growth opportunities use discretionary accruals as a tool for giving an indication about the future performance of the firms (Agrawal & Chatterjee, 2015). Moreover, high growth firms with higher future discretionary investment opportunities are hard to monitor so they indulge in manipulating reported figures (Debnath, 2017).

7. Firm Age – Older firms are expected to improve their financial reporting practices and try to enhance their reputation and image, so they are less involved in earnings management practices (Bassiouny et al., 2016). In contrast, Debnath (2017) found a positive association between firm age and earnings management.

## Major Findings of the Study

### Descriptive Statistics:

Table 1 depicts the descriptive statistics for the dependent and independent variables used in this study. The mean and median values of DAC are 0.0005 and 0.0165 respectively which denotes that overall, managers of distressed firms are inclined towards income-increasing earnings management practices. The minimum value of earnings management shows a negative value (-0.6239) which implies that some firms are also involved in income-decreasing earnings management. The mean Z-Score (0.8983) reveals that, on average, companies have poor financial condition. The profitability of firms measured by return on assets (ROA) varies widely across firms as there is a high difference between the minimum value (-100.0567) and maximum value (18.3506) and the standard deviation is also very high (14.4128). The mean value of ROA is negative (-7.1258) which signifies that most of the sample firms are loss-making. The CFC of the firms presents almost a similar picture as it also has a very high standard deviation (30.1519) since there exists a wide gap between the minimum value (-13.1933) and maximum value (421.1667). Therefore, a wide difference across the sample firms is obvious for CFC. Liquidity (CR) of the firms has a high standard deviation (6.9603). So, a wide difference between the minimum value (0.0635) and maximum value (57.5647) is also evident for the liquidity of the firms. The mean value of leverage of the firms (0.8827) portrays that mostly the sample firms are highly leveraged. In respect of the growth opportunities of the firms, there is a moderate gap between the minimum value (0.0026) and maximum value (9.3463) of sample firms. From the table, it can also be noted that on average, the firm size is 5.8258 and firm age is 3.4017.

## Table 1. Descriptive statistics (full sample)

| VARIABLE | DESCRIPTIVE STATISTICS ( FULL SAMPLE) | | | | |
|---|---|---|---|---|---|
| | MEAN | MEDIAN | STD.DEV. | MIN. | MAX. |
| DAC | 0.0005 | 0.0165 | 0.1247 | -0.6239 | 0.4555 |
| Z-Score | 0.8983 | 1.5394 | 3.1774 | -27.6085 | 7.2477 |
| Profitability(ROA) | -7.1258 | -2.8657 | 14.4128 | -100.0567 | 18.3506 |
| Liquidity(CR) | 4.3257 | 2.3274 | 6.9603 | 0.0635 | 57.5647 |
| Leverage | 0.8827 | 0.6237 | 1.4517 | 0.0923 | 15.0859 |
| Firm Size | 5.8258 | 5.8389 | 1.0766 | 2.7688 | 8.1337 |
| CFC | 4.9648 | 1.0241 | 30.1519 | -13.1933 | 421.1667 |
| Growth | 0.3032 | 0.1040 | 0.9343 | 0.0026 | 9.3463 |
| Firm Age | 3.4017 | 3.3498 | 0.5213 | 1.6094 | 4.6250 |

*Source: Authors' calculations*

The descriptive statistics and t-test for mean differences for the dependent and independent variables after dividing the total sample into two sub-samples - low distressed firms and high distressed firms - on the basis of median Z-Score are presented in Table 2. It is perceived from Table 2 that the mean DAC for the high distressed firms is negative (-0.0216) and for the low distressed firms is positive (0.0225) which imply that the high distressed firms are mostly engaged in negative earnings management while the low distressed firms, on an average, are engaged in income-increasing earnings management. The mean difference of DAC for the two sub-samples is statistically significant at 5% level of significance. The mean Z-Score is also negative for high distressed firms (-0.2342) and positive (1.9261) for low distressed firms and is statistically significant at 1% level of significance. This finding is consistent with the findings of Agrawal and Chatterjee (2015) and Jaggi and Lee (2002). They put forth that the use of discretionary accruals by the managers to manipulate earnings depends on the severity of financial distress. The managers of the high distressed firms involve in income-decreasing earnings management practices to enter into the renegotiation of debt covenants with their lenders. DeAngelo et al. (1994) specified that the firms that are suffering from severe distress show negative discretionary accruals to renegotiate debt covenants and to obtain support from the government. Alternatively, the managers of low distressed firms tend towards income-increasing earnings management practices for their own benefit to reduce the chance of a cut in their bonus, job loss or loss of reputation. It is also evident from Table 2 that the high distressed firms have high negative mean ROA (-12.648) than the low distressed firms (-1.6089) which implies that the high distressed firms suffer higher losses than the low distressed firms. The mean difference is statistically significant for firms' profitability at a 1% level of significance. There is also a significant difference between the mean leverage and mean liquidity of the firms.

## Table 2. Descriptive Statistics and t-test (Sub-samples)

| VARIABLES | LOW DISTRESSED FIRMS | | HIGH DISTRESSED FIRMS | | Mean Diff. | t-test | p-value |
|---|---|---|---|---|---|---|---|
| | Mean | Std. Dev. | Mean | Std. Dev. | | | |
| DAC | .0225 | .0463 | -.0216 | .0531 | 0.0441** | 2.238 | .041 |
| Z-Score | 1.9261 | .5374 | -.2342 | 2.5081 | 2.1603*** | 3.024 | .009 |
| Firm Size | 5.5615 | 1.1813 | 6.0901 | .7816 | -.5285 | -1.610 | .129 |
| Leverage | .4783 | .1401 | 1.2871 | 1.1802 | -0.8088** | -2.634 | .019 |
| CFC | 1.7915 | 1.1991 | 2.9858 | 4.3893 | -1.1942 | -1.018 | .326 |
| Profitability (ROA) | -1.6089 | 2.527 | -12.6428 | 5.5736 | 11.0339*** | 6.482 | .000 |
| Growth | .2185 | .2382 | .3880 | 1.1097 | -.1695 | -.581 | .570 |
| Liquidity (CR) | 3.0870 | 2.2121 | 5.5643 | 4.2442 | -2.4773* | -1.756 | .100 |
| Firm Age | 3.3981 | .6152 | 3.4052 | .4101 | -.0072 | -.028 | .977 |

*Source: Authors' calculations*

*Notes: ***statistical significant level of 1%, **statistical significance level of 5%,*
 *  *statistical significance level of 10%.*

**Regression results:**

Table 3 exhibits the results of both the regression models. In both the models, the coefficient of Altman's Z-Score, the measure for financial distress, is negative i.e. -0.0285 for model-1 and -0.0138 for model-2 which signifies that financial distress is negatively associated with earnings management. In regression model-1, the coefficient of Z-Score is found to be statistically significant at 1% level of significance. This indicates that financially distressed firms are engaged in income-decreasing earnings management activities. Most of the sample firms suffer from severe distress (as is evident from Table 1 that, on an average, the Z-Score is very low) so they adopt income-reducing earnings management practices. This result is consistent with the findings of Habib et al. (2013) and Etemadi et al. (2013). Etemadi et al. (2013) argued that distressed firms engage in income-decreasing earnings management practices under the pressure of audit opinion. According to Jaggi and Lee (2002), distressed firms practice negative earnings management when they are involved in debt restructuring or debt renegotiation. In regression model-2, the Z-Score dummy variable is found to be negatively associated with DAC (-0.0138) which implies that the low distressed firms indulge in lower earnings management practices. However, this relationship is not found to be statistically significant.

As for the control variables, the firms' profitability measured by ROA, has a positive coefficient in both model-1 (0.0066) and model-2 (0.0058) and is statistically significant at 1% level of significance, which reflects a positive association between ROA and earnings management. This reveals that the managers of the profitable firms are enticed to use DAC for manipulating the reported figures to achieve their desired level of earnings and to gain the confidence of the investors. This result confirms the findings of Agrawal & Chatterjee (2015). Liquidity, measured by current ratio, is found to be positively and significantly related to earnings management in both model-1 (0.0032) and model-2 (0.0024). This highlights that firms with high liquidity have lesser incentive to manipulate their earnings through DAC. Leverage shows a negative sign for model-1 (-0.0537) which is statistically significant at 1% level of significance, and a positive sign for model-2 (0.0036) which is not found to be statistically significant. This suggests that a high leverage ratio within a firm increases the level of monitoring and thus restricts opportunistic earnings management practices by managers. This result is consistent with the findings of Muljono & Suk (2018). CFC is found to exert an adverse impact on earnings management as the coefficient of CFC is negative for both the models (-0.0009) and statistically significant at 1% level of significance. This conveys that higher CFC restricts the level of earnings management practices in firms. This result confirms the findings of Becker et al. (1998), Jiang & Anandarajan (2009) and Agrawal & Chatterjee (2015). In respect of the growth opportunities of the firms, it is found to have a favourable influence on earnings management for both model-1 (0.0234) and model-2 (0.0069). However, the result is statistically significant at 1% level of significance for model-1 only. It signifies that the managers of the firm having higher growth opportunities tend to employ DAC as a tool for achieving their self-interest. This confirms the findings of Debnath (2017) and Agrawal & Chatterjee (2015). In case of firm size, a positive association is found with earnings management, and for firm age, a negative association is evinced with earnings management, but the results are not found to be statistically significant for both the models.

**Table 3. Regression Results**

| VARIABLES | MODEL-1 | | | MODEL-2 | | |
|---|---|---|---|---|---|---|
| | Coefficients | Z-Value | P-Value | Coefficients | Z-Value | P-Value |
| Constant | 0.1359* | 1.93 | 0.053 | 0.0564 | 0.80 | 0.422 |
| Z-Score | -0.0285*** | -2.93 | 0.003 | | | |
| Z-Score Dummy | | | | | | |
| Profitability (ROA) | 0.0066*** | 14.04 | 0.000 | 0.0058*** | 14.91 | 0.000 |
| Liquidity (CR) | 0.0032*** | 3.89 | 0.000 | 0.0024*** | 2.97 | 0.003 |
| Leverage | -0.0537*** | -2.64 | 0.008 | 0.0036 | 0.81 | 0.417 |
| Firm Size | 0.0033 | 0.48 | 0.630 | 0.0035 | 0.45 | 0.650 |
| CFC | -0.0009*** | -5.19 | 0.000 | -0.0009*** | -5.07 | 0.000 |
| Growth | 0.0234*** | 2.70 | 0.007 | 0.0069 | 0.99 | 0.321 |
| Firm Age | -0.0151 | -1.09 | 0.274 | -0.0115 | -0.79 | 0.429 |
| R2 | 0.5105 | | | 0.4912 | | |
| No. of Observation | 300 | | | 300 | | |

*Source: Authors' calculations*

*Notes**: ***statistical significance level of 1%, *statistical significance level of 10%,*

*Regression Model-1: $DAC_{i,t} = 0.1359 - 0.0285 Z\text{-}Score_{i,t} + 0.0066 ROA_{i,t} + 0.0032 CR_{i,t} - 0.0537 Leverage_{i,t} + 0.0033 Firm\ Size_{i,t} - 0.0009 CFC_{i,t} + 0.0234 Growth_{i,t} - 0.0151 Firm\ Age_{i,t} + \varepsilon_{i,t}$*

*Regression Model-2: $DAC_{i,t} = 0.0564 - 0.0138 Z\text{-}Score\ Dummy_{i,t} + 0.0058 ROA_{i,t} + 0.0024 CR_{i,t} + 0.0036 Leverage_{i,t} + 0.0035 Firm\ Size_{i,t} - 0.0009 CFC_{i,t} + 0.0069 Growth_{i,t} - 0.0115 Firm\ Age_{i,t} + \varepsilon_{i,t}$*

# Conclusion

This study intends to provide an insight into the relationship between the degree of financial distress and earnings management in the Indian context by using a sample comprising 30 distressed textile firms covering a period of 10 years from 2010-2019. Modified Jones Model has been used to detect DAC, which is used as a proxy for earnings management. The degree of financial distress has been computed by using Altman's Z-Score. To establish the relationship between financial distress and earnings management, multiple regression analysis has been used after taking into consideration certain control variables, namely, profitability measured by ROA, liquidity measured by current ratio, leverage as a measure of capital structure, firm size, CFC, growth and firm age. The empirical analysis of the sample firms manifests a significant negative relationship between Altman's Z-Score and DAC which implies that the distressed firms manipulate the reported numbers downward to income-decreasing earnings management activities. Among the control variables, profitability, liquidity and growth opportunities of the firm are found to have a significant positive association with earnings management, while CFC and leverage are found to have a significant negative relationship with earnings management. This signifies that profitable firms, firms having high liquidity and firms with high growth opportunities are more inclined towards earnings management practices while highly leveraged firms and firms with higher CFC are less prone to manipulate their earnings. These findings confirm the findings of several prior research studies. It reveals that even firms suffering from financial distress can be involved in earnings management activities, which distorts the quality of reported information, thus making it difficult for lenders and investors to predict the true financial condition of the companies.

## Applicability and Generalizability

The findings of this study would be useful for lenders, investors as well as managers of firms. Based on the intensity of distress, the incentive for distorting the reported figures by managers of financially distressed companies may vary. The present as well as prospective investors can apply the Altman's Z-Score model to assess the financial position of companies and Modified Jones model to evaluate whether firms have been involved in earnings management practices to mask their actual financial position. The findings of the study will be useful for policymakers and regulators to frame proper policies to safeguard reporting quality, develop a robust corporate governance structure and ensure proper auditing of the financial statements to avert opportunistic earnings management practices by managers. Investors and lenders should be aware of the fact that even low distressed companies can indulge in earnings management activities to screen their true financial position. The results will assist the management of distressed companies to enhance their comprehension regarding the plausible repercussions of their decisions to manipulate reported earnings. The techniques applied in this research paper to detect the level of financial distress and earnings management are also pertinent to other enterprises in different sectors of the Indian economy and other emerging economies of the world.

# References

- Agrawal, Khushbu, and Chanchal Chatterjee. (2015). "Earnings Management and Financial Distress: Evidence from India." *Global Business Review* 16(5S): 140-154.

- Ali, Usman, Muhammad Afzal Noor, Muhammad Kashif Khurshid, and Akhtar Mahmood. (2015). "Impact of Firm Size on Earnings Management: A Study of Textile Sector of Pakistan." *European Journal of Business and Management* 7(28): 47-56.

- Bassiouny, Sara W., Mohamed Moustafa Soliman, and Aiman Ragab. (2016). "The Impact of Firm Characteristics on Earnings Management: An Empirical Study on the Listed Firms in Egypt." *The Business and Management Review* 7(2): 91-101.

- Becker, Connie L., Mark L. Defond, James Jiambalvo, and K. R. Subramanyam. (1998). "The Effect of Audit Quality on Earnings Management." *Contemporary Accounting Research 15*(1): 1-24.

- Bekiris, Fivos V., and Leonidas C. Doukakis. (2011). "Corporate Governance and Accruals Earnings Management." *Managerial and Decision Economics* 32: 439-456.

- Beneish, Messod D., Eric Press, and Mark E. Vargus. (2001). "The Relation between Incentives to Avoid Debt-Covenant Default and Insider Trading." Working Paper, Indiana University.

- Bisogno M., and De Luca R. (2015). "Financial Distress and Earnings Manipulation: Evidence from Italian SMEs." *Journal of Accounting and Finance* 4(1): 42-05.

- Burgstahler, David, and Ilia Dichev. (1997). "Earnings Management to Avoid Earnings Decreases and Losses." *Journal of Accounting and Economics* 24(1): 99-126.

- Campa, Domenico, and Ray Donnelly. (2014). "An Assessment of Corporate Governance Reforms in Italy Based on a Comparative Analysis of Earnings Management." *Corporate Governance* 14(3): 407-423.

- Charitou, Andreas, Neophytos Lambertides, and Lenos Trigeorgis. (2007). "Earnings Behaviour of Financially Distressed Firms: The Role of Institutional Ownership." *Abacus* 43(3): 271-296.

- Chen, Yenpao, Chien-Hsun Chen, and Shiau-Lan Huang. (2010). "An Appraisal of Financially Distressed Companies' Earnings Management." *Pacific Accounting Review* 22(1): 22-41.

- DeAngelo, Harry, Linda DeAngelo, and Douglas J. Skinner. (1994). "Accounting Choice in Troubled Companies." *Journal of Accounting and Economics* 17(1/2): 113-143.

- Debnath, Pranesh. (2017). "Assaying the Impact of Firm's Growth and Performance on Earnings Management: An Empirical Observation of Indian Economy." *International Journal of Research in Business Studies and Management* 4(2): 30-40.

- Dechow, Patricia M., Richard G. Sloan, and Amy P Sweeney. (1995). "Detecting Earnings Management." *The Accounting Review* 70(2): 193-225.

- DeFond, Mark L., and James Jiambalvo. (1994). "Debt Covenant Violation and Manipulation of Accruals." *Journal of Accounting and Economics* 17(1): 145-176.

- Etemadi, Hossein, Hassan Farajzadeh Dehkordi, and Kourosh Amirkhani. (2013). "Effect of Auditor Opinion on Discretionary Accruals Behavior of Distressed Firms: Empirical Evidences from Iran." *African Journal of Business Management* 7(20): 1956–1965.

- Ghosh, Debasish. (2017). "Empirical Study of Credit Rating Migration in India." *NMIMS Management Review* 34(1): 12-30.

- Habib, Ahsan, Md. Borhan Uddin Bhuiyan, and Ainul Islam. (2013). "Financial Distress, Earnings Management and Market Pricing of Accruals during the Global Financial Crisis." *Managerial Finance* 39(2): 155-180.

- Hassanpour, Sara, and Mehdi Nazemi Ardakani. (2017). "The Effect of Pre-Bankruptcy Financial Distress on Earnings Management Tools." *International Review of Management and Marketing* 7(3): 213-219.

- Healy, Paul M., and James M. Wahlen. (1999). "A Review of the Earnings Management Literature and Its Implications for Standard Setting." *Accounting Horizons* 13: 365-383.

- Hrp, Anugerah Iman, Isfenti Sadalia, and Khaira Amalia Fachrudin. (2017). "The Effect of Leverage and Financial Distress on Earnings Management with Good Corporate Governance as the Moderating Variable." *Academic Journal of Economic Studies* 3(4): 86-95.

- Hsiao, Hsiao-Fen, Szu-Hsien Lin, and Ai-Chi Hsu. (2010). "Earnings Management, Corporate Governance, and Auditor's Opinions: A Financial Distress Prediction Model." *Investment Management and Financial Innovations* 7(3): 29-40.

- Humeedat, Mohammad M. (2018). "Earnings Management to Avoid Financial Distress and Improve Profitability: Evidence from Jordan." *International Business Research* 11(2): 222-230.

- Hutchinson, Marion R., Majella Percy, and Leyal Erkurtoglu. (2008). "An Investigation of the Association between Corporate Governance, Earnings Management and the Effect of Governance Reforms." *Accounting Research Journal* 21(3): 239-262.

- Jaggi, Bikki, and Picheng Lee. (2002). "Earnings Management Response to Debt Covenant Violations and Debt Restructuring." *Journal of Accounting, Auditing & Finance* 17(4): 295-324.

- Jiang, Wei, and Asokan Anandarajan. (2009). "Shareholder Rights, Corporate Governance and Earnings Quality." *Managerial Auditing Journal* 24(8): 767-791.

- Kaur, Raghuveer, Kartikay Sharma, and Ashu Khanna. (2014). "Detecting Earnings Management in India: A Sector-Wise Study." *European Journal of Business and Management* 6(11): 11-18.

- Kothari, S. P., Andrew J. Leone, and Charles E. Wasley. (2005). "Performance Matched Discretionary Accrual Measures." *Journal of Accounting and Economics* 39(1): 163-197.

- Lara, Juan Manuel Garcia, Beatriz Garcia Osma, and Evi Neophytou. (2009). "Earnings Quality in Ex-Post Failed Firms." *Accounting and Business Research* 39(2): 119-138.

- Mohammadi, Farhad, and Peyman Amini. (2016). "Investigating the Relationship between Financial Distress and Earnings Management in Corporations of Accepted in Tehran Stock Exchange." *International Academic Journal of Accounting and Financial Management* 3(6): 41-50.

- Moradi, Mahdi, Mahdi Salehi, and Masomeh Najari. (2012). "A Study of the Effective Variables on Earning Management: Iranian Evidence." *Research Journal of Applied Sciences, Engineering and Technology* 4(17): 3088-3094.

- Muljono, Danella Rachel, and Kim Sung. (2018). "Impacts of Financial Distress on Real and Accrual Earnings Management." *Journal Akuntansi* 22(2): 222-238.

- Nagar, Neerav and Kaustav Sen. (2016). "Earnings Management Strategies during Financial Distress." IIMA Working Paper No. 2016-02-03, Indian Institute of Management Ahmedabad, Research and Publication Department.

- Panigrahi, Ashok. (2019). "Validity of Altman's 'Z' Score Model in Predicting Financial Distress of Pharmaceutical Companies." *NMIMS Journal of Economics and Public Policy* 4(1): 65-73.

- Qin, Zhongling, and Xiao Ren. (2017). "Distress Risk and Earning Management." Working paper, University of Georgia.

- Rakshit, Debdas, and Rajarshri Chatterjee. (2018). "Relationship between Corporate Governance and Earnings Management: A Comparative Study Based on Two Discretionary Accruals Measures." *International Research Journal of Business and Management* 11(4): 106-114.

- Rosner, Rebecca L. (2003). "Earnings Manipulation in Failing Firms." *Contemporary Accounting Research 20*(2): 361-408.

- Ting, Wei Chung Yuan, Sin-Hui Yen, and Sheng-Shih Huang. (2009). "Top Management Compensation, Earnings Management and Default Risk: Insights from the Chinese Stock Market." *International Journal of Business and Finance Research* 3(1): 31-46.

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