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The Moderating Role of Corporate Social Responsibility (CSR) on the Relationship Between Corporate Credit Risk and Earnings Management

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Abstract- *This study aims to empirically investigate the moderating impact of Corporate Social Responsibility on the link between credit risk and earnings management in manufacturing companies listed on the Egyptian Stock Exchange. A sample of 40 Egyptian manufacturing firms listed on the Egyptian Stock Exchange is used for a period of seven years, from 2014 to 2021. Panel regression analysis using Panel-Corrected Standard Errors (PCSEs) has been used to test the three empirical models. The findings show that there is insignificant positive relationship between credit risk and earnings management. Besides, the authors found that there is negative relationship between Corporate Social Responsibility (CSR) and Earnings Management (EM). The findings reach to a conclusion that CSR as a moderating variable has a positive impact on the relationship between credit risk and earnings management. This implies that CSR considerably improves the connection between earnings management and credit risk. The findings have significant implications for various stakeholders, including investors, and regulators. Understanding the influence of credit risk on earnings management in the light of Corporate Social Responsibility can help these stakeholders make more informed decisions regarding investments and regulatory policies. It emphasizes the need for transparency in financial reporting. This study is the first to investigate the potential moderating influence of Corporate Social Responsibility on the link between credit risk and earnings management in manufacturing companies listed on the Egyptian Stock Exchange, as far as the researchers is aware.*

Keywords- Credit Risk, Earnings Management, *Corporate Social Responsibility* , Egyptian companies.

1. INTRODUCTION

Earnings management accrues when managers exercise judgment in financial reporting and transaction structuring; they can manipulate financial reports to either change contractual outcomes that rely on reported accounting numbers or to mislead certain stakeholders about the company's underlying economic performance. According to (Healy & Wahlen, 1999)

Shareholders, creditors, bankers, unions, regulators, suppliers, customers, and competitors are among the groups that could be impacted by such actions. When these groups rely on false information, they may suffer from making poor investment choices (Lo, 2008). Every company has a goal and a challenge to grow, and this could happen by maintaining earnings smoothing, therefore, if costs don't decrease at a sufficient rate, the earnings of the companies will reduce, and this will drive managers to commit earnings management (EM).

It is anticipated that effective or opportunistic earnings management will increase stakeholders' interest in financial reports. According to the opportunistic perspective of EM, management is not always a good steward of a firm and may manipulate company profits in order to satisfy expectations, benchmarks, or standards. Management may come up with ways to solidify themselves out of fear of facing disciplinary action from shareholders for the EM practices they have engaged in. Enhancing their corporate social responsibility (CSR) is one of their entrenchment methods (Gao & Zhang, 2015; Surroca, & Tribo, 2007).

Credit risk refers to the potential that a borrower will fail to meet their obligations in accordance with agreed terms. This risk is a critical concern for lenders, investors, and financial institutions, as it can lead to financial losses. Credit-risk management has increased due to high default rates and bankruptcies. This has led to increased interest in sophisticated risk management techniques, especially in a changing regulatory environment, such as revisions to the Basel Accord (Altman, 2002)

Corporate Social Responsibility (CSR) is one of the most investigated topics around the world and would most likely remain so since the current business trend focuses on making a profit while maintaining the welfare of the entire community rather than just making a profit for business owners. Corporate responsibility, according to the Organization for Economic Co-operation and Development (OECD, 2001), is the successful "fit" or "mutual dependence" between businesses and society, as evidenced by the steps taken by the companies to foster and strengthen the symbiotic relationship (Abner, & Ferrer, 2019).

According to (Albitar et al. 2020) ESG goes beyond CSR and includes social issues as well as ESG components. ESG encompasses governance elements like ethics and investor protection, social elements like gender equality and human rights, and environmental elements like water, climate, and energy (Farooque et al. 2022). Regarding Egypt initiatives for ESG, the implementation of the value-added tax to boost consumption expenditure, the construction of national railway networks, the enhancement of road networks, and the green economy are only a few of Egypt's important projects. As part of its social responsibility, Egypt strives to provide a comprehensive, affordable, high-quality, and universal healthcare system that may improve medical settings and give trainees and students the tools they need to think creatively (GB Auto, 2018; GB Auto, 2019).

The aim of this study is to examine the moderating influence **of** Corporate Social Responsibility (CSR) on the link between credit risk and earnings management in manufacturing companies listed on the Egyptian Stock Exchange. To the best of the researchers' knowledge no study

conducted looked at the potential moderating influence of CSR on the link between CR and EM. Thus, this study contributes to the literature and would help in filling this gap.

The rest of the paper is designed as follows: Section 2 is a theoretical background. Section 3 presents the literature and hypotheses development. Section 4 presents the study methodology, which includes an overview of data collecting, research models, and variable measurements, while Section 5 contains descriptive and the statistical analyses and the discussion of the empirical results is presented in Section 6. Finally, Section 7 concludes the findings, and suggests future research paths.

2. THEORETICAL BACKGROUND

2.1 Earnings Management

The accounting literature has documented several motives for EM, for instance, (Healy & Wahlen, 1999; Cohen, et al. 2008; Ghazali, et al. 2015) as managers have many reasons to use their judgment in the process of decision-making about the accounting procedures and financial statements practices of the organizations they oversee. Accordingly, prior research confirms the significance of highlighting the incentives and motivations behind EM as managers are more likely to participate in EM if their compensation is linked to the company's financial results, so, they are in their best interests to appear to do well by EM to obtain higher compensation (Essam Mahmoud, E., et al, 2023).

As a result, researchers of accounting have traditionally concentrated on two types of EM techniques: Real earnings management (REM) and accrual-based earnings management (AEM) (Gounopoulos & Pham, 2017). On one hand, some of these strategies are focused on changing the timing or structuring of real economic operations and interventions in business operations, investment, and financing. Some, on the other hand, depend on accounting discretion through accrual consideration and interventions in the process of financial reporting as well as in accounting rules and regulations.

Two forms of EM were specifically distinguished by (Roychowdhury, 2006). First, accrual earnings management (AEM), a feature of the accrual system of accounting, involves discretionary earnings management. In order to accomplish this, accruals are manipulated without attempting to directly impact cash flows. According to (Rahmani & Ghashghaei, 2018) , there is discretion in the implementation of accounting principles concerning asset impairment, bad debt losses, and the salvage value of fixed assets. Because management has the authority and power to exercise their own judgment and discretion in accounting, they can control and manage their true economic performance by manipulating earnings through accrual (Dechow & skinner, 2000). As a result, AEM occurs when managers control their reported earnings by utilization of the accounting discretion associated with GAAP (Joosten, 2012).

Demirtas (2013) and Ghazali et al. (2015) stated that the usage of accruals is one of the strategies used by managers to exercise their discretion because total accruals are divided into two categories: non-discretionary accrual (normal accrual) depended on management estimates of economic performance and discretionary accrual which is usually manipulated by management through the constraints of accounting principles. Consequently, Managers may manipulate the discretionary accruals to achieve the targeted earnings number (Kim, 2013). Second, real

activities manipulation is named real earnings management (REM), it stands for management's decision to depart from standard business procedures. (Asim & Ismail, 2019).
Prior literature depends more on using both REM and AEM as main proxies for EM. But the used measures of EM were different. Some studies focused on measuring EM by focusing on AEM technique using abnormal accruals as a proxy and estimated by modified 1991 jones model (Demirtas, 2013; Liu, 2018; Huang et al., 2020). On the other hand, another large stream of the prior Literature measured EM using both techniques (AEM and REM) by using abnormal accruals as a proxy of AEM and using abnormal cash flow from operations, abnormal production costs and abnormal discretionary expenses as a proxies of REM (Kim, 2013; Lin, 2015; Gounopoulos & pham, 2017; and Hill, 2019) .

2.2 Credit Risk

Credit risk, or the possibility that the lender will lose principal and interest, is increased when a borrower defaults on loan. Although a probabilistic assessment of the default can be conducted, organizations that pose a risk cannot be explicitly identified prior to default. Businesses compensate creditors for this uncertainty by adding a spread above the risk-free interest rate that is proportionate to the likelihood of default. (Hunjra, et al. 2023).
The framework of (Merton's, 1974) structural credit models is used to define credit risks. It was also used by (Duffie & Lando, 2001) as the likelihood that a company's asset value will fall below a specific Impact of real earnings management default level, which can alter how a firm's assets are distributed and hence affect credit risk (Sethuraman, 2019) reported that the CR is controlled and dominated by three biggest agencies: Moody's, Standard & Poor's (S&P), and Fitch.
An institution's operational capabilities are negatively impacted by inadequate credit risk management, which may cause clients to lose faith in the organization. Credit risk is a significant financial risk that may be closely monitored and managed to reduce default rates. Given the significant extent of credit risk, stakeholders must make sure that credit risk policies are applied correctly and keep a close eye on their implementation throughout the whole loan cycle, from disbursement to recovery. Management, operational, financial, and industrial hazards are examples of unsystematic risks (Xin, et al.2024). Various studies documented that credit analysts rely on both sources of information: public and non-public provided by managers to evaluate the firm (Demirtas, 2013; Gounopoulos & pham, 2017) firm supervisors have superior data around the long run rating changes of their firms than exterior financial specialists as rating offices tend to gather data from management (kim, 2013).

3. LITERATURE REVIEW AND HYPOTHESES FORMULATION

The key objective of this study is to examine moderating influence of CSR on the link between CR and EM, in the Egyptian context. Consequently, the literature review divided into three sections: the first section covers the literature that look at the direct correlation between CR and EM. An overview of the literature related to the direct impact of CSR on a firm's EM is given by

the second section. The literature that considered the moderating impact of CSR on the connection between EM and CR are analyzed by the third section.

3.1 Corporate Credit Risk and Earnings Management

Corporate credit risk can drive companies to engage in earnings management to maintain favorable credit ratings and access to capital. This is often achieved through discretionary accruals, which allow firms to adjust reported earnings. The relationship between corporate credit risk and earnings management is complex and bidirectional. On one hand, earnings management can influence corporate credit risk, as firms may manipulate earnings to appear more creditworthy. On the other hand, corporate credit risk can also influence earnings management, as firms facing higher credit risk may engage in earnings management to mitigate perceived risks.

Firms facing higher credit risk may engage in earnings management to improve their financial appearance and reduce the perception of risk. For instance, firms with lower credit ratings may expand their earnings management activities to raise their credit ratings and ensure smooth capital procurement (Gong, et al 2020). Similarly, firms with higher credit risk may use real earnings management (REM) techniques, such as overproduction or discretionary spending, to manipulate cash flows and reduce the likelihood of default (Xin et al., 2024).

Some studies have documented that financial reporting misbehaviors may be likely to be detected through the monitoring by CRAs and the reduced information asymmetry, and this is because of the provision of CR. In contrast, other studies provide evidence that CRAs are fooled by manipulations of EM. In addition, there have been no studies were ever conducted on the impact of CR on EM applied to Egyptian firms.

In addition, empirical studies which conducted on such a relationship have been revealed different point of views. As, (Kim, 2013; Lin, 2015; Gounopoulos & pham, 2017; Liu, 2018) found that EM when measured by AEM was associated significantly and negatively with CR. When businesses successfully oversee their earnings and effectively get a higher CR, the perceived quality of these CR will be harmed over a long run.

Additionally, Gounopoulos & pham (2017) found that EM when measured by REM had a negative relationship with CR. On the other hand, there were other studies which indicated that there was a positive relationship between EM measured by AEM and CR (Demirtas, 2013; Hill, 2019; Huang et al., 2020). Also, (Kim, 2013; Lin, 2015; Hill, 2019) revealed that there was a positive association between EM when measured by REM and CR.

Finally, the findings were mixed because according to previous mentioned studies, it was found that managers try to avoid CR downgrades by using both techniques of EM (accruals based and real EM). Some studies documented that financial reporting misbehaviors may be likely to be detected through the monitoring by CRAs and the reduced information asymmetry and this because of the provision of CR. In contrast, other studies provide evidence that CRAs are fooled by manipulations of EM.

Additionally, REM is an opportunistic practice that raises a firm's default risk as well as its information risk as it conceals a firm's true performance and increments the data asymmetry between lenders and managers (Pappas, 2019). Real management activities are harder than accrual-based EM to be detected by outsiders, because REM may be unclear from optimal

business activities (Zhao, 2017) and (Pappas, 2019). Furthermore, it sacrifices a company's future cash flows in return for current recorded earnings (Pappas, 2019).

(kim, 2013; Zhao, 2017) stated that the survey which has been provided by (Graham et al. 2005) clarified the mangers 'inclinations and incentives behind preferring REM rather than AEM. One of the conceivable reasons for using such preference is that those techniques are likely to be harder to be detected, despite their high cost (Cohen et al., 2008) as cited in (Zhao, 2017). Similarly, the survey of (Graham et al. 2005) stated that managers have the intent to apply REM rather than AEM, since accrual-based manipulation is more likely to attract audit or regulatory attention than real manipulation activities (kim, 2013).

Accordingly, this may influence future firm performance negatively (Gunny, 2010). Following (Roychowdhury, 2006), as a result, companies manage earnings by deviating from the normal business activities to achieve the desired level of earnings by ''three types of REM: abnormal cash flow from operations, abnormal production costs, and abnormal discretionary expenses'' (Pappas, 2019).

Therefore, the results of various studies are not consistent with each other. Hence, based on the majority of the prior literature, the first hypothesis is developed as follows by focusing on AEM as a proxy of EM:

H1: There is a positive direct impact of Corporate Credit Risk on Earnings Management

3.2. Corporate Social Responsibility (CSR) and Earnings Management

According to (Velte, 2019) accrual-based earnings management (AEM) suffers from ESG practices, whereas real earnings management (REM) is unaffected. Furthermore, since more ethical behavior is linked to socially conscious organizations, (Gaio et al, 2022) validated this tendency and the existence of a negative association between social performance and earnings management. Nevertheless, (Moratis & van, 2018) struggled that there isn't a link between managing earnings and engaging in CSR. According to (Goncalves et al. 2021), managers that establish high levels of corporate social responsibility (CSR) compliance desist from actions that could negatively impact earnings due to their greater moral beliefs.

CSR is related to ethical and moral concerns about corporate decision-making. Participating in socially responsible initiatives not only raises stakeholder satisfaction but also develops corporate reputation. CSR policies may be an organizational tool that leads to more efficient resource utilization, which has an inverse impact on EM activities (Gras-Gil et al. 2016). (Alodat et al. 2024) settle that managers use less realistic earnings management to guard the firm's earnings in the long term. (Chih et al. 2008) found that CSR negatively affects EM. The inference behind this is that companies with comprehensive CSR initiatives have a strong commitment to social responsibility and that EM thus happens less frequently. (Hong & Andersen, 2011) exposed that socially responsible firms engage less in REM practices. (Scholtens & Kang, 2013) claimed that Asian enterprises with relatively excellent CSR are much less involved in EM.

On the other hand, (Chih et al. 2008), (Prior et al. 2008) in cross-countries, and (Gargouri et al. 2010) found that CSR has a positive impact on EM. This result is supported by the rationale that managers smooth earnings to reduce earnings volatility to provide stakeholders with more useful information. Earnings smoothing may be beneficial if it improves the information quality of

stated profits and aids in forecasting profits for future periods. This occurs when management attempts to minimize current high earnings figures if they anticipate a drop in future profits. The Opportunistic Financial Reporting Hypothesis (OFRH) was presented by q(Palacios-Manzano et al. 2021). OFRH suggested that managers continue to utilize EM while being fully aware of the damage it causes and use CSR as a cover to do so.

Managers who control profits are motivated to project a positive social image in order to win over stakeholders. Thus, CSR serves as an entrenchment mechanism by lowering the likelihood that the manager will be sacked (Habbash & Haddad, 2020).

Therefore, based on the previous discussion of literature, the researchers formulated the second hypothesis, which could be stated as follows:

H2: The corporate social responsibility (CSR) activities of a firm have a negative relationship with Earnings Management.

3.3. Moderating Role of CSR on Corporate Credit Risk and Earnings Management

Corporate credit risks can positively impact earnings management, with Corporate Social Responsibility (CSR) playing a moderating role. Earnings management contains manipulating financial statements to extant a preferred image of a company's financial health, often influenced by credit risk. CSR, as a moderating factor, can either mitigate or exacerbate these practices depending on its implementation and perception by stakeholders.

A useful starting point for studying the relationship between CR, EM, and CSR is stakeholder theory. This approach holds that CSR is required for the company to fulfill broader accountability standards by informing pertinent stakeholders (Guay et al., 1996). According to Freeman (1984), stakeholder theory examines how organizations handle the people and groups that have the power to influence or be influenced by them. According to the theory, managers must take into account the interests of all stakeholders when making choices, and companies have a duty and obligation to a wider variety of stakeholders (Buhr, 2001; Guay et al., 1996).

However, this perspective provides a prescription for how managers can undertake strategies to manage and treat their various stakeholders; it does not have a direct role in predicting managerial behavior in practice (Deegan, 2002). As the firm is perceived as a multilateral set of relationships amongst stakeholders, Grougiou et al. (2014) indicate that as mangers attempt to attend a multilateral set of stakeholders' objectives, the information asymmetry between mangers and stakeholder is high. The existence of information asymmetry provides managers an opportunity to practice EM. Further to this, Hoque (2006) argues that managers manipulate earnings to improve their private interests at the expense of other stakeholders. Moreover, Grougiou et al. (2014) and Sun et al. (2010) illustrate that companies that engage in CSR to negotiate diverse stakeholders' interests are inadvertently expected to practice EM. Thus, one can assume a positive relationship between EM and CSR in the stakeholder theory framework.

H3: The corporate social responsibility (CSR) activities of a firm have a positive impact on Corporate Credit Risk and Earnings Management

The relationship between the study variables are shown in Figure 1.

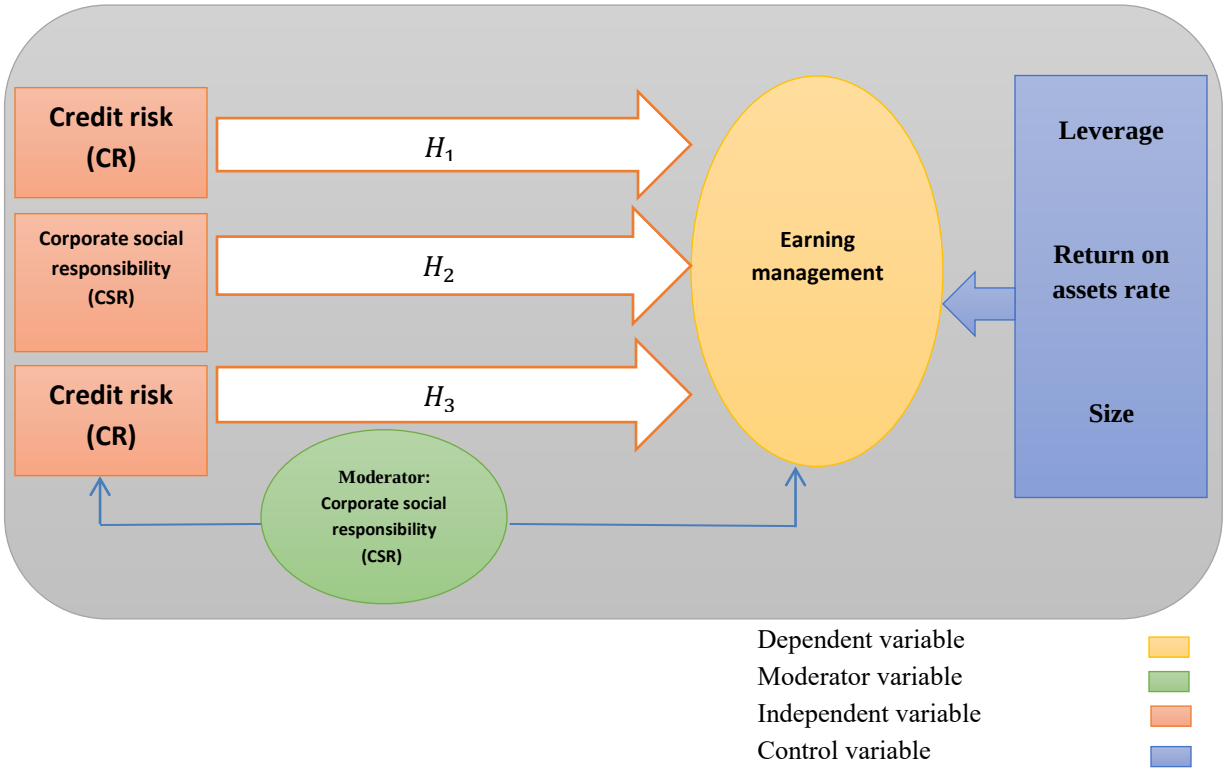

Figure (1) the relationship between the study variables

4. RESEARCH METHODS

Our sample comprises of 40 firms listed on the Egyptian Stock Exchange (ESX). The industrial companies listed specifically in the EGX 100 index were selected, and only 40 firms are manufacturing covering the period 2014-2021. Were selected based on the available data needed for the study. Financial firms are excluded because of differences in accounts handling. The (Stata. 14.2) software package was used for statistical analysis.

The study's time frame was specifically selected due to its relative stability for industrial companies operating in the Egyptian market. This is because many of these firms rely on imports from Russia and Ukraine, and with the war reaching its peak, this significantly disrupted import activities—particularly for industries dependent on wheat, sunflower oils, iron, certain metals, and tobacco. Therefore, the researchers choose this particular period to allow for better generalizability of the results without the influence of geopolitical disruptions. Data pertaining to measuring the research variables is extracted from *Thomson Reuters Eikon* database (financial statements) available at *The British University in Egypt (BUE)*. Additionally, the researchers collected some data from *Mubasher Egypt* and *Investing* websites. Panel regression is used to estimate the relations between AEM, CR, CSR and control variables. Table 1 shows the study variables.

Table (1): The Study Variables

Variable	Formula	Source
Credit risk	The author has chosen Altman's Z-Score model for manufacturing companies (see Formula 1) as the ancestor of accrual-based quantitative models and one of the most popular and widely used in financial institutions nowadays $Z = 1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + 0.999X5$ where: X1 = working capital / total assets؛ X2 = retained earnings / total assets؛ X3 = earnings before interest and taxes / total assets X4 = market value of equity / total liabilities X5 = sales / total asset	(Altman, 1968; Sajjan, 2016)
Earnings management	Accruals = (ΔCA-ΔCash)-(ΔCL-ΔASTD-ΔTP)-Dep Where ΔCA= Change in total current assets -ΔCash = change in cash/cash equivalents ΔCL = Change in total current liabilities -ΔASTD = change in short-term debt included in current liabilities ΔTP= change in income taxes payable Dep= depreciation and amortization Cash flow from operation = operating earnings – accruals EM = (accruals)/ (cash flow from operations)	(Dechow, Sloan & Sweeney, 1995; leuz et al. 2003; wang Campbell, 2012)
Leverage	leverage ratio equals the total debt to the total Equity	(Chouaibi & Zouari, 2022)
Return on assets rate	net income divided by total assets	(Chouaibi & Zouari, 2022)
Size	Firm size equals the natural logarithm of total assets	(Chouaibi & Zouari, 2022)
Corporate social responsibility	Measured using a dummy variable. An observation is assigned a value of 1 if it is included in the ESG index, and 0 otherwise.	The researchers

5. RESULTS

5.1. Descriptive Statistics

This study uses the Winsorizing method to handle outliers or extreme values in the study sample data. The results are shown in Figure 2. Descriptive statistics are used to summarize the key characteristics of the study variables. Table 2 presents the descriptive statistics for the independent variables, dependent variables, control variables, and moderating variable. As shown in Table 2, the SIZE (Firm Size) the mean is 9.41 (log scale) and range is 8.45–10.63. Standard deviation is 0.63. Results show moderate variation, typical for log-transformed size measures. Results show that regarding the ROA (Return on Assets) the mean value is 11.59% which reflect healthy average profitability and range is from -13.83% to +49.16%. Extreme values suggest the inclusion of both distressed and high-performing firms. . Standard deviation is 0.150 reflecting high volatility in profitability.

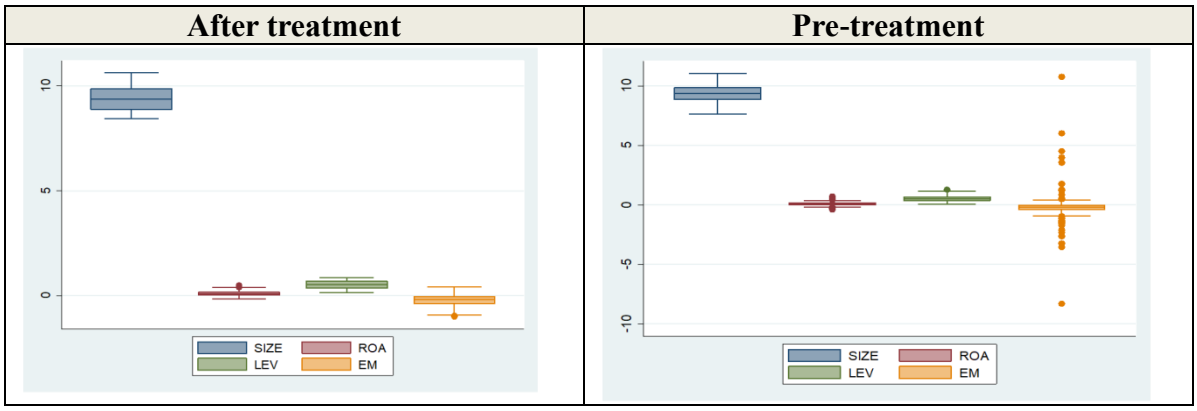

Figure (2) Outliers for the quantitative study variables before and after treatment

Source: Produced by Authors

Table (2): Descriptive Statistics of the Variables

Variable	Min	Max	Range	Sd	Mean
Size	8.454506	10.62948	2.174977	.6299659	9.413315
Return on assets rate	-.138307	.4915957	.6299027	.1504436	.1159122
Leverage	.1397772	.8462342	.706457`	.2088217	.5120806
Earnings management	-1	.413009	1.413009	.3511077	-.2408062

Source: authors` calculations

Regarding the LEV (Leverage) the mean is 51.21% which reveal moderate debt levels on average and the range is from 13.98%–84.62% which contains both conservatively and highly leveraged firms. Standard deviation is 0.209 reflecting substantial variation in capital structures. Finally, results show that EM (Earnings Management) the mean value is -0.241 which present a negative mean suggests sample-wide income-decreasing manipulations. Range is from -1 to +0.413 which comprises firms with both aggressive smoothing and big bath accounting. Standard deviation is 0.351 reflecting extremely high dispersion, indicating diverse Earnings management EM practices.

5.2. Statistical Tests

5.2.1. Correlation between Variables

This paper uses Pearson Correlation Matrix Analysis to find any correlation between the variables. As stated by Brooks (2008), a correlation matrix is a critical tool for examining linear relationships between independent, dependent, and control variables. This analysis employs Pearson's correlation coefficient, which ranges from −1 to +1; where positive values indicate a direct (positive) linear relationship, negative values indicate an inverse (negative) linear relationship, and zero values imply no linear association between variables. The results of the correlation between variables are shown in Table 3.

Table (3) Pearson correlation matrix for the study variables.

Variable	Size	ROA	LEV	EM
Size	1.0000			
Return on assets rate	-0.0388	1.0000		
	0.4890			
Leverage	0.4730	-0.3370	1.0000	
	0.0000	0.0000		
Earnings management	0.1274	0.2848	0.0491	1.0000
	0.0227	0.0000	0.3818	

Source: authors` calculations

The Pearson correlation matrix provides valuable insights into the linear relationships between key study variables. The analysis reveals a statistically insignificance but weak negative correlation between firm size (SIZE) and returns on assets (ROA) at the 0.05 level ($r = -0.0388$, $p = 0.4890$), suggesting larger firms tend to show slightly lower profitability, though this relationship appears relatively weak. More notably, a strong positive correlation exists between firm size and leverage (LEV) at the 0.01 significance level ($r = 0.4730$, $p = 0.0000$), indicating larger firms typically employ higher debt financing. The profitability measure Return on Assets (ROA) demonstrates a moderate negative correlation with leverage ($r = -0.3370$, $p = 0.0000$), consistent with financial distress theory which posits that higher debt levels may constrain profitability. Earnings management (EM) shows a weak positive association with firm size ($r = 0.1274$, $p = 0.0227$) and a more substantial positive correlation with profitability ($r = 0.2848$, $p = 0.0000$), potentially suggesting more profitable firms engage in greater earnings management practices. Interestingly, no significant relationship emerges between earnings management and leverage ($r = 0.0491$, $p = 0.3818$), indicating these practices operate independently of capital structure decisions. These findings provide a robust foundation for subsequent analysis, though the strong SIZE-LEV correlation warrants attention to potential multicollinearity issues in multivariate modeling. The results generally align with corporate finance theories while revealing some nuanced relationships that merit further investigation, particularly regarding how firm size simultaneously associates with both increased leverage and earnings management activities. Researchers should consider these interrelationships when specifying econometric models to avoid biased estimates.

Analysis of the intervariable relationships demonstrates that all multiple linear correlation coefficients among the study variables remained below the 90% threshold. As established by Hair et al. (2006), multicollinearity issues emerge only when intervariable correlations exceed 90% - a condition not observed in the current study. We can therefore conclusively state that multicollinearity does not constitute a significant concern in this research.

5.2.2 Diagnostic Tests

Before testing study hypotheses using Ordinary Least Squares (OLS) regression, certain standard diagnostic tests should be conducted to verify classical linear regression assumptions and ensure unbiased results. As outlined by Brooks (2008), the key assumption verification tests include:

- Shapiro-Wilk test to examine the normality of residuals
- Breusch-Pagan/Cook-Weisberg test to detect heteroskedasticity
- Variance Inflation Factor (VIF) test to identify multicollinearity among independent variables
- Durbin-Watson (DW) test to detect autocorrelation in residuals

Normality of Residuals

The Shapiro-Wilk test was employed to determine whether the residuals (random errors) follow a normal distribution. The null hypothesis states that residuals are normally distributed, while the alternative hypothesis suggests non-normality. According to Brooks (2008), the null hypothesis is accepted when the test's p-value exceeds 5% (0.05) and rejected when the p-value falls below 5%. Table 4 shows the Shapiro-Wilk test results for the study models.

Table (4): Shapiro-Wilk Test Results for Study Models

Model	Prob>z
1	0.00009
2	0.00016
3	0.00016

Table (4) reveals that the study models violate the normality of residual assumption, as evidenced by the Shapiro-Wilk test p-values below the 5% significance threshold. However, based on methodological literature, the researchers justify this outcome through two key arguments:

- Large Sample Justification Field (2009) notes that the normality assumption becomes optional when study samples exceed 30 observations, as the Central Limit Theorem ensures robust parameter estimates regardless of residual distribution.
- Disciplinary Convention As established financial science research frequently encounters non-normal data distributions without compromising result validity. This reflects inherent characteristics of financial datasets rather than model misspecification.

Multicollinearity Test

The Variance Inflation Factor (VIF) test was employed to examine the degree of multicollinearity among the independent variables. As established by Gujarati & Porter (2003), multicollinearity ceases to be problematic when the mean VIF value is below 10. Conversely, a mean VIF exceeding 10 indicates significant multicollinearity that may distort regression results. Table (5) demonstrates that none of the study models exhibit multicollinearity issues among the independent variables, as the mean Variance Inflation Factor (VIF) values all remained below

the critical threshold of 10. This confirms the fulfillment of the independence assumption among explanatory variables.

Table (5): Variance Inflation Factor (VIF) Test

Model	Variance Inflation Factor (VIF)
1	1.26
2	1.33
3	1.24

Source: authors` calculations

Heteroscedasticity Test

The Breusch-Pagan/Cook-Weisberg test was employed to examine whether residuals maintain constant variance (homoscedasticity). This issue particularly emerges in cross-sectional data due to the aggregation of diverse sectoral observations within a fixed timeframe.

The test hypotheses are structured as:

- Null hypothesis (H_0): residuals are homoscedastic (constant variance)
- Alternative hypothesis (H_1): Residuals are heteroscedastic

Following Gujarati & Porter (2003), H_0 to be accept if p-value > 0.05; to be reject if p-value ≤ 0.05. As shown in Table (6), the results reveal that all study models exhibit heteroscedasticity issues (non-constant variance in residuals), as evidenced by Breusch-Pagan/Cook-Weisberg test p-values below the 5% significance threshold.

Table (6): Breusch-Pagan/Cook-Weisberg Test Results for Study Models

Heteroscedasticity Test Results:

Model	Breusch-Pagan/Cook-Wsisberg
1	0.0000
2	0.0000
3	0.0015

Source: authors` calculations

Autocorrelation Test

Autocorrelation indicates non-independence of residuals, where this issue predominantly occurs in time-series data, as well as, it appears less frequently in cross-sectional data. Hence, the Durbin-Watson test was implemented to diagnose serial correlation in residuals, and guide appropriate remedial measures. Since applying Ordinary Least Squares (OLS) without addressing residual autocorrelation would yield biased results, we implemented the Cochrane-Orcutt procedure via *Stata* statistical software to correct this issue, following Brooks' (2008) methodological guidelines. The results are shown in Table 7.

Table (7): Durbin-Watson Test Results for Study Models (Pre-and Post-Treatment)

Model	Pre-treatment	After treatment
1	1.215047	2.055172
2	1.212481	2.057954
3	1.259222	2.069974

Source: authors` calculations

5.2.3. *Regression Analysis*

There are three models to test the relationship between CR and EM and the moderating role of CSR. The first one is to test the direct impact of CR and EM. The second one is to test the direct impact of CSR and EM. The third one is to test indirect impact of CSR as a mediator variable on CR and EM. This paper focused on applying this to Egyptian firms as follows:

Model (1): The impact of corporate credit risk on earnings management

$$EM_{i,t} = B_0 + B_1 CR_{i,t} + B_2 LEV_{i,t} + B_3 ROA_{i,t} + B_4 SIZE_{i.t} + £_{i,t} \quad (1)$$

The researchers initially performed a panel data analysis but identified two critical issues in the dataset: cross-panel correlation (interdependence among companies) and heteroscedasticity (unequal variance of errors over time or groups). These violated key assumptions of traditional panel regression models, such as independence and homoskedasticity. To address these limitations, the analysis utilized panel-corrected standard errors (PCSEs), a robust method that accounts for cross-panel dependencies and heteroskedasticity, thereby ensuring more reliable statistical inferences (p-values and confidence intervals). As shown in Table 8, the model demonstrated strong overall statistical significance (Wald chi2(4) = 57.84, $p < 0.001$) but exhibited limited explanatory power (R-squared = 11.02%), suggesting potential gaps such as unmeasured variables or data quality issues. Three predictors showed statistically significant effects: Leverage LEV (coefficient = 0.202, $p = 0.009$), ROA (coefficient = 0.763, $p < 0.001$; strongest effect), and SIZE (coefficient = 0.046, $p = 0.034$). Credit risk CR was statistically insignificant ($p = 0.766$), and the negative constant (_cons = -0.868, $p < 0.001$) implied unmodeled factors negatively influencing the dependent variable. While PCSEs enhanced the robustness of results against panel data irregularities, the low R-squared underscores the need for future research to incorporate additional variables or improve data quality to strengthen the model's explanatory capacity.

Table 8 presents results from a linear regression with panel-corrected standard errors (PCSEs) applied to balanced panel data covering 40 companies (320 observations, 8 years per company). The model achieved high overall statistical significance (Wald chi2(4) = 57.84, $p < 0.001$), with an R-squared of 11.02%, indicating that approximately 11% of the dependent variable's variance is explained by the model. Three variables showed statistically significant effects: Return on Assets ROA (coefficient = 0.7626, $p < 0.001$) as the strongest positive predictor, followed by Leverage LEV (coefficient = 0.2025, $p = 0.009$), and SIZE (coefficient = 0.0462, $p = 0.034$). Credit risk CR had no significant impact ($p = 0.766$), while the negative constant (_cons = -0.8684, $p < 0.001$) suggests the influence of unmodeled factors. PCSEs were employed to

address panel correlation and heteroskedasticity, enhancing estimation robustness despite the model's limited explanatory power. Hence, the first hypothesis has been rejected.

Table (8): Regression model (1)

Linear regression and correlated panels corrected standard errors (PCSEs)						
Group variable: company1			Number of obs = 320			
Time variable: years			Number of groups = 40			
Panels: correlated (balanced)			Obs per group:			
Autocorrelation: no autocorrelation			Min = 8			
Estimated co-variances = 820			Avg= 8			
Estimated autocorrelations = 0			Max = 8			
Estimated coefficients = 5			R-squared = 0.1102			
			Wald Chi2 (4) = 57.84			
			Prob > chi2 = 0.0000			
EM Earnings management	**Coef**	**Std. Err.**	**Z**	**p>|z|**	**[95% conf. Interval]**	
LEV	.2024528	.0771488	2.62	0.009	.0512439	.3536617
ROA	.7625645	.1350706	5.65	0.000	.497831	1.027298
SIZE	.046223	.0218561	2.11	0.034	.0033858	.890601
CR	.0328649	.1104377	0.30	0.766	-.1835891	.2493188
_Con	-.8683911	.1975822	-4.40	0.000	-1.255645	-.4811371

Source: authors' calculations

Model (2): The impact of the corporate social responsibility (CSR) activities on earnings management

$EM_{i,t} = B_0 + B_1 CSR_{i,t} + B_2 LEV_{i,t} + B_3 ROA_{i,t} + B_4 SIZE_{i.t} + £_{i,t}$ *(2)*

Table 9 presents the results of a panel regression analysis using Panel-Corrected Standard Errors (PCSEs) for a dataset comprising 320 observations across 40 companies (averaging 8 observations per company). The model demonstrates moderate explanatory power (R^2=11.01%) with a highly significant overall model fit (Wald chi^2=58.24, p=0.000). The analysis reveals strongly significant positive effects for both Return on Assets (ROA: coefficient=0.766, p=0.000) and Leverage (LEV: coefficient=0.203, p=0.009), while Firm Size (SIZE) shows a marginally significant positive effect (p=0.059). Conversely, Corporate Social Responsibility (CSR) displays no statistically significant impact (p=0.885). The intercept term is negative and highly significant (p=0.000), potentially indicating unmodeled factors negatively influencing the dependent variable. These results outperform the random effects model in terms of both explanatory power and several significant variables, though the modest R^2 suggests room for improvement through additional explanatory variables or model specification adjustments. The analysis appropriately accounts for panel correlations while assuming no autocorrelation, as reflected in the model diagnostics. Therefore, the second hypothesis has been accepted.

Table (9): Regression model (2)

Linear regression and correlated panels corrected standard errors (PCSEs)						
Group variable: company1			Number of obs = 320			
Time variable: years			Number of groups = 40			
Panels: correlated (balanced)			Obs per group:			
Autocorrelation: no autocorrelation			Min = 8			
Estimated covariances = 820			Avg= 8			
Estimated autocorrelations = 0			Max = 8			
Estimated coefficients = 5			R-squared = 0.1101			
			Wald Chi2 (6) = 58.24			
			Prob > chi2 = 0.0000			
EM Earnings management	**Coef**	**Std. Err.**	**Z**	**p>|z|**	**[95% conf. Interval]**	
CSR	-.0061664	.0425002	-0.15	0.885	-.0894653	.0771324
SIZE	.0475693	.0251721	1.89	0.059	-.0017671	.0969058
ROA	.7661054	.1373844	5.58	0.000	.4968368	1.035374
LEV	.2031645	0.772118	3.63	0.009	.08518321	.3544968
Leverage _Con	-.8806196	.2247023	-3.92	0.000	-1.321028	-.4402111

Source: authors' calculations

Model (3) the moderating role of CSR on the impact of corporate credit risk on earnings management

$$EM_{i,t} = B_0 + B_1 CR_{i,t} + B_2 LEV_{i,t} + B_3 ROA_{i,t} + B_4 SIZE_{i.t} + B_5\, CSR_{i.t} + B_6 CSR_{i,t} * CR_{i,t} + £_{i,t} \quad (3)$$

The researchers initially conducted a panel data analysis but identified two critical issues in the dataset: cross-panel correlation (interdependence among companies) and heteroscedasticity (unequal error variances across time or groups). These violated the assumptions of traditional panel regression models, such as independence and homoskedasticity. To address these limitations, the analysis was instead performed using panel-corrected standard errors (PCSEs), a method designed to produce robust standard errors that account for cross-panel dependencies and heteroskedasticity. This approach ensured more reliable statistical inferences (p-values and confidence intervals) despite the data's structural flaws. While the model's explanatory power remained modest (R-squared = 15.47%), it successfully identified three significant predictors (LEv, ROA, Moderator), underscoring the value of PCSEs in mitigating biases caused by panel data irregularities. The results highlight both the adaptability of PCSEs in handling complex datasets and the need for future research to incorporate additional variables or refine data quality to improve model performance.

Table 10 presents results from a linear regression analysis using panel-corrected standard errors (PCSEs) applied to balanced panel data covering 40 companies (320 observations, 8 years per company). The model demonstrated high overall statistical significance (Wald chi2(6) = 74.35, p < 0.001), with an R-squared of 15.47%, indicating that approximately 15.5% of the variance in the dependent variable is explained by the model. Three variables exhibited statistically significant effects: Leverage LEV (coefficient = 0.197, p = 0.010), ROA (coefficient = 0.756, p <

0.001) as the strongest positive predictor and the Moderator (coefficient = 0.177, p < 0.001). Variables SIZE (p = 0.101), Credit risk CR (p = 0.755), and Corporate social responsibility CSR (p = 0.431) showed no significant impact. The negative constant (_cons = -0.821, p < 0.001) reflects the influence of unmodeled factors. PCSEs were employed to address panel correlations, enhancing estimation robustness despite the model's limited explanatory power, and highlighting the need to explore additional variables or refine model specifications to improve variance explanation. Hence, the third hypothesis has been accepted.

Table (10): Regression model (3)

Linear regression and correlated panels corrected standard errors (PCSEs)						
Group variable: company1			Number of obs = 320			
Time variable: years			Number of groups = 40			
Panels: correlated (balanced)			Obs per group:			
Autocorrelation: no autocorrelation			Min = 8			
Estimated co-variances = 820			Avg= 8			
Estimated autocorrelations = 0			Max = 8			
Estimated coefficients = 7			R-squared = 0.1547			
			Wald Chi2 (6) =			
			Prob > chi2 = 0.0000			
EM Earnings management	**Coef**	**Std. Err.**	**Z**	**p>|z|**	**[95% conf. Interval]**	
LEV	.1970518	.0765898	2.57	0.010	.0469387	.347165
ROA	.756169	.1347444	5.61	0.000	.4920749	1.020263
SIZE	.0415533	.0253712	1.64	0.101	-.0081732	.0912798
CR	.0343197	.110179	0.31	0.755	-.1816273	.2502666
Moderator	.1772803	.0454957	3.90	0.000	.0881103	.2664503
CSR	.0291478	.0369877	0.79	0.431	-.0433467	.1016424
_Con	-.8208597	.2274021	-3.61	0.000	-1.26656	-.3751598

Source: authors' calculations

The researchers initially conducted a panel data analysis but identified two critical issues in the dataset: cross-panel correlation (interdependence among companies) and heteroskedasity (unequal error variances across time or groups). These violated the assumptions of traditional panel regression models, such as independence and homoskedasticity. To address these limitations, the analysis was instead performed using panel-corrected standard errors (PCSEs), a method designed to produce robust standard errors that account for cross-panel dependencies and heteroskedasticity. This approach ensured more reliable statistical inferences (p-values and confidence intervals) despite the data's structural flaws. While the model's explanatory power remained modest (R-squared = 15.47%), it successfully identified three significant predictors (LEv, ROA, Moderator), underscoring the value of PCSEs in mitigating biases caused by panel data irregularities. The results highlight both the adaptability of PCSEs in handling complex datasets and the need for future research to incorporate additional variables or refine data quality to improve model performance.

The table presents results from a linear regression analysis using panel-corrected standard errors (PCSEs) applied to balanced panel data covering 40 companies (320 observations, 8 years per company). The model demonstrated high overall statistical significance (Wald chi2(6) = 74.35, p < 0.001), with an R-squared of 15.47%, indicating that approximately 15.5% of the variance in

the dependent variable is explained by the model. Three variables exhibited statistically significant effects: Leverage LEV (coefficient = 0.197, p = 0.010), ROA (coefficient = 0.756, p < 0.001) as the strongest positive predictor and the Moderator (coefficient = 0.177, p < 0.001). Variables SIZE (p = 0.101), Credit risk CR (p = 0.755), and Corporate social responsibility CSR (p = 0.431) showed no significant impact. The negative constant (_cons = -0.821, p < 0.001) reflects the influence of unmodeled factors. PCSEs were employed to address panel correlations, enhancing estimation robustness despite the model's limited explanatory power, and highlighting the need to explore additional variables or refine model specifications to improve variance explanation.

6. DISCUSSION OF RESULTS

Based on the above results regarding the first hypothesis, the researchers found a non-significant positive relationship between credit risk and real earnings management. This means that as credit risk increases, real earnings management practices in the studied companies increase as well. However, this study differs from previous research in terms of the direction of the relationship. Our study considered credit risk as an independent variable affecting earnings management as a dependent variable, examining how accountants and managers manipulate financial statements. This implies the actual existence of credit risk and financial distress in the company, which may influence earnings management practices—a novel relationship in the accounting literature.

Most of prior studies, to the best of the researchers' knowledge, examined earnings management as an independent variable affecting credit risk, implying that earnings management occurs first, and its impact on credit risk is observed later. Studies supporting a positive relationship include (Demirtas, 2013; Jung, 2013; Hill, 2019; Huang et al., 2020). Another key difference is that these studies focused on real earnings management, whereas our research examines accrual-based earnings management, aligning with studies such as (Kim, 2013; Lin, 2015; John, 2016; Hill, 2019). However, the nature of the relationship remains contested.

Conversely, several studies found an inverse relationship, though they also examined earnings management's impact on credit risk (Kim, 2013; Lin, 2015; John, 2016; Gounopoulos & Pham, 2017; Liu, 2018). These studies used accrual-based earnings management, while others examined real earnings management but with conflicting results regarding the independent-dependent variable relationship. Notably, the findings of (Gounopoulos & Pham, 2017) contradict our results.

Concerning the second hypothesis, which examined the impact of corporate social responsibility (CSR) on earnings management, the researchers found a non-significant negative relationship between CSR and real earnings management. This may be credited to the fact that CSR remains a relatively new concept in the Egyptian business environment. The S&P EGX ESG Index, launched in 2010 to attract foreign and Arab investments (hot money), includes only 30 companies annually, with adjustments made each year. Our study focused on industrial firms listed on the Egyptian Stock Exchange, with only 13.13% of the sample observations included in the index, indicating limited corporate interest in CSR participation.

Finally, with reference to the third hypothesis, our study uniquely tested the relationship between credit risk and earnings management under the moderating effect of CSR. Results suggests that companies with lower CSR engagement are more likely to manipulate earnings—a logical outcome, as firms engaging in earnings management tend to neglect societal responsibilities and avoid ESG indices. Our findings align with (Velte, 2019), who reported an inverse relationship between CSR and accrual-based earnings management, though our study differs in its focus on real earnings management, possibly due to contextual differences. (Gaio et al., 2022) also supported our conclusions, whereas (Van, 2018) found no relationship whatsoever.

When introducing CSR as a moderating variable (the key difference between Hypotheses 1 and 3), we observed that CSR significantly strengthens the relationship between credit risk and earnings management. This implies that companies included in CSR indices experience higher credit risk and engage in more earnings management to maintain their competitive market position compared to non-CSR firms. To the best of the researchers' knowledge, this hypothesis testing represents a novel contribution to the literature, as prior studies have not explored this dynamic.

Notably, this study enriching accounting thought from multiple perspectives. Regarding financial markets, the third hypothesis aimed to reveal the relationship between credit risk and earnings management under corporate social responsibility (CSR), which would consequently increase market participants' awareness - particularly concerning companies listed in CSR indices. By market participants, we specifically refer to financial analysts and credit rating agencies, who should exercise caution against these companies' potential earnings manipulation practices. This enhanced vigilance would ultimately improve market efficiency.
Our study also contributes to better risk assessment by motivating the market to develop new, more effective mechanisms for evaluating earnings quality, thereby reducing information asymmetry. On another front, for creditors (e.g., commercial banks) and investors (e.g., company shareholders), our study highlights that CSR-listed companies may engage more extensively in earnings management practices than their non-CSR counterparts. This finding alerts investors to exercise greater caution with CSR-indexed companies, especially those experiencing financial distress. Our study further recommends modifying valuation models to avoid companies with unclear risks.

Finally, from the researchers' perspective, the third hypothesis's results suggest the need to develop tax monitoring mechanisms to address potential loopholes and detect earnings management - particularly in companies with social activities, as these activities inherently reduce taxable income. This reduction could potentially be exploited for earnings management purposes to obtain tax incentives.
Our study is ultimately grounded in agency theory, reflecting the market pressures faced by Egyptian industrial companies operating in the local market as they strive to align with Egypt's Vision 2030 and highlight their societal role. Company managers attempt to maintain their firms' positions in CSR indices through earnings management practices. Our findings can also be interpreted through signaling theory, as a company's inclusion in CSR indices shows a strong correlation with its engagement in earnings management practices compared to non-listed companies.

7. CONCLUSION

The current research empirically examining the moderating effect of CSR on the relationship between credit risk and earnings management in industrial firms listed on the Egyptian Stock Exchange. Over a seven-years period, from 2014 to 2021, a sample of 40 Egyptian manufacturing companies listed on the Egyptian Stock Exchange is used in this study.

The results indicate insignificant positive relationship between earnings management and credit risk. Additionally, researchers discovered a negative correlation between earnings management and corporate social responsibility (CSR). The results conclude that the connection between credit risk and earnings management is positively impacted by CSR as a moderating variable. This suggests that CSR significantly strengthens the link between credit risk and earnings management.

The findings have significant implications for various stakeholders, including investors, regulators, and bank management. Understanding the influence of credit risk on earnings management can help these stakeholders make more informed decisions regarding investments and regulatory policies. In addition, the results of this study might support managers in modifying earnings management practices to reduce credit risk. It emphasizes the need for transparency in financial reporting. These contributions collectively enhance the understanding of the dynamics between credit risk and earnings management, providing valuable insights for both academic research and practical applications in the manufacturing sector.

The research area explored in this study is unique and least explored by any other researchers in the past. Therefore, the results obtained in the current study are significant contributions to the existing literature on corporate social responsibility (CSR), credit risk, and accrual earnings management in context of developing countries. The main contribution of the current research is the empirical evidence gathered on how corporate social responsibility (CSR) moderate the relationship between credit risk and earnings management in the Egyptian manufacturing companies listed on the Egyptian Stock Exchange.

Based on the outcomes of the research, there are some ideas for forthcoming research**:** applying this study to service sectors rather than industrial sectors, selecting a period characterized by geopolitical tensions, unlike the study's current timeframe, and this research can be conducted with an expanded scope by incorporating business sustainability as a moderating variable. This would involve developing a compound index include the full dimensions of sustainable development.

REFERENCES

Abner, R. A., & Ferrer, R. C. (2019). The role of corporate social responsibility on the link of real earnings management with financial performance and firm value of publicly listed companies in the Philippines. Asia-Pacific Social Science Review, 19(2), 3. DOI: https://doi.org/10.59588/2350-8329.1219

Albitar K, Hussainey K, Kolade N, Gerged AM (2020) ESG disclosure and firm performance before and after IR: the moderating role of governance mechanisms. Int J Account Inf Manag 28(3):429–444. https:// doi. org/ 10. 1108/ IJAIM-09-2019-0108Al

Alodat, A. Y., Salleh, Z., Hashim, H. A., & Sulong, F. (2024). Sustainability disclosure and firms' performance in a voluntary environment. Measuring Business Excellence, 28(1), 105-121.

Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. The journal of finance, 23(4), 589-609.

Altman, E. I. (2002). Managing Credit Risk: A Challenge for the New Millennium. Economic Notes, 31(2), 201–214. https://doi.org/10.1111/1468-0300.00084

Asim, A., & Ismail, A. (2019). Impact of leverage on earning management: Empirical evidence from the manufacturing sector of Pakistan. Journal of Finance and Accounting Research, 1(1), 70-91.

Brooks, S. P., Freeman, S. N., Greenwood, J. J., King, R., & Mazzetta, C. (2008). Quantifying conservation concern–Bayesian statistics, birds and the red lists. Biological Conservation, 141(5), 1436-1441. https://doi.org/10.1016/j.biocon.2008.03.009

Buhr, N. (2001), "Corporate silence: environmental disclosure and the North American free trade agreement", Critical Perspectives on Accounting, Vol. 12 No. 4, pp. 405-421.

Chih, H. L., Shen, C. H., & Kang, F. C. (2008). Corporate social responsibility, investor protection, and earnings management: Some international evidence. Journal of business ethics, 79, 179-198.

Chouaibi, Y., & Zouari, G. (2022). The effect of corporate social responsibility practices on real earnings management: evidence from a European ESG data. International Journal of Disclosure and Governance, 19(1), 11-30. https://doi.org/10.1057/s41310-021-00125-1

Cohen, D. A., Dey, A., & Lys, T. Z. (2008). Real and accrual- based earnings management in the pre- and post- Sarbanes- Oxley periods. The accounting review, 83(3), 757-787. https://doi.org/10.2308/accr.2008.83.3.757

Dechow, P. M., & Skinner, D. J. (2000). Earnings management: Reconciling the views of accounting academics, practitioners, and regulators. Accounting Horizons, 14(2), 235-250. https://doi.org/10.2308/acch.2000.14.2.235

Dechow, P., Sloan, R., & Sweeney, A. (1995), Detecting earnings management. The Accounting Review, 70, 193–225.

Deegan, C., Rankin, M. and Tobin, J. (2002), "An examination of the corporate social and environmental disclosures of BHP from 1983-1997: a test of legitimacy theory", Accounting, Auditing & Accountability Journal, Vol. 15 No. 3, pp. 312-343.

Demirtas, K.O. and Cornaggia, K.R., 2013. Initial credit ratings and earnings management. Review of Financial Economics, 22(4), pp.135-145. https://doi.org/10.1016/j.rfe.2013.05.003

Duffie, D. and Lando, D. (2001), "Term structures of credit spreads with incomplete accounting information", Econometrica, Vol. 69 No. 3, pp. 633-664, doi: 10.1111/1468-0262.00208.

Essam Mahmoud, E., Gamal Abdel-Kader, M., & Abdel Karim Mahmud, K. (2023). The Relationship between Earnings Management and Credit Ratings and Their Impact on Firm Performance: Evidence from Egypt. Scientific Journal of Business and Environmental Studies, 14 (1), 586-640.

Farooque Q, Dahawy K, Shehata N, Soliman M (2022) ESG disclosure, board diversity and ownership: did the revolution make a difference in Egypt? Corp Ownersh Control 19(2):67–80. https:// doi. org/ 10. 22495/ cocv1 9i2ar t6

Field, A. (2009). Discovering statistics using SPSS: Book plus code for E version of text (Vol. 896). London, UK: SAGE Publications Limited.

Freeman, R.E. (1984), Strategic Management: A Stakeholder Approach, Pitman-Ballinge, Boston.

Gaio, C., Gonçalves, T., & Sousa, M. V. (2022). Does corporate social responsibility mitigate earnings management?. Management Decision, 60(11), 2972-2989.

Gao, L., & Zhang, J. H. (2015). Firms' earnings smoothing, corporate social responsibility, and valuation. Journal of corporate finance, 32, 108-127.

Gargouri, R. M., Shabou, R., & Francoeur, C. (2010). The relationship between corporate social performance and earnings management. Canadian Journal of Administrative Sciences/Revue Canadienne Des Sciences De l'Administration, 27(4), 320-334.

Ghazali, A. W., Shafie, N. A., & Sanusi, Z. M. (2015). Earnings management: An analysis of opportunistic behavior, monitoring mechanism, and financial distress. Procedia Economics and Finance, 28, 190-201. https://doi.org/10.1016/S2212-5671(15)01100-4

Gonçalves, T., Gaio, C., & Ferro, A. (2021). Corporate social responsibility and earnings management: Moderating impact of economic cycles and financial performance. Sustainability, 13(17), 9969. https://doi.org/10.3390/su13179969

Gounopoulos, D., & Pham, H. (2017). Credit ratings and earnings management around IPOs. Journal of Business Finance &Accounting, 44(1-2), 154-195. https://doi.org/10.1111/jbfa.12228

Gong, Q., Liu, C., Peng, Q., & Wang, L. (2020). Will CEOs with banking experience lower default risks? Evidence from P2P lending platforms in China. *Finance Research Letters*, *36*, 101461.

Graham, J., C. Harvey, and S. Rajgopal. (2005). The economic implications of corporate financial reporting. Journal of Accounting and Economics 40 (1–3): 3–73.

Gras-Gil, E., Manzano, M. P., & Fernández, J. H. (2016), Investigating the Relationship Between Corporate Social Responsibility and Earnings Management: Evidence from Spain. BRQ Business Research Quarterly, *19*(4), 289-299. https://doi.org/10.1016/j.brq.2016.02.002

Guay, W.R., Kothari, S.P. and Watts, R.L. (1996), "A market-based evaluation of discretionary accrual models", Journal of Accounting Research, Vol. 34, pp. 83-105.

Guenther, T. W., Riehl, A., & Rößler, R. (2014), Cost stickiness: state of the art of research and implications. Journal of Management Control, 24, 301-318. https://doi.org/10.1007/s00187-013-0176-0

Gujarati, D., & Porter, D. (2003). Multicollinearity: What happens if the regressors are correlated. Basic econometrics, 363.

Gunny, K. A. (2010). The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks. Contemporary accounting research, 27(3), 855-888.

Habbash, M., & Haddad, L. (2020). The impact of corporate social responsibility on earnings management practices: evidence from Saudi Arabia. *Social Responsibility Journal*, *16*(8), 1073-1085. https://doi.org/10.1108/SRJ-09-2018-0232

Hair, J., Black, B., Babin, B., Anderson , R., & Tatham, R. (2006). Multivariate Data Analysis (6 ed.). New jersey: person Education.

Healy, P. M., & Wahlen, J. M. (1999), A review of the earnings management literature and its implications for standard setting. Accounting Horizons, 13(4), 365–383.

Hill, P., Korczak, A. and Wang, S., 2019. The use of earnings and operations management to avoid credit rating downgrades. Accounting and Business Research, 49(2), pp.147-180. https://doi.org/10.1080/00014788.2018.1479630.

Hoque, Z. (2006), Methodological Issues in Accounting Research: Theories and Methods, Spiramus Press.

Hong, Y., & Andersen, M. L. (2011). The relationship between corporate social responsibility and earnings management: An exploratory study. Journal of Business Ethics, 104, 461-471.

Huang, Z., Huang, H., Song, Y., & Feng, T. (2020). Earnings Management, Analyst Forecasts and Credit Rating of Corporate Bond: Empirical Evidences from Chinese Listed Companies. Journal of Finance and Economics, *8*(1), 21–32. https://doi.org/10.12691/JFE-8-1-4

Hunjra, A. I., Muhammad, F., & Sebai, S. (2023). The impact of real earnings management on corporate credit risk. Journal of Financial Reporting and Accounting, 21(5), 1171-1187. https://doi.org/10.1108/JFRA-12-2021-0441

Joosten, Carmen. 2012. Real Earnings Management and Accrual-Based Earnings Management as Substitutes. Tilburg: Tilburg University, vol. 52.

Kim, Y. S., Kim, Y., & Song, K. R. (2013). Credit rating changes and earnings management. Asia-Pacific Journal of Financial Studies, 42(1), 109-140. https://doi.org/10.1111/ajfs.12007

Lin, Y.M. and Shen, C.A., 2015. Family firms' credit rating, idiosyncratic risk, and earnings management. Journal of Business Research, 68(4), pp.872-877. https://doi.org/10.1016/j.jbusres.2014.11.044

Liu, A. Z., Subramanyam, K. R., Zhang, J., & Shi, C. (2018). Do Firms Manage Earnings to Influence Credit Ratings? Evidence from Negative Credit Watch Resolutions. The Accounting Review, 93(3), 267–298. https://doi.org/10.2308/ACCR-51855

Lo, K. (2008). Earnings management and earnings quality. Journal of accounting and economics, 45(2-3), 350-357.

Merton, R. C. (1974). On the pricing of corporate debt: the risk structure of interest rates. Journal of Finance, 29(2), 449–470. https://doi.org/10.1111/J.1540-6261.1974.TB03058.X

Moratis, L., and M. van Egmond. (2018), Concealing social responsibility? Investigating the relationship between CSR, earnings management ،and the effect of industry through quantitative analysis. International Journal of Corporate Social Responsibility 3 (1)

Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003), Corporate Social and Financial Performance: A Meta-Analysis. Organization Studies, 24(3), 403-441. https://doi.org/10.1177/0170840603024003910

Palacios-Manzano, M., Gras-Gil, E., & Santos-Jaen, J. M. (2021), Corporate Social Responsibility and its Effect on Earnings Management: An Empirical Research on Spanish Firms. Total corporate Social Responsibility andellence, 32(7-8), 921-937. https://doi.org/10.1080/14783363.2019.1652586

Pappas, K., Walsh, E. J., & Xu, A. L. (2019). Real Earnings Management and Loan Contract Terms. British Accounting Review, 51(4), 373–401. https://doi.org/10.1016/J.BAR.2019.03.002

Pasko, O., Chen, F., Proskurina, N., Mao, R., Gryn, V., & Pushkar, I. (2021). Are Corporate Social Responsibility Active Firms Less Involved in Earnings Management? Empirical Evidence from China. Business: Theory and Practice, 22(2), 504-516. https://doi. org/10.3846/btp.2021.14940

Prior, D., Surroca, J., & Tribó, J. A. (2008), Are socially responsible managers ethical? Exploring the relationship between earnings management and corporate social responsibility. Corporate governance: An international review, 16(3), 160-177. https://doi.org/10.1111/j.1467-8683.2008.00678.x

Rahmani, A. and Ghashghaei, F. (2018), "The relation between accounting comparability and earning management", Accounting and Auditing Review, Vol. 24 No. 4, pp. 527-550, doi: 10.22059/ ACCTGREV.2018.231579.1007589.

Roychowdhury, S. (2006). Earnings management through real activities manipulation. Journal of accounting and economics, 42(3), 335-370. https://doi.org/10.1016/j.jacceco.2006.01.002

Scholtens, B., & Kang, F. C. (2013), Corporate Social Responsibility and Earnings Management: Evidence from Asian EconoOh, H., Co, A. D., Zonatto, V. C. D. S., Magro, C. B. D., & Klann, R. (2019). Sticky Costs Behavior and Earnings Management. BBR. Brazilian Business Review, 16, 191-206. https://doi.org/10.15728/bbr.2019.16.2.6

Sethuraman, M. (2019). The Effect of Reputation Shocks to Rating Agencies on Corporate Disclosures. The Accounting Review, 94(1), 299–326. https://doi.org/10.2308/ACCR-52114

Sun, N., Salama, A., Hussainey, K. and Habbash, M. (2010), "Corporate environmental disclosure, corporate governance and earnings management", Managerial Auditing Journal, Vol. 25 No. 7, pp. 679-700.

Surroca, J., & Tribó, J. A. (2008). Managerial entrenchment and corporate social performance. Journal of Business Finance & Accounting, 35(5-6), 748-789.

Velte, P. 2019. The bidirectional relationship between ESG performance and earnings management: Empirical evidence from Germany. DOI 10.1108/JGR-01-2019-0001

Xin, A., Khalid, M., Nisar, S., & Riaz, I. (2024). Financial sustainability and corporate credit risk: Moderating role of earnings management. Sustainability, 16(13), 5747. https://doi.org/10.3390/su16135747

GB Auto (2018). *sustainability report*, Egypt. https://s3.amazonaws.com/resources.inktankir.com/gb/GB-Auto-Final-Sustainability-Report-2018.pdf

GB Auto (2019). *Sustainability report*, Egypt. https://s3.amazonaws.com/resources.inktankir.com/gb/Ghabbour-Auto-Sustainability-Report-2019.pdf. https://www.oecd.org/en/publications/2001/04/oecd-annual-report-2001_g1ghg13c.html

APPENDIX

Sample Companies

N	Company Code
1.	ECAP.CA
2.	PRCL.CA
3.	CERA.CA
4.	MCQE.CA
5.	SVCE.CA
6.	LCSW.CA
7.	ORWE.CA
8.	EIUD.CA
9.	ENGC.CA
10.	NCCW.CA
11.	GGCC.CA
12.	MOIL.CA
13.	AMOC.CA
14.	EAST.CA
15.	JUFO.CA
16.	SUGR.CA
17.	ISMA.CA
18.	POUL.CA
19.	ORHD.CA
20.	AMER.CA
21.	PHDC.CA
22.	TMGH.CA
23.	EHDR.CA
24.	MENA.CA
25.	HELI.CA
26.	OCDI.CA
27.	ZMID.CA
28.	UEGC.CA
29.	SWDY.CA
30.	ELEC.CA
31.	ABUK.CA
32.	SKPC.CA
33.	KZPC.CA
34.	ESRS.CA
35.	ASCM.CA
36.	EGCH.CA
37.	EFIC.CA
38.	EGAL.CA
39.	ATQA.CA
40.	MICH.CA