



The Effect of Financial Distress on Earnings Management: Evidence from Egypt

Research extracted from a Master thesis of accounting

By

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The Effect of Financial Distress on Earnings Management: Evidence from Egypt

Mayar Mamdouh Khalil and Dr. Eman Mohamed Saad Eldeen

Abstract:

Purpose: The main research objective is to investigate the impact of financial distress on earnings management for a sample of Egyptian non-financial companies.

Design and methodology: This research used secondary data available in the financial statements from a sample of 106 companies listed on the Egyptian Stock Exchange for ten-year period from 2013 to 2022. The study sample was extracted from (6) main sectors and excluded banks, insurance companies, and companies in the financial service sector; as they have a special nature that governs their institutions. The study used a Generalized method of moments (GMM) to test the research hypothesis.

Findings and Recommendations: The findings showed a curvilinear relationship (U-shape) between financial distress and earnings management. In other words, the greater the financial distress is, the lower the earnings management is until the distress reaches a certain point, after which the relationship becomes positive. Namely, the greater the financial distress is, the greater the earnings management is. Based on this, the study recommends the following: the necessity of activating an effective audit committee to monitor the level of financial distress to limit earnings management; because when financial distress increases beyond a specific level, earnings management increases accordingly.

Originality and Value: This study contributes to the accounting literature through its contributions to explaining the relationship between the financial distress and earnings management by providing practical evidence from the Egyptian business environment, which in turn may contribute to reducing the research gap and controversy.

Key words: Financial distress, Earnings management, Egyptian listed companies

1- Introduction

In public firms, the separation of ownership and control gives rise to an agency problem between the principals (shareholders) and the agents (managers). Due to the high contracting costs between managers and firms and shareholders' limited rationalities that prevent them from understanding management actions, managers may be unwilling to disclose the truth under this conflict of interest. Consequently, managers have control over financial reporting, which if done in accordance with generally accepted accounting principles (GAAP), may manifest as earnings management (El Diri, 2017).

Therefore, earnings management is one of the most important topics that has received significant attention from researchers in recent years. It has also received attention from investors in achieving the profit goal: as it is one of the most important indicators of a company's performance. Accordingly, earnings management can be defined as the manipulation of financial statements. Therefore, the reported profit is not the actual profit for the year. The purpose of this practice is to deceive stakeholders while presenting earnings in a way that differs (up or down) from what they know and to gain private benefits (Lee & Lu, 2015).

Furthermore, there are two types of earnings management as follows: real earnings management (REM) and accrual earnings management (AEM). When companies have many financial problems and do not have enough financial resources, they tend to manipulate earnings by using accrual earnings management; because it does not change the cash flows of businesses and economic activity but just manipulate the accounting procedures and estimates and asset impairment techniques. However, the reason for not using real earnings management (REM) is that it requires a change of business strategies, for example a modification of profits through changing the company's economic procedures such as an irregular promotion at the end of the accounting period or reduce R&D expenditure (Li et al. 2020).

With the expansion of economic activity, inflation rates, competition and unexpected recession around the world, the phenomenon of company's financial distress has increased and consequently the importance of research increased in order to know more about financial distress (Ranjbar and Amanollahi 2018). When the cash flow of the company is insufficient to repay its debts or when the total liabilities of the company exceed its total assets, the company will face the danger of financial distress (Li et al. 2020).

Additionally, many models indicated that the reason of distress is a poor management performance, one of these models is Altman z score that can be used in predicting the firm's volatility and assessment of its financial robustness. Because of investors and creditors cannot trust distressed companies, it is possible that companies manipulate in financial information to show a good and prosperous financial situation in order to obtain better financial resources (Moradi et al. 2012). According to (Li et al., 2020; Rakshit and Paul, 2020) studies, it became clear that companies with financial problems and at a risk of bankruptcy have strong desire to manage earnings to hide the fact that they are financially distressed.

Therefore, this research aims to investigate and analyze the impact of financial distress on earnings management among companies listed on the Egyptian stock exchange. In other words, the researchers examine how financial distress can influence the level of earnings management practices among non-financial Egyptian listed companies from 2013 to 2022.

The rest of this research is organized as follows: section 2 presents the literature review which demonstrates previous studies assessing the relationship between financial distress and earnings management and developing the study hypothesis, section 3 includes the research design and methodology, the study sample and data collection, section 4 presents the hypothesis testing and empirical results and finally section 5 provides the study conclusions.

2- Literature Review and Hypothesis Development

previous studies were divided into 3 groups to extract the research hypothesis as follows:

- 2.1** The relationship between financial distress and earnings management.
- 2.2** The relationship between corporate social responsibility (CSR) and earnings management.
- 2.3** The relationship between audit quality and earnings management.

2.1 The Relationship between Financial distress and Earnings management

The study of (Viana et al., 2022) analyzed a sample of 33,455 firm-year data from 20 emerging markets, covering a substantial 20-year period (1999–2018). Overall, the results show that companies facing greater financial distress manage earnings upward through accruals. Additionally, empirical evidence shows that the relationship between the level of financial distress and accruals-based earnings management is weaker for companies audited by a Big 4 audit firm than for those audited by a non-Big 4 audit firm.

Besides, (Zamri et al., 2022) examined how financial distress affects decision-making regarding earnings management strategies before and during the COVID-19 epidemic. It employs a sample of 672 company-year data from publicly traded Malaysian companies between 2018 and 2021. found a significant negative relationship between AEM and financial distress (COVID-19). This finding suggests that the likelihood of using the accrual earnings management technique to achieve financial goals increases with a firm's health.

According to (Pratiwi et al., 2022) showed that companies in the property, real estate, and building construction sectors that were listed on the Indonesia Stock Exchange between 2015 and 2019 constituted the study's population (185 samples were collected). The findings of the analysis indicate that financial distress has an impact on earnings management practices and that this behavior increases as the company's level of financial distress increases. Consequently, this earnings management practice is expected to save the company so the managers manipulate earnings for the following reasons: first, managers frequently manipulate earnings to conceal their poor performance. Second, by practicing earnings management, managers have the chance to receive incentives or maintain their positions because investors believe they are capable of maintaining or even enhancing the company's financial performance.

In contrast, (Kamal & Khazalle, 2021) sought to determine whether companies suffering from financial distress engage in earnings management by analyzing a sample of (454) industrial companies listed on the Malaysian Stock Exchange from 2016 to 2017. This study chose the industrial sector; because it is the basis for the country's progress and used the Altman measure; to measure

financial distress. The results revealed a significant negative relationship between financial distress and earnings management, which means that industrial companies engage in earnings management when the company is in good health and not in distress.

Additionally, **(Campa,2019)** examined the strategies of earnings management by companies listed and delisted on the stock exchange during the periods of financial distress. Accordingly, a sample of 6,407 French non-financial companies from 2009 to 2016 was used. The findings show that non-financial companies operating in France exhibit income-increasing earnings manipulation through real activities rather than discretionary accruals when there are significant financial issues.

Jacoby et al. (2019) analyzed the impact of financial distress on earnings management for a sample of private companies in China from 1998 to 2009 because most studies aim to analyze the impact of financial distress on companies listed on the stock exchange and because of the scarcity of analyzing private companies. They found that companies experiencing financial distress are more involved in earnings management than companies that enjoy good financial health to mitigate the effects of financial distress.

Furthermore, **(Agrawal and Chatterjee, 2015)** used (150) financially distressed Indian companies from 2009 to 2014 as a sample to investigate the relationship between financial distress and earnings management. This study used the cross-sectional modified Jones model to estimate discretionary accruals, which is a proxy for earnings management. Altman's (Z-score) was used to measure financial distress. The findings asserted the fact that that companies suffering from financial distress has a significantly negative impact on earnings management. This, in turn, means that whenever the financial distress of the company increases, they are less likely to engage in earnings management. In other words, the greater the financial health of a company or its profits are, the more it will engage in high levels of earnings management.

Moreover, **(Hsiao et al., 2010)** used a sample of 183 companies in good financial condition and studied 93 companies in financial distress from 1997 to 2007 to examine if financially distressed companies are more likely to engage in earnings management, and found that companies in periods of financial distress engage in earnings management more than financially healthy companies.

The study of (Chen et al., 2010) mentioned that distressed firms engage in managing earnings more than non-distressed companies. This study examined the earnings management behavior of financially distressed companies listed on the Chinese Stock Exchange from 2002 to 2006. The study also used discretionary accruals as a proxy for earnings management, and the results demonstrated that companies practice earnings management to avoid the risks that could befall a distressed company.

2.2 The Relationship between Corporate Social Responsibility (CSR) and Financial Distress

(Rahman et al., 2023) examined the relationship between financial distress and corporate social responsibility (CSR), as well as the moderating effect of firm and auditor characteristics and the coronavirus disease (COVID-19) in China. 1,257 Chinese-listed companies' data set from 2011 to 2021. The main measure used to measure financial distress risk is the Z-score. CSR score is used as a proxy for CSR. Findings indicated that financial distress and corporate social responsibility are inversely related.

Besides (Farooq & Noor, 2021) study aimed to explore the impact of corporate social responsibility (CSR) on financial distress for a sample of (139) companies listed on the Pakistan Stock Exchange for the period from 2008 to 2019. The dynamic generalized method of moments (GMM) estimators was used to examine the impact of CSR on financial distress. The results showed a positive relationship between the role of corporate social responsibility and financial distress.

(Khan et al., 2021) investigated the relational behavior of corporate social responsibility (CSR) and its effect on firms' financial distress (FD). The population of the study consisted of all the non-financial firms presently listed in the equity market of Pakistan. The yearly data set of 213 non-financial companies was selected from 2005 to 2017 with total observations of 2769. The analysis of the study was based on OLS regression, fixed effect, and random effect models. The study also used the GMM technique. Results indicated that higher investment in CSR leads to reduced/lower financial distress. It suggested that investment in CSR raises the reputation and creditworthiness of firms.

Additionally, **(Boubaker et al., 2020)** examined how corporate social responsibility (CSR) affects the level of financial distress risk (FDR). Using a sample of 1,201 US-listed firms during 1991–2012, the results indicated that firms with higher CSR levels have lower FDR. Overall, the findings suggested that the adoption of CSR practices comes with less distress and default risks, likely leading to a more attractive corporate environment, better financial stability and more crisis-resilient economies.

Also, **(Zheng et al., 2019)** analyzed the effect of corporate social responsibility on financial distress for a sample of 11,840 observations from 1991 to 2015. The results demonstrated a negative relationship between corporate social responsibility and financial distress. It showed that corporate social responsibility works to improve relationships with stakeholders, which reduced the risk of financial distress and also works to reduce the risk of default.

2.3 The relationship between Audit Quality and earnings management

Markets have recently witnessed many accounting scandals due to the manipulation of financial statements. This has led to questioning auditors' abilities because of these practices, especially in developing countries. Therefore, **(Awuye, 2022)** examined the relationship between audit quality and financial reporting quality in French-listed firms. Real and accruals earnings management estimation was utilized to determine earnings management, and the auditor brand name (Big4) is employed as a stand-in for audit quality. Real earnings management is estimated using models provided by Roychowdhury (2006), whereas discretionary accruals are estimated using the Jones and modified Jones models. The sample was comprised from 1532 firm-year observations of French listed firms and data collected from the FactSet Database covering the period from 2009 to 2016. The results indicated that clients of Big 4 audit firms record higher levels of accruals and real earnings management.

The study of **(Ismael & Kamel, 2021)** investigated the relationship between UK companies' participation in earnings management practices and internal audit quality. This study analyzed 115 responses to a postal questionnaire that was sent to the heads of internal audit departments in a sample of nonfinancial listed businesses in the UK in order to assess the quality of internal audits. In order to

test the research hypothesis, the current study used both logistic and ordinary least squares regression models using abnormal accruals as a proxy for earnings management. The results of this study indicated that there is a negative relationship between abnormal accruals and internal audit quality. This result suggested the companies need to focus more on enhancing the internal audit competence to reduce the opportunistic management's behavior.

In contrast (**Shahwan, 2021**) empirically examined how corporate governance, audit quality, and firm characteristics affect earnings management. 39 manufacturing companies listed between 2017 and 2019 on the Amman Stock Exchange comprised the sample used in this study. Additionally, multiple regression statistical testing was used in this study. The results indicated that audit quality has no effect on earnings management.

The study of (**EL Deeb & Ramadan, 2020**) investigated the influence of audit quality, firm size, and financial distress on earnings management practices. This study used a sample of 42 Egyptian-listed companies using data obtained from 2015 to 2017. Also, Regression analysis was used to determine the specific causal relationships among the study variables. This study's findings demonstrated that audit quality has a significant effect on earnings management practices. Additionally, (**Agyei & Yeboah, 2019**) aims to investigate the effects of audit committee effectiveness and audit quality (auditor size) on earnings management. A descriptive analysis was performed to provide background statistics for the variables examined. This was followed by regression analysis, which formed the main data analysis. The results indicate that audit quality has a significantly negative relationship with discretionary accruals (DACC) as a proxy for earnings management.

Moreover, (**Yasser & Soliman, 2018**) investigated the effect of audit quality on earnings management in companies listed on the Egyptian Stock Exchange from 2012 to 2016. OLS regression analysis is used to explore the relationship between audit quality proxies such as audit firm size, auditor industry specialization, auditor tenure, and earnings management. The results prove a positive relationship between audit tenure and earnings management. They also prove that there is no relationship between the rest of the variables and earnings management.

Based on the above discussion that analyzed the association between financial distress and earnings management, analyzed the association between CSR and financial distress and analyzed the association between audit quality and earnings management, the first hypothesis will be:

H1: There is a significant relationship between financial distress and earnings management.

3- Research Design and Methodology

3.1 Research Conceptual Framework

The following figure (1) presented the research conceptual framework that shows the relation between independent and dependent variables:

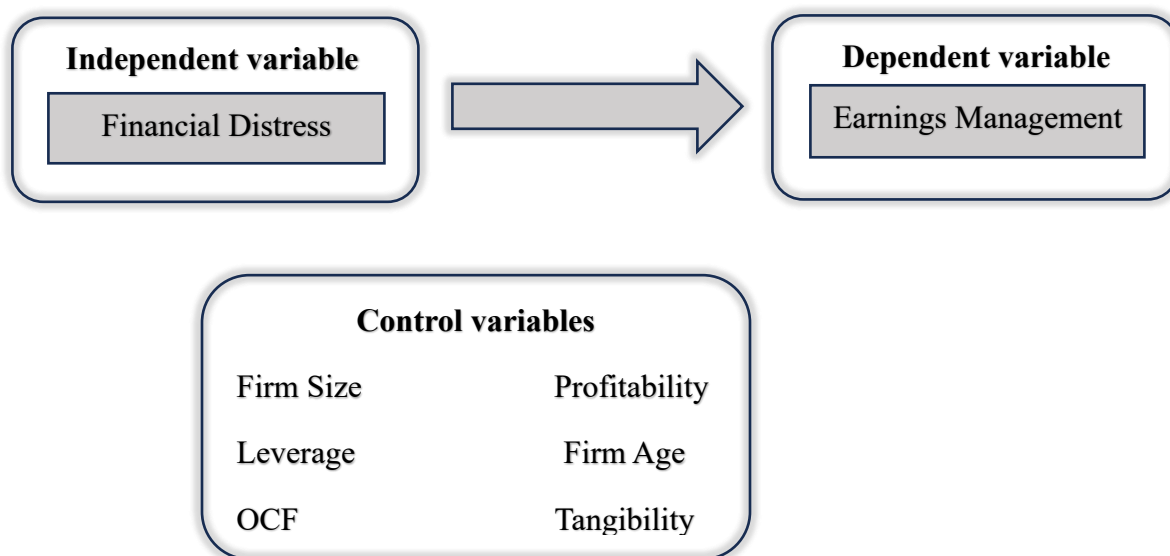


Figure (1): The relationship between independent and dependent Variables

Source: Prepared by the researcher

3.2 Data Collection and Study Sample

The population consist of (106) listed companies on the Egyptian Stock Exchange (EGX), during the study period from 2013 to 2022 with a total of 1,060 observations. The sample involved (6) main sectors (materials, real estate, consumer discretionary, industrials, health care, consumer staples). The research excluded banks, insurance companies and companies in the financial service sector as they have special nature that governs their institutions.

The data were obtained using secondary data available in the financial statements for a sample of 106 non-financial firms listed in the Egyptian Stock Exchange from 2013 to 2022, which is published on (www.egx.eg.com), (www.mubasher.info) and (THOMSON REUTERS).

3.3 Research Model

$$EM_{i,t} = \beta_0 + \beta_1 ZScore_{i,t} + \beta_2 Size_{i,t} + \beta_3 ROE_{i,t} + \beta_4 Lev_{i,t} + \beta_5 OCF_{i,t} + \beta_6 Age_{i,t} + \beta_7 Tang_{i,t} + \epsilon_{i,t}$$

Where,

EM → Earning management for firm (i) at time (t)

β_0 → refers to the estimated constant term.

Z-score → Z-score for firm (i) at time (t)

Size → Size for firm (i) at time (t)

ROE → Return on Equity for firm (i) at time (t)

Lev → Leverage for firm (i) at time (t)

OCF → Operating cash flow for firm (i) at time (t)

Age → Firm Age for firm (i) at time (t)

Tang → Assets tangibility for firm (i) at time (t)

ϵ_{it} → refers to the estimated random error of company i in year t.

i → refers to the company.

t → refers to the year.

3.4 Variables Measurements

Table (1): Variables Measurement

Variables	Measurement	Reference
<u>Independent Variables</u> Financial distress	Altman Z-score is created by Edward I. Altman in 1968	-(Li, et al 2020) -(Range et al, 2018)
<u>Dependent Variable</u> Earnings Management	Modified Jones Model (1995)	-(Alzoubi, 2017); -(Baig& Khan,2016)
<u>Control Variables</u> OCF	Operating cash flow/ Total assets	(Nugroho & Pertiwi, 2021) (Millianto & Bangun, 2021)
Firm size	Ln (Total assets)	(Padli et al. 2019)
Leverage	Total Liabilities/ Total Assets (Capital Structure)	(Moghaddam & Abbaspour ,2017).
Firm Age	The number of years since the firm got listed on stock exchange.	(Memon & Samo, 2019)
Profitability	ROE (Return on Equity)	(Humeedat, 2018)
Tangibility	Property, plant and equipment / Total assets Tangible fixed assets/ Total assets	(Gregova et al., 2021)

Source: prepared by the researcher

3.5 Method of Data Analysis

The data obtained from the financial statements will be analyzed using a mathematical formula to measure financial distress and earnings management, and then a panel regression model is used to test the study hypothesis using Stata 17 software to analyze the impact of financial distress and earnings management based on the data in financial statements.

4- Empirical analysis and results discussion

4.1 Descriptive Analysis

The importance of descriptive statistics stems from the simplicity of presenting the basic properties of a large set of observations. Also, the appropriate statistical techniques were used to analyze the data are chosen based on the underlying characteristics of the data included in the study sample.

The main statistical features of all continuous variables were used to the impact of financial distress on earnings management are shown in Table (2).

Table (2) Main Variables Descriptive Analysis

Table (2) Descriptive Statistics					
Variable	Obs	Mean	Std. Dev.	Min	Max
EM	1060	.054	.05	0	.242
Z-Score	1060	3.017	2.201	-1.781	7.361
Size	1060	20.715	1.709	17.319	24.891
ROE	1060	.105	.185	-1.048	1.083
Lev	1060	.429	.213	.028	.953
OCF	1060	.055	.113	-.449	.406
Age	1060	17.871	6.551	1	29
Tang	1060	.315	.239	0	.941

Source: prepared by the researcher from Stata 17 software output

Table (2) presents that:

- Earnings management (EM) exhibits large changes through time and across firms as shown in the overall standard deviation (0.0495) which represents around (90%) of the overall mean (0.0543).
- Z-score as a measure of financial stability and an indirect measure of financial distress displays an overall mean of (3.0168), indicating that the Egyptian listed firms have high financial stability and low degree of financial distress. With a high dispersion around the mean, reflecting high heterogeneity in the financial distress of Egyptian listed firms.

- Applying the logarithm on total assets caused smoothing in total assets among firms that result in small variances in firm size among the sample firms. Thus, the size shows an overall deviation of (1.71) which is very small relative to the overall mean (20.8).
- The profitability as measured by return on equity (ROE) shows an overall mean of (0.105), which indicates low profitability for equity holders. With a high dispersion around the mean, reflecting high heterogeneity in the profitability of Egyptian listed firms.
- Capital structure as measured by total liabilities (Lev) shows an overall mean of (0.4288), which means firms have a balanced capital structure, with a high dispersion around the mean, reflecting high heterogeneity in the capital structure of Egyptian listed firms.
- The operating cash flow (OCF) shows an overall mean of (0.0553), with a high dispersion around the mean, reflecting high heterogeneity in the cash flow from operation of Egyptian listed firms.
- The firm Age (Age) score shows an overall mean of (17.87), with a low dispersion around the mean, reflecting high homogeneity in the firm Age of Egyptian listed firms.
- Assets structure as measured by plant, property and equipment to total assets (Tang) shows an overall mean of (0.3154), with a high dispersion around the mean, reflecting high heterogeneity in the assets structure of Egyptian listed firms.

4.2 optimal lag selection

The optimal lag selection test aims to determine whether measure of earnings management is static or dynamic by testing whether the previous events influenced variables at time zero occurred to them. Three criteria are used to determine whether the variable under investigation is dynamic or static. These are Akaike Information Criterion (AIC), Hannan-Quinn Information Criterion (HQIC), and Schwarz Information Criterion (SBIC).

Table (3) Optimal Lag Selection for EM								
Lag	LL	LR	Df	P	FPE	AIC	HQIC	SBIC
0	1455.44				0.002617	-3.10778	-3.10581	-3.10261
1	1472.98	35.082	1	0	0.002526	-3.14313	-3.13918	-3.13278
2	1481.62	17.269	1	0	0.002485	-3.15944	-3.15352	-3.14392
3	1486.32	9.3963*	1	0.002	.002466*	3.16734*	3.15945*	3.14665*
4	1486.33	0.03276	1	0.856	0.002471	-3.16524	-3.15538	-3.13938

Table (3) shows a decline in the values of Akaike information criterion (AIC) and Hannan-Quinn information criterion (SBIC), also known as Schwartz information criterion (SBIC) at the third level, indicating that earning management is a dynamic phenomenon, meaning that the current practices of the earning management is impacted by the previous practices of earning management.

4.3 Pearson's Correlation Test

Pearson's correlation coefficient shows the direction and the strength of the linear association between any two variables included in the current research. Moreover, Pearson's correlation coefficients are used to detect the possible multicollinearity between any two independent variables included in the same regression model. Table (4) shows Pearson's correlation coefficients for all the study variables to test the impact of financial distress on earnings management.

Table (4) Pearson's Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) EM	1.000							
(2) ZScore	-0.205*** (0.000)	1.000						
(3) Size	-0.074** (0.015)	0.077** (0.012)	1.000					
(4) ROE	0.122*** (0.000)	-0.299*** (0.000)	0.193*** (0.000)	1.000				
(5) Lev	0.020 (0.505)	-0.148*** (0.000)	0.396*** (0.000)	0.067** (0.030)	1.000			
(6) OCF	0.062** (0.043)	-0.198*** (0.000)	0.124*** (0.000)	0.437*** (0.000)	-0.146*** (0.000)	1.000		
(7) Age	0.145*** (0.000)	-0.156*** (0.000)	0.058* (0.058)	0.157*** (0.000)	0.042 (0.169)	0.124*** (0.000)	1.000	
(8) Tang	-0.035 (0.261)	0.069** (0.026)	-0.130*** (0.000)	-0.294*** (0.000)	-0.219*** (0.000)	0.020 (0.518)	-0.109*** (0.000)	1.000

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: prepared by the researchers from Stat 17 software output

From the previous Table (4), it can be concluded:

- There is a negative direct linear association between the financial stability as measured by Z-Score and earning management practices ($r = -0.205$, $p\text{-value} = 0.000$) for Egyptian listed firms. Implies that financial distress positively associated with earning management practices in Egyptian listed firms.

- There is a negative direct linear association between the firm size and earning management practices ($r=-0.074$, $p\text{-value}=0.015$) for Egyptian listed firms.
- There is a positive direct linear association between the firm profitability and earning management practices ($r=0.122$, $p\text{-value}=0.000$) for Egyptian listed firms.
- There is a positive direct linear association between the firm capital structure as measured by non-interest-bearing total liabilities and earning management practices ($r=0.020$, $p\text{-value}=0.505$) for Egyptian listed firms.
- There is a positive direct linear association between operating cash flow and earning management practices ($r=0.062$, $p\text{-value}=0.043$) for Egyptian listed firms.
- There is a positive direct linear association between firm age and earning management practices ($r=0.145$, $p\text{-value}=0.000$) for Egyptian listed firms.
- There is no direct linear association between asset structure as measured by assets tangibility and earning management practices ($r=-0.035$, $p\text{-value}=0.261$) for Egyptian listed firms.

4.4 Dynamic model of the impact of financial distress on earnings management using Generalized Methods of Moments GMM:

When endogeneity is present, the OLS estimates will be biased due to a correlation between the error terms and the predicted dependent variable that violates OLS principles. This leads to an important contrast in regression outcomes when comparing 2SLS and OLS approaches. Using the 2SLS technique with the instrumental data is the recommended approach in this situation. Without endogeneity, the findings obtained by ordinary least squares (OLS) and instrumental variable methods will not show significant differences. One of the underlying assumptions behind OLS regression is independence of the error terms (Hair et al., 2010, p. 185). Models with independent variables that are endogenous (ROE), are variables that are influenced by other variables in the model (lag of OCF, NDTS, and sales growth), can produce inconsistent and misleading results. Therefore, GMM is best fitted for research data.

Testing the validity of the developed research hypotheses starts by conducting some goodness of fit tests of GMM estimation to determine whether the model best fits the sample data. GMM panel estimates rely on two fundamental assumptions as follows: first, there is no link between the error term and lagged instruments; second the selected lagged instruments are sufficient to adequately explain the model. Therefore, AR (1) and AR (2) are tests for first order and second-order serial correlation. In GMM, the biggest concern is related to the inclusion of lags to control the dynamics of the empirical relationship. The residuals in the first differences (AR(1)) may be correlated but there should not be any serial correlation in second difference (AR(2)). Inconsistency will imply if second-order autocorrelation (AR(2)) is present. The next specification test is the Hansen test of over-identification. GMM uses multiple lags as instrument variables which make the system over-identified and provide an opportunity to carry out a test of over-identification under null that all instruments are valid. These assumptions are supported by the modelling of earning management as follow:

Table (5) GMM goodness of fit

Endogeneity test	
GMM C statistics Chi2(1)	1.29313 0.2555
Over identification restrictions test	
Hansen's J chi2(I7)	3.68092 0.1587
Test of Weak instrument	
First-Stage R-sq	0.553
First-Stage Adjusted R-sq	0.547
First-Stage Partial R-sq	0.136
First-Stage (F- Statistics)	39.220*** 0.0000
*** p<0.01, ** p<0.05, * p<0.1	

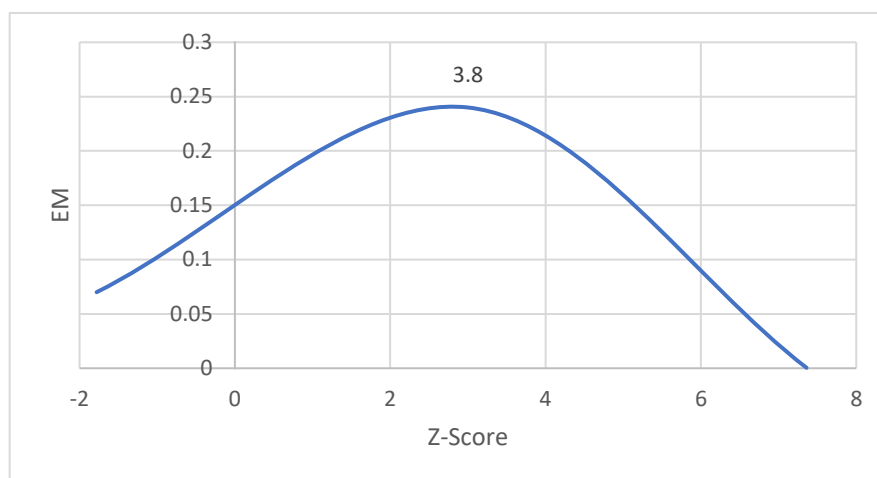
The final fitted model of dynamic EM as follows:

EM	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
ZS	.01	.004	2.25	.024	.001	.019	**
ZS_SQ	-.001	0	-2.58	.01	-.002	0	***
Size	-.002	.001	-1.79	.073	-.005	0	*
ROE	-.029	.031	-0.93	.351	-.088	.031	
Lev	.032	.012	2.77	.006	.009	.055	***
OCF	-.101	.038	-2.64	.008	-.176	-.026	***
OCF_SQ	.906	.135	6.73	0	.642	1.17	***
Ln_Age	.006	.003	2.21	.027	.001	.012	**
Tang	.063	.021	3.04	.002	.022	.103	***
Tang_SQ	-.076	.022	-3.39	.001	-.12	-.032	***
L.EM	.126	.036	3.45	.001	.054	.197	***
Constant	.034	.031	1.11	.266	-.026	.094	
Mean dependent var	0.055		SD dependent var			0.050	
R-squared	0.236		Number of obs			941	
Chi-square	144.308		Prob > chi2			0.000	
*** p<.01, ** p<.05, * p<.1							

- the financial distress can explain 23.6% of the variation in earnings management for Egyptian listed firms by using GMM. Implying that earning management practices are driven by financial distress.
- This research reveals that a curvilinear relationship exists between financial stability and earning management practices, which means the existence of a minimum level of financial stability to minimize earning management practices for Egyptian listed firms. Any deviation will lead to a negative impact on earning management practices; there is an inverted U shape

between them. Where the ZS parameter is positive (>0) and significant, and the ZS2 squared is negative and significant,

Turning point in association between ZS and EM: Z-score = 3.8



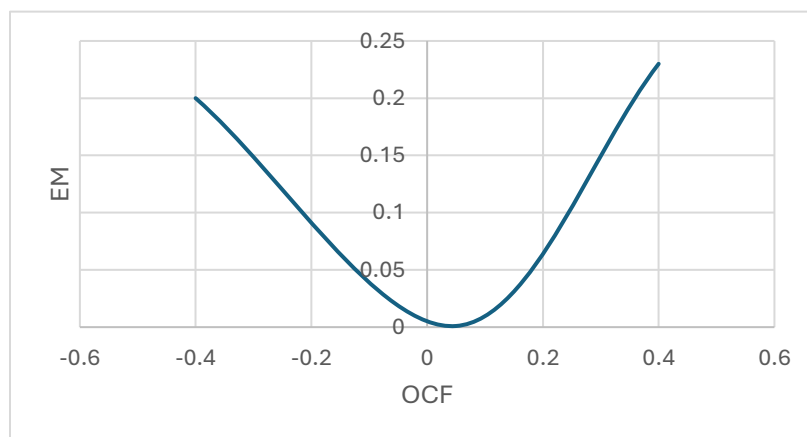
This means an z-score from 0 to 3.8 shows a positive association between z-score and EM. In addition, an z-score exceeding 3.8 will negatively impact EM practices. Which implies Egyptian listed firms must have a certain level of financial stability to decrease earning management practices, (i.e. if the financial distress exceeds a certain level, Egyptian listed firm will aggressively practice accrual earning management).

- When the turning point of the z-score is greater than 3.8, this means that to reduce earnings management practices, I must achieve a minimum level of financial stability. Therefore, if a minimum level is achieved, earnings management begins to decline. Accordingly, financial distress must be at a maximum acceptable level. If a company has an acceptable level of financial distress, it will not affect it in any way. Therefore, the company will not manage its earnings. However, if the distress exceeds an acceptable level, it forces companies and managers to manage earnings to improve the company's image in front of investors and shareholders.

Therefore, the researchers will accept the main study hypothesis as follows: financial distress has a significant effect on earnings management.

- There is a negative direct significant impact of firm size on accrual earning management for Egyptian listed firms.
- There is no direct significant impact of profitability on accrual earning management for Egyptian listed firms.
- There is a positive direct significant impact of leverage on accrual earning management for Egyptian listed firms.
- This research reveals that a curvilinear relationship exists between operating cash flow and earning management practices, which means the existence of an optimal level of operating cash flow to minimize earning management practices for Egyptian listed firms. Any deviation will lead to a negative impact on earning management practices. There is (U) shape between them. Where the OCF parameter is negative (<0) and significant, and the OCF2 squared is positive (>0) and significant,

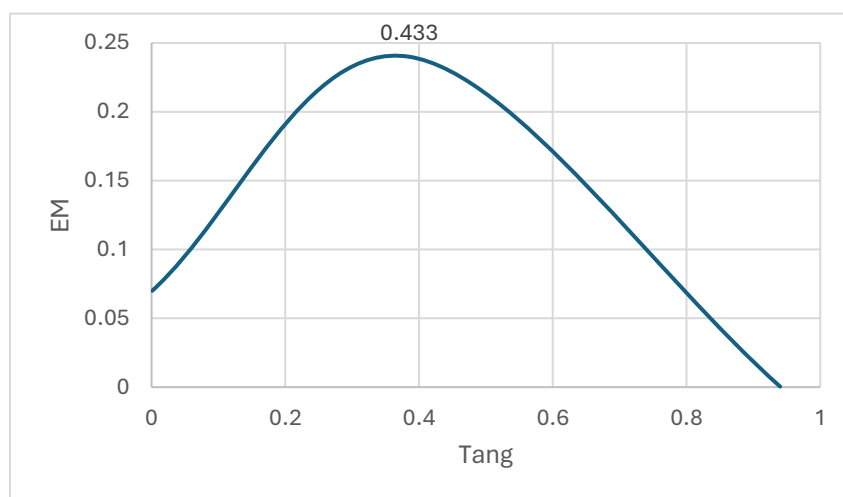
Turning point in association between OCF and EM: OCF = 0.058 of total assets



This means an OCF from negative operating cash flow to 0.058 shows a negative association between OCF and EM. In addition, an 0.058 exceeding 0.058 will positively impact EM practices. Which implies Egyptian listed firms have an optimal level of operating cash flow to decrease earning management practices.

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- There is no direct significant impact of firm age on accrual earning management for Egyptian listed firms.
 - This research reveals that a curvilinear relationship exists between tangibility and earning management practices, which means the existence of a minimum level of assets tangibility to minimize earning management practices for Egyptian listed firms. Any deviation will lead to a negative impact on earning management practices; there is an inverted U shape between them. Where the Tang parameter is positive (>0) and significant, and the Tang2 squared is negative and significant,

Turning point in association between Tang and EM: Tang = 0.433



This means tangibility from 0 to 0.433 shows a positive association between tangibility and EM. In addition, tangibility exceeding 0.433 will negatively impact EM practices, which implies that Egyptian listed firms must have a certain level of assets tangibility to decrease earning management practices.

- there is a positive direct significant impact of previous levels of accrual earning management and current accrual earning management for Egyptian listed firms.

5- conclusion

This research examined the effect of financial distress on earnings management for a sample of (106)Egyptian listed companies during the period from 2013 to 2022. The study sample was extracted from 6 main sectors (materials, real estate, consumer discretionary, industrials, health care, consumer staples). The research excluded banks, insurance companies and companies in the financial service sector; as they have special nature that governs their institutions.

The empirical findings showed that there was a curvilinear relationship (U-shape) between financial distress and earnings management. In other words, the greater the financial distress is, the lower the earnings management is until the distress reaches a certain point, after which the relationship becomes positive. This means that the greater the financial distress is, the greater the earnings management is. The results are consistent with the results of (Kamal & Khazalle, 2021; Agrawal and Chatterjee 2015; Azizah 2021; Zamri et al., 2022) studies as they agreed that financial distress has a significant negative effect on earnings management. Furthermore, the results are also consistent with the results of (Paramita et al., 2017; Karina and Soenarno 2022; Ljubisavljevic and Jakobsson, 2022) studies as they agreed that financial distress has a significant positive effect on earnings management.

6- Study Limitations and Future Researches

6.1 The research limitations could be presented as follows:

- The research is limited to a sample of companies listed on the Egyptian Stock Exchange during the period from 2013 to 2022.
- The study sample comprises of companies listed on the Egyptian Stock Exchange, except banks, financial institutions, and insurance companies, as they have a special nature.
- The study includes the use of/ measuring one type of earnings management (the accrual earnings management) which is measured using the modified Jones model.

6.2 Future Research

Considering the limitations and results of the current study, the researcher recommends a group of future studies that can be conducted as an extension of the current study:

- A comparative study between companies that suffer from financial distress and companies that enjoy financial health and stability, and testing their impact on earnings management.
- Studying the impact of financial distress on real earnings management.
- Studying the determinants of financial distress and its impact on real and accrual earnings management.

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تأثير الضائقة المالية على إدارة الأرباح: دليل من مصر

مستخلص البحث:

الهدف: دراسة أثر الضائقة المالية على إدارة الأرباح في عينة من الشركات المصرية غير المالية.

التصميم والمنهجية: استخدم الباحث البيانات الثانوية المتوفرة بالقوائم المالية بخصوص عينة مكونة من ١٠٦ شركة مقيدة بالبورصة المصرية لمدة عشر سنوات ممتدة من ٢٠١٣ إلى ٢٠٢٢، وأختيرت عينة الدراسة من (٦) قطاعات وأستبعدت البنوك و شركات التأمين والشركات العاملة في قطاع الخدمات المالية؛ لما لها من طبيعة خاصة تحكم مؤسساتها. واستخدمت الدراسة طريقة الفروق العامة للعزوم (GMM) في اختبار فرضية البحث.

النتائج والتوصيات: أظهرت النتائج وجود علاقة منحنية غير خطية بين الضائقة المالية وإدارة الأرباح (U-shape). بعبارة اخرى كلما زادت الضائقة المالية انخفضت ادارة الارباح حتى تصل الضائقة الى نقطة معينة، وبعدها تصبح العلاقة ايجابية أي انه كلما زادت الضائقة المالية زادت إدارة الأرباح، واستناداً الى ذلك توصي الدراسة بضرورة تفعيل لجنة مراجعة فعالة لمراقبة مستوى الضائقة المالية للحد من ادارة الارباح، لأنه عندما تزيد الضائقة المالية عن مستوى معين تزداد إدارة الأرباح.

الأصالة والإضافة: تسهم هذه الدراسة في الأدب المحاسبي من خلال مساهمتها في تحليل العلاقة بين الضائقة المالية وإدارة الارباح، من خلال تقديمها لأدلة عملية من بيئة الأعمال المصرية، مما قد يساهم في تقليص الفجوة البحثية والجدل حولها.

الكلمات المفتاحية: الضائقة المالية، إدارة الارباح، الشركات المصرية المقيدة