

The Moderating Role of Corporate Cash Holding on the Relationship between Earnings Management and Firm Value: Evidence from Egyptian Listed Firms

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Abstract

Purpose – This study aims to explore how earnings management affects the firm value. In particular, it examines the effect of earnings management on the firm value in Egypt. Likewise, it explores how corporate cash holding affects the relationship between earnings management and firm value.

Design/methodology/approach – The study uses a sample from Egyptian firms listed in the EGX 100 from 2015 to 2021. The earnings management is measured by employing modified Jones.

Findings – The results indicate that earnings management is a negative function of firm value, suggesting that Egyptian firms with high levels of earnings management are likely to have lower levels of firm value. Likewise, corporate cash holding moderates this relationship.

Practical implications – The study's conclusions push regulators and legislators in developing nations, including Egypt, to create stronger rules, guidelines, and regulatory actions to limit earnings management in Egyptian companies.

Originality/value – This study is valuable to determine the strength of the association between earnings management and firm value based on the moderating role of corporate cash holding in Egypt. Likewise, this study examine how COVID-19 affects this association.

Keywords: Earnings management; firm value; corporate cash holding; Egypt.

الدور الوسيط للاحتفاظ بالنقدية على العلاقة بين إدارة الأرباح وقيمة الشركة: دليل من الشركات المدرجة بسوق الأوراق المالية المصرية

ملخص البحث

الغرض - تهدف هذه الدراسة إلى البحث في قياس تأثير إدارة الأرباح على قيمة الشركة. وعلى وجه الخصوص، قامت الدراسة بقياس العلاقة بين إدارة الأرباح وقيمة الشركة في البيئة المصرية. بالإضافة إلى ذلك، قامت الدراسة بقياس مدى تأثير الاحتفاظ بالنقدية كمتغير وسيط على العلاقة بين إدارة الأرباح وقيمة الشركة.

التصميم/المنهجية- تستخدم الدراسة الحالية عينة من الشركات المصرية المدرجة ضمن مؤشر EGX 100 من عام 2015 إلى عام 2021. ويتم قياس تمهيد الدخل من خلال استخدام نموذج Jones المعدل.

النتائج- تشير النتائج إلى أن ممارسات إدارة الأرباح تعتبر بمثابة أداة ذات تأثير سلبي على قيمة الشركة، مما يدل على أن الشركات المصرية التي تتسم بمستويات عالية من إدارة الأرباح من المرجح أن يكون لديها مستويات أقل من قيمة الشركة. بالإضافة إلى ذلك، يؤدي الاحتفاظ بالنقدية إلى الحد من تأثير إدارة الأرباح على قيمة الشركة.

الآثار العملية - توصي نتائج الدراسة الجهات التنظيمية في الدول النامية، بما في ذلك مصر، إلى إنشاء قواعد ومبادئ توجيهية وإجراءات تنظيمية صارمة للحد من ممارسات إدارة الأرباح في الشركات المصرية.

الأصالة/القيمة - تعتبر هذه الدراسة ذات قيمة لتحديد قوة الارتباط بين إدارة الأرباح وقيمة الشركة بناءً على الدور الوسيط للاحتفاظ بالنقدية في الشركات المصرية المدرجة. علاوة على ذلك تبحث هذه الدراسة في كيفية تأثير COVID-19 على هذه العلاقة.

الكلمات المفتاحية: تمهيد الدخل؛ قيمة الشركة؛ الإحتفاظ بالنقدية؛ جمهورية مصر العربية.

1. Introduction

Theoretically, (Boachie and Mensah, 2022) indicated that the agency theory recognizes that individuals will always act opportunistically, including 'managing earnings' to the extent that their actions will increase their wealth. Moreover, earnings management is the practice of manipulating earnings to show a company's outstanding performance. Because investors are unaware of the real state of the firm's finances and changes, earnings management may be negative to investors. The company's management uses earnings management because they know that investors are more likely to dedicate focus to the reported earnings than to the process of making those earnings (Bao and Bao, 2004). (Sherlita and Kurniawan, 2013) shows that earnings management can usually be achieved in several ways, including by controlling the timing of a transaction, selecting a principle or method, and controlling the distinction between other profit and normal operating profit. Therefore, management purpose determines the form of intentional earnings management (Bao and Bao, 2004; Beyer et al., 2019).

In addition, (McNichols and Stubben, 2008) reveals that the market's response to the revelation of deceptive reporting is significantly negative suggesting that investors are not completely aware of the manipulation. However, one could observe negative returns to announcements ex post that would not necessarily imply resources are misallocated ex ante, to the extent that equity investors have reasonable expectations of the amount of manipulation occurring, even if they cannot identify the magnitude for specific companies.

The agency theory suggests that the practice of rewarding or compensating the agent based on the evaluation of performance metrics like earnings increases the agency problem brought about by the separation of ownership from management. Therefore, among other dysfunctional behaviors, the managers resort to earnings management, budgeting slacks, creative reporting, and earnings smoothness to fulfill their earnings objectives. These unhealthy practices have the potential to reduce a company's effectiveness and, in turn,

its performance (Abogun et al., 2021). (Ibrahim et al., 2020) Examines the real earnings management using income/loss from asset sales and accounting earnings management using discretionary accruals to determine if managers converted between the two strategies before and after Egypt's first governance alteration. The results indicated that the managers use actual events, such as asset sales for earnings management more frequently than they use accounting earnings management through discretionary accruals. In the context of firm value, the main objective of any firm is increasing the firm value in the long term; this increase is reflected in the share price in the market. Therefore, the investors will depend on evaluating and making decisions on the firm value. Thus, a conflict of interest will arise between investors and managers (Felmania, 2014). In this regard, the agency theory seeks to reduce the information asymmetry between the internal parties of the firm, which are more familiar with the financial information than the external parties. However, the manager (the agent) does not pay to provide the perfect agency (Panda and Leepsa, 2017) where managers tend to disclose information that maximizes their objectives (Felmania, 2014), which is reflected on the firm value. Empirical evidence shows the negative effect of earnings management on the firm value, (Abogun et al., 2021). This suggests that the practice of managers' earnings management for the purpose achieve their objective and consequently, receive an incentive bonus at whatever cost, may be an issue that might have a detrimental impact on the performance of the firm. Complex results for organizations include stock market performance, operational efficiency, financial performance, and failures of corporations. The influence of managers' opportunistic behavior on organizational results indicates that self-motivated earnings management would also affect firm value.

2. Research Problem

Since corporate governance is lacking in Egypt, the data used in this study is collected from Egyptian firms. (Ahmed et al., 2024) reported that the Egyptian firms have the weaknesses corporate governance rules. Thus, this

gives managers a motivation to misrepresent the information in their reports (Alm El-Din, *et al.*, 2021) and increase the earnings management practices. Moreover, the novelty of this study from it complements the limited research in Egypt that investigates the effect of earnings management on the firm value. In addition, this study examines the moderating role of earnings management on this relationship.

3. Research Objectives

This study aims to cover the following questions. First, to explore how earnings management is associated with firm value. Second, (Muryani Arsal et al., 2024) indicated that firms have high cash holding levels tend to have higher levels of earnings management, due to the creation of significant cash holdings caused by managers and principals' conflicting interests. The management typically seeks advantage of opportunities by holding or using the cash for policies that support their interests, possibly ignoring the shareholder's concerns. The principal desires to obtain income in the form of dividends. This, in turn, may affect the firm value. According to that, this study examines the effect of corporate cash holding on the relationship between earnings management and firm value.

4. Research Importance

The current study contributes to prior studies in several ways. First, the results are added to the prior literature an evidence of the manager's use of earnings management to mislead investors about the management perspective. Second, it is the first evidence in Egypt, which examine the earnings management on the firm value and examine the effect of corporate cash holding on the association between earnings management and firm value. Results show a significant and negative association between earnings management and firm value, which confirms this study, expects that earnings management decrease the firm value. This result is consistent with the agency theory. Furthermore, the firms with higher cash holding levels have higher TOBIN's Q level. The results of additional analysis are confirmed with the results in

the main analysis. The remaining of the study is structured as follows. Section 5 is the literature review and hypotheses development. Section 6 presents the research methodology. Section 7 the results. Section 8 presents additional analysis, and the final section shows the conclusion.

5. Literature Review and Hypotheses Development

5.1 Earnings Management and Firm Value

The majority of prior literature on the association between earnings management and firm value, reports that there is a negative effect of earnings management on the firm value. Which indicated that higher levels of earnings management is associated with a lower firm value. Like (Dyussemina et al., 2024) which finds that there is a negative relationship between earnings management and firm value. Moreover, (Garanina, 2023) examines the relationship between earnings management and firms' value through the moderating effect of the missing elements – corporate social responsibility disclosure and state ownership in Russian companies. This study observed that the firms that disclosed more CSR information experience a weaker negative relationship between earnings management and market value because investors and other stakeholders positively evaluate a positive CSR image. In addition (Thien and Hung, 2024) reported that the efficiency of investments is negatively impacted by earnings management, and this relationship is likely to be stronger for firms that engage in overinvestment. On the other hand, for underinvestment, there is no clear association.

In the context of the side effect of earnings management (Baik et al., 2022) examine the possibility that higher informative earnings are related to earnings management through R&D management. While accruals-based earnings managing has been found in the literature to increase earnings informative, it is uncertain if investors are informed by managing through R&D management because it is significantly more difficult to determine and eliminate. The relationship between more informative earnings and R&D management, which is a subset of real activities management, is lower than

that relationship managing using accruals. Results also show that, in comparison with managing through accruals, R&D-based managing is associated with analyst earnings estimations that are more accurate and less distributed. However, the relationship is smaller. In addition, (Hernawati et al., 2021) indicated that there is a negative relationship between earnings management and firm value. Moreover, the results are in line with the point of view of management strategy, increasing income is used as a way to transfer potential welfare from the company to stakeholders. Social welfare (tax) and managerial remuneration are proven mediators in increasing the effect of increasing income on future company value.

In the context of determinants of the firm value (Sudiyatno et al., 2020) showed that capital structure and managerial ownership have a negative effect on firm value. While profitability and firm size have a positive effect on firm value. However, despite the existing research, there has been limited examination of the direct association between earnings management and firm value. Previous studies have focused on specific attributes of the effect of corporate governance, such as managerial ownership on the firm value. Precisely consequence, further research will be needed to completely comprehend how earnings management affects firm value. The study's hypothesis for this gap in the literature is as follows:

H1:Earnings management negatively influences the firm value in Egypt.

5.2 Earnings Management, Firm Value and Corporate Cash Holding

Theoretically, the amount of cash that a firm holds is called cash holding, cash serves as an additional cushion. In essence, firms utilize reserve funds to cover new investments when retained income is not sufficient, and in the worst-case situation, they issue debt. Additionally, corporations typically collect external capital and instead depend on cash holdings to fund efforts while accessing external funding requires predictable costs. A company's

liquidity may be shown by how much cash it has on hand or whether it is not excessively large (Ifada et al., 2020).

This section discusses the relevant literature on the association between earnings management and firm value. Moreover, how corporate cash holding could affect this relation. Prior empirical research examines the effect of cash holding on the firm value. However, there are no decisive results; the results are both inconsistent and unclear about the nature of the relationship between cash holding and firm value. (Nisasmara and Musdholifah, 2016) indicated that there is no effect of the cash holding on the firm value. However, (Sheikh and Khan, 2016) reported that excess cash is significantly negatively related to firm value. Moreover, (Anton and Afloarei, 2019) showed that the existence of an optimal level of cash holding leads to maximizing the value of the firm value. In addition, avoiding deviation from the optimal level of cash holding will lead to a decrease in the value of the firm, and there is a relationship Concave (inverted) U-shaped relationship between cash holding and firm value. Furthermore, (Theissen *et al.*, 2023) reported that there is a significantly positive effect of the cash holding on the firm value. Firms with high investment opportunities may drive these results. On the other hand (Inayah and Izzaty, 2021) indicated that there is a negative and significant effect of cash holding on earnings management, this result proves that the firms that have a higher cash holding level, have a lower earnings management, or vice versa. Where cash holding is a liquid asset, so it is used to finance the firm's operational activities and dividend payments to shareholders, so that managers cannot use cash for their personal interests. When the cash holding in the company is not sufficient to finance dividends, what the company management does is accumulate cash. According to the above discussion, corporate governance practices are lacking in Egyptian firms. Thus, the managers of Egyptian firms may be incentivized to use earnings management practices. Specially, for firms that hold cash. Thus, the effect of cash holding on the relationship between earnings management and

firm value may not be clear immediately. As a result, this study formulates the following hypothesis:

H2: Corporate cash holding does significantly affect the association between earnings management and firm value in Egypt.

6. Methodology

6.1 Measuring Earnings Management

The current study follows (Grant et al., 2009; Ibrahim et al., 2020; Kliestik et al., 2021; Aboud et al., 2023), to measuring and applying the modified Jones model, as it is the best and most common model used in previous studies to measure earnings management. Which relies on estimating discretionary and non-discretionary accruals given that as the most susceptible to manipulation by managers by the following models:

Model [1]:

$$\frac{TA_{it}}{A_{t-1}} = \beta_1 \frac{1}{A_{t-1}} + \beta_2 \frac{\Delta REV_{it}}{A_{t-1}} + \beta_3 \frac{PPE_{it}}{A_{t-1}} + \beta_4 ROA_{it} + \epsilon_{it}$$

Model [2]:

$$NDA_{it} = \beta_1 \frac{1}{A_{t-1}} + \beta_2 \left(\frac{\Delta REV_{it}}{A_{t-1}} - \frac{\Delta AR_{it}}{A_{t-1}} \right) + \beta_3 \frac{PPE_{it}}{A_{t-1}} + \beta_4 (ROA_{it})$$

Model [3]:

$$DA_{it} = \frac{TA_{it}}{A_{t-1}} - NDA_{it-1}$$

6.2 Measuring Firm Value

According to Crisóstomo et al. (2011), Tobin's Q, which can be described as the total market capitalization of common stocks plus preferred stocks and total debt divided by the total asset, is a measure that is frequently employed for measuring the firm value. Furthermore, Because Tobin's Q reflects the present value of future cash flows based on both current and future

information; it is a useful proxy to measure the performance of a firm from a long-term market perspective (Zamzmir et al., 2021).

6.3 Empirical Models

This study takes into consideration corporate governance mechanisms variables that influence the firm's value in the regression models. Because firm corporate governance mechanisms have a positive and strong relationship with firm value (Ammann et al., 2011). Previous studies suggest there is a positive correlation between firm size and firm value, the study additionally controls for firm size. (Husna and Satria, 2019; Siahaan, 2014). Furthermore, the study controls the firm's level of leverage as previous research indicates that firm leverage has a detrimental impact on the value of the firm (Rizqia and Sumiati, 2013; Fosu et al., 2016). Similarly, given previous research indicates a strong and positive association between profitability and firm value, the investigation includes consideration for firm profitability (Naceur and Goaid, 2002). Additionally, there may be variations in the firm value over time. To take into consideration these variations, the study employs the year-fixed effect. Lastly, there could be variations in the firm value across industries. To consider these variations, the study adds the industry-fixed effects.

To test hypothesis H1 that addresses that there is a negative relationship between earnings management and firm value, the study develops Model 1 as follows:

$$\begin{aligned}
 \text{TOBIN'S } Q_{i,t} = & \beta_0 + \beta_1 \text{EARN_MNGT}_{i,t} + \beta_2 \text{INST_OWNRSH}_{i,t} \\
 & + \beta_3 \text{INSDR_OWNRSH}_{i,t} + \beta_4 \text{BRD_SIZE}_{i,t} + \beta_5 \text{BRD_INDP}_{i,t} \\
 & + \beta_6 \text{BRD - MEET}_{i,t} + \beta_7 \text{AUD_COMM_SIZE}_{i,t} \\
 & + \beta_8 \text{AUD_COMM_MEET}_{i,t} + \beta_9 \text{PROFT}_{i,t} + \beta_{10} \text{F_SIZE}_{i,t} \\
 & + \beta_{11} \text{LEVRG}_{i,t} + \text{YEAR_EFFECT} + \text{IND_EFFECT} + \varepsilon
 \end{aligned}$$

Model (1)

TOBIN's Q_{it} is the value of a firm i in year t , and **EARN_MNGT $_{it}$** is the level of earnings management of firm i in year t as measured in section 3.1. Table I shows more details about the remaining variables.

To test hypothesis H2. Which addresses the effect of corporate cash holding on the association between earnings management and firm value, the study develops an interactional variable between cash holding and earnings management. The following empirical model to test H2.

$$\begin{aligned} \text{TOBIN'S } Q_{i,t} = & \beta_0 + \beta_1 \text{EARN_MNGT}_{i,t} + \beta_2 \text{CASH_HOLD}_{i,t} \\ & + \beta_3 \text{EARN_MNGT}_{i,t} \times \text{CASH_HOLD}_{i,t} + \beta_4 \text{INST_OWNRSH}_{i,t} \\ & + \beta_5 \text{INSDR_OWNRSH}_{i,t} + \beta_6 \text{BRD_SIZE}_{i,t} + \beta_7 \text{BRD_INDP}_{i,t} \\ & + \beta_8 \text{BRD_MEET}_{i,t} + \beta_9 \text{AUD_COMM_SIZE}_{i,t} \\ & + \beta_{10} \text{AUD_COMM_MEET}_{i,t} + \beta_{11} \text{PROFT}_{i,t} + \beta_{12} \text{F_SIZE}_{i,t} \\ & + \beta_{13} \text{LEVRG}_{i,t} + \text{YEAR_EFFECT} + \text{IND_EFFECT} + \varepsilon \end{aligned}$$

Model (2)

EARN_MNGT \times CASH_HOLD $_{it}$ represents an interaction variable between a corporate cash holding and earnings management.

Table I: Variables definitions

Variables	Labels	Measurements	References
Cash holding	CASH-HOLD $_{it}$	The natural logarithm value of ratio of cash and cash equivalents to total assets.	(Kumar and Symss, 2024; Zhang et al., 2024; Liu et al., 2024).
Firm value	TOBIN's Q_{it}	The firm value is measured using the market value of equity plus the book value of equity divided by the book value of assets.	(Ammann, et al. 2011; Rizqia and Sumiati, 2013; Bhagawan and Mukhopadhyay, 2024).
Earnings management.	EARN_MNGT $_{it}$	Earnings management is measured using the modified jones model through discretionary accruals, which is the nondiscretionary accruals minus total accruals.	(Grant et al., 2009; Stubben, 2010; Ibrahim et al., 2020; Kliestik et al., 2021).
Board directors size	BRD-SIZE $_{it}$	The total number of directors on board.	Arayssi and Jizi (2024).
Board	BRD-INDEP $_{it}$	The percentage of independent	Arayssi and Jizi (2024).

Variables	Labels	Measurements	References
independence		directors on the board.	
Board meetings	BRD-MEET _{it}	The total number of board directors meetings yearly.	Alta'any et al. (2024).
Audit committee size	AUD-COMM-SIZE _{it}	The total number of audit committee members yearly.	Ahmed et al. (2024).
Audit committee meetings	AUD-COMM-MEET _{it}	The total number of audit committee meetings yearly.	Maskati and Hamdan (2017).
Managerial ownership	INSDR-OWNRSH _{it}	The percentage of outstanding shares owned by insider.	Wicaksono et al. (2024).
Institutional ownership	INST-OWNRSH _{it}	The percentage of outstanding shares owned by institutions.	Wicaksono et al. (2024).
Firm profitability	PROFT _{it}	The net income of a firm divided by its total assets	Chychyla et al. (2019).
Firm Size	F-SIZE _{it}	The natural logarithm of a firm's total assets	Guay et al. (2016).
Firm Leverage	LEVRG _{it}	Total liabilities of a firm divided by its total assets	Alm El-Din et al. (2021).
Year effect	YEAR_EFFECT	Year dummy for each year	Alm El-Din et al. (2021).
Industry effect	IND_EFFECT	Industry dummy for each industry	Alm El-Din et al. (2021).

6.4 Sample Selection

The current study uses a quantitative approach. The study sample covers the firms listed on the EGX 100 index for the financial period from 2015 to 2021, to comply with all requirements associated with the variables of the current study. The EGX 100 index was chosen considering its coverage of the most traded firms on the Egyptian Stock Exchange. Additionally, the study is conducted starting in 2015 to mitigate the effects of the January Revolution

and its subsequent influence on the financial statements. The study's initial sample consists of 126 firms, which were included in the EGX 100 index during any one of the study's years from 2015 to 2021, which appears in the following table after excluding the 14 financial firm's annual reports. 69 firms are remaining in the study's final sample, totaling 483 observations within 7 years. Additionally, eight firms are excluded from the study's sample of firms that indicate and 17 companies have been excluded from the companies that issue their annual reports on June 30 in US dollars are its financial statements presented.

Table II: Sample selection

	Observations
The initial number of observations	756
(-) Financial firms annual reports	(98)
(-) Annual reports dated 30/06	(119)
(-) Annual reports with presented in dollars	(56)
Final sample	483

7. Results

7.1 Descriptive Statistics and Correlation Analysis

Table III summarizes the descriptive statistics (overall) of the study variables, which used in the analysis. The results show that the mean and median for the TOBIN's Q_{it} that is a proxy of firm value are 1.150 and 1.036, respectively, with a minimum value of 0.122 and a maximum value of 2.008. This indicates that the firms are profitable, on average. These results are consistent with some previous research (e.g., Zamzmir et al., 2021). The Table also shows that the mean (median) of $EARN_MNGT_{it}$ is 0.35 (0.24). Moreover, the difference between maximum and minimum values of earnings management indicates a variation in the earnings management practices of the Egyptian firms. In terms of firm's cash holding, the study sample has a mean (median) of $CASH_HOLD_{it}$ 11.97% (2.33%), which indicates that the Egyptian firms have substantial cash holding ratios.

Concerning control variables, the mean value of INSDR-OWNRSHP_{it}, that is a measure of managerial ownership is 7.84, with a minimum and (maximum) are 0 and (80.58). Furthermore, the INST-OWNRSHP_{it} is 28.59. Additionally, the size of the board of directors has a mean value of 9.15 [10 directors]. On average, the frequency of board meetings is 13.02 [13 meetings] a year. The board independence has a mean value of 0.21. The size of the audit committee is, on average, 3.60 [4 members] with a frequency of meetings of 3.11 [3 meetings] per year. Moreover, the size of firms in the study sample ranges from 7.01 to 10.47, with a mean value of 8.89. Furthermore, the firms have a mean value of leverage ratio of 0.34. In addition, the mean of profitability is 0.06.

Table III: Descriptive Statistics

	Mean	Median	Std. Deviation	Minimum	Maximum	25%	75%
TOBIN'S Q _{it}	1.150	1.036	0.448	0.122	2.008	0.861	1.352
EARN_MNGT _{it}	0.35	0.24	0.30	0.00	0.98	0.13	0.50
CASH_HOLD _{it}	11.97	2.33	26.94	0	26.45	47.11	10.39
INSDR-OWNRSHP _{it}	7.84	0.00	17.67	0.00	80.58	0.00	5.28
INST-OWNRSHP _{it}	28.59	22.02	27.07	0.00	91.39	1.35	56.77
BRD_SIZE _{it}	9.15	10.00	2.57	4.00	15.00	8.00	11.00
BRD-INDEP _{it}	0.21	0.20	0.17	0.00	0.82	0.08	0.33
BRD-MEET _{it}	13.02	14.00	2.34	4.00	17.00	12.00	14.00
AUD-COMM-SIZE _{it}	3.60	3.00	0.80	0.00	6.00	3.00	4.00
AUD-COMM-MEET _{it}	3.11	3.00	0.81	1.00	5.00	3.00	4.00
LEVRG _{it}	0.34	0.29	0.23	0.00	0.98	0.17	0.51
F-SIZE _{it}	8.89	8.96	0.72	7.01	10.74	8.40	9.42
PROFIT _{it}	0.06	0.04	0.08	-0.13	0.24	0.01	0.10

Table IV shows the Pearson correlation matrix. The results indicate that the EARN_MNGT_{it} has a negative effect on the TOBIN's Q_{it}. This result suggests that firms with higher level of earnings management practices have a lower level of firm value. However, TOBIN's Q_{it} is a positively correlated with CASH_HOLD_{it}, indicating that the firms with a high level of cash holding ratio exhibit higher level of firm value.

Regarding the multicollinearity issue. The correlations between the independent variables, the highest correlations were found between the INST-OWNRSHP_{it} and the F-SIZE_{it} as independent variables at approximately 20%, followed by the BRD_SIZE_{it} and the BRD-INDEP_{it} as

independent variables at 19%. These results can be concluded that there is no multicollinearity problem. Mokhtar and Mellett (2013) argue that the correlations between independent variables represent a severe multicollinearity problem only if they exceed 0.80. The study further confirm for multicollinearity by perform a Variance Inflation Factor test (VIF). Table (V) showed the VIF results that the highest value of Model (1) was found for the $INSDR-OWNRSHP_{it}$ at 1.769, while the highest value of Model (2) was found for the $EARN_MNGT_{it} \times CASH_HOLD_{it}$ at 3.046. These values do not exceed 10, which indicates that there is no multicollinearity problem between independent variables.

Table IV: Pearson Correlation Matrix

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]
TOBIN'S Q _{it} [1]	1	-0.056*	0.061*	-0.021	-0.047	-0.089 [†]	0.021	-0.143**	-0.072	0.056	.099 [†]	0.048	-0.027
		0.011	0.032	0.620	0.272	0.037	0.620	0.001	0.090	0.187	0.020	0.261	0.529
EARN_MNGT _{it} [2]	-0.056*	1	0.077	0.073	-0.013	0.030	-0.024	-0.159**	-0.076	-0.079	-0.130**	.139**	0.078
	0.011		0.074	0.087	0.755	0.483	0.567	0.000	0.075	0.065	0.002	0.001	0.067
CASH_HOLD _{it} [3]	0.061*	0.077	1	0.010	-0.031	0.049	-0.020	-0.189**	.092 [†]	.087 [†]	.110 [†]	-0.078	0.073
	0.032	0.074		0.820	0.471	0.259	0.638	0.000	0.033	0.043	0.011	0.071	0.091
INSDR-OWNRSH _{it} [4]	-0.021	0.073	0.010	1	.095 [†]	-0.018	.110**	.100**	.184**	-.169**	-.111**	.126**	-0.019
	0.620	0.087	0.820		0.026	0.666	0.009	0.019	0.000	0.000	0.009	0.003	0.655
INST-OWNRSH _{it} [5]	-0.047	-0.013	-0.031	.095 [†]	1	-0.051	0.013	-0.076	-0.001	-.182**	-0.053	.195**	-0.014
	0.272	0.755	0.471	0.026		0.228	0.756	0.073	0.981	0.000	0.218	0.000	0.744
BRD_SIZE _{it} [6]	-.089 [†]	0.030	0.049	-0.018	-0.051	1	-.188**	0.044	0.030	-.122**	0.070	0.018	0.056
	0.037	0.483	0.259	0.666	0.228		0.000	0.298	0.477	0.004	0.102	0.680	0.191
BRD-INDEP _{it} [7]	0.021	-0.024	-0.020	.110**	0.013	-.188**	1	0.050	-0.043	-0.016	.130**	.124**	-.148**
	0.620	0.567	0.638	0.009	0.756	0.000		0.245	0.312	0.708	0.002	0.004	0.000
BRD-MEET _{it} [8]	-.143**	-.159**	-.189**	.100 [†]	-0.076	0.044	0.050	1	.134**	-.139**	-0.071	-0.038	0.018
	0.001	0.000	0.000	0.019	0.073	0.298	0.245		0.002	0.001	0.094	0.373	0.671
AUD-COMM-SIZE [9]	-0.072	-0.076	.092 [†]	.184**	-0.001	0.030	-0.043	.134**	1	0.019	-.123**	-.104 [†]	.160**
	0.090	0.075	0.033	0.000	0.981	0.477	0.312	0.002		0.651	0.004	0.015	0.000
AUD-COMM-MEET _{it} [10]	0.056	-0.079	.087 [†]	-.169**	-.182**	-0.016	-.139**	0.019	1	0.057	-.150**	-0.009	
	0.187	0.065	0.043	0.000	0.000	0.004	0.708	0.001	0.651		0.183	0.000	0.828
LEVRG _{it} [11]	.099 [†]	-.130**	.110 [†]	-.111**	-0.053	0.070	.130**	-0.071	-.123**	0.057	1	0.041	0.025
	0.020	0.002	0.011	0.009	0.218	0.102	0.002	0.094	0.004	0.183		0.331	0.551
F-SIZE _{it} [12]	0.048	.139**	-0.078	.126**	.195**	0.018	.124**	-0.038	-.104 [†]	-.150**	0.041	1	-.087 [†]
	0.261	0.001	0.071	0.003	0.000	0.680	0.004	0.373	0.015	0.000	0.331		0.040
PROFIT _{it} [13]	-0.027	0.078	0.073	-0.019	-0.014	0.056	-.148**	0.018	.160**	-0.009	0.025	-.087 [†]	1
	0.529	0.067	0.091	0.655	0.744	0.191	0.000	0.671	0.000	0.828	0.551	0.040	
	552	552	552	552	552	552	552	552	552	552	552	552	552

Note(s): This Table presents the Pearson correlation matrix.
[†], **, and *** show significance at the 10%, 5%, and 1% levels (two-tailed test), respectively

7.2 Empirical Findings

7.2.1 Testing H1: EARN_MNGT_{it} Effect on TOBIN'S Q_{it}

The findings of Model 1 are shown in Table V. The regression analysis of TOBIN'S Q_{it} on the control variables in the absence of an independent variable appears in Panel 1. Panel 2 presents the regression after adding EARN_MNGT_{it} into additional consideration. In every single panel, the model shows statistically significant results at the 0.001 level. Furthermore, Panel 1's adjusted R² value of 0.149 increases to 0.153 in Panel 2, indicating that some of the changes in the firm value of the EGX 100 firms, may be explained by earnings management. The t-statistics and tolerance coefficient are shown in brackets. Panel 2 shows that, for TOBIN'S Q_{it}, the coefficient of EARN_MNGT_{it} is -0.084 (t = -1.986). This suggests that earnings management and firm value have a substantial negative correlation. This result

supports the H1 hypothesis and contributes credibility to the theory that increasing the adoption of earnings management techniques decreases the value of the firm.

The result can be showed on the basis that the earnings management leads to lower TOBIN'S Q_{it} . The result is consistent with Abogun *et al.* (2021). Which indicated that the firm value had been negatively affected by earnings management. This indicates that investors valued firms that engaged in earnings management, particularly purposeful earnings management, low and that the managing employed by Egyptian firms showed up to be intentional rather than unintentional. (Baik et al., 2020). Furthermore, this finding is consistent with findings among Chen et al. (2017), which showed that managing is considered by investors as an indication of management opportunism that decreases firm value and increases risk.

Table V shows the effects of control variables on firm value. Panel 1 reports a negative effect of BRD-MEET_{it} on the TOBIN'S Q_{it} ($\beta = -0.097$; $t = -2.132$), suggesting that firms with higher board of directors meetings during the year have a lower level of value. Moreover, this relationship is significant ($\beta = -0.107$; $t = -2.385$) in Panel 2. However, both panels report that there are insignificant relationships between TOBIN'S Q_{it} and PROFIT_{it}, AUDT-COMM-MEET_{it}, AUDT-COMM-SIZE_{it}, BRD-SIZE_{it} and BRD-INDP_{it}.

Table V: Impact of Earnings Management on Firm Value

	Panel (1)		Panel (2)	
	Coefficients (t-statistics)	VIF (tolerance)	Coefficients (t-statistics)	VIF (tolerance)
Intercepts	21.137*** (3.673)		21.842*** (3.638)	
EARN_MNGT _{it}			-0.084* (-1.986)	1.162 (0.860)
INSDR-OWNSHP _{it}	0.021 (0.398)	1.759 (0.569)	0.029 (0.550)	1.769 (0.565)
INST-OWNSHP _{it}	-0.053 (-1.225)	1.234 (0.810)	-0.061 (-1.393)	1.243 (0.805)
BRD-SIZE _{it}	-0.070 (-1.614)	1.221 (0.819)	-0.066 (-1.523)	1.224 (0.817)
BRD-INDP _{it}	-0.015 (-0.357)	1.173 (0.853)	-0.014 (-0.331)	1.173 (0.852)
BRD-MEET _{it}	-0.097** (-2.132)	1.331 (0.751)	-0.107** (-2.385)	1.350 (0.741)
AUDT-COMM-SIZE _{it}	0.048 (1.020)	1.407 (0.711)	0.038 (0.824)	1.420 (0.704)
AUDT-COMM-MEET _{it}	-0.019 (-0.427)	1.261 (0.793)	-0.022 (-0.510)	1.263 (0.792)
LEVRG _{it}	0.067 (1.482)	1.316 (0.760)	0.053 (1.167)	1.347 (0.743)
F-SIZE _{it}	0.138*** (3.144)	1.306 (0.766)	0.137** (2.773)	1.378 (0.306)
PROFT _{it}	0.008 (0.201)	1.084 (0.922)	0.017 (0.408)	1.096 (0.912)
IND_EFFECT	Included		Included	
YEAR_EFFECT	Included		Included	
F-test	4.432***		4.439***	
Adjusted R-Squared	0.149		0.153	
Observations	483		483	

Notes: This table shows the results of Model 1. Panel 1 presents the results of model 1 without including the earnings-management variable [control variables only]. While, Panel (2) presents the results of the earnings management and controls variables.

7.2.2 Testing H2 EARN_MNGT_{it} and CASH_HOLD_{it} Effect on TOBIN'S Q_{it}

The findings of Model 2, which investigates how corporate cash holding affects the relationship between earnings management and firm value, are presented in Table VI. At 0.001 statistical level, it is significant. The value of the adjusted R² is 0.155. TOBIN'S Q_{it} on EARN_MNGT_{it} has a coefficient of -0.093 (t = -2.175). This indicates that the business value decreases by earnings management. On the other hand, the coefficient of CASH_HOLD_{it} on TOBIN'S Q_{it} is 0.112 (t = 2.282), indicating that a firm's cash holdings have a positive significant effect on the firm value. Nevertheless, the interaction coefficient between corporate cash holding and earnings management (**CASH_HOLDING_{it} × EARN_MNGT_{it}**) is -0.126 (t = -1.759). Which indicates that corporate cash holding decreases the negative association between earnings management and firm value. This, in turn, indicates that the relationship between earnings management and the firm value is likely to decrease (increase) in higher (lower) cash holding. This results support the H2 hypothesis. This result indicates that whether investors discover the value of Egyptian listed firms. It explains how managers manage earnings for the purpose to disclose confidential firm information, which reduces information asymmetry as suggested by the agency theory. This result is consistent with Abogun et al. (2021).

Table VI: Impact of Corporate Cash Holding on The Nexus of Earnings Management and Firm Value

	Coefficients	VIF
	(t-statistics)	(tolerance)
Intercepts	22.011***	
EARN_MNGT _{it}	-0.093** (-2.175)	1.171 (0.854)
CASH_HOLD _{it}	0.112** (2.282)	1.541 (0.649)
EARN_MNGT _{it} × CASH_HOLD _{it}	-0.126* (-1.759)	3.064 (0.306)
INSDR-OWNSHP _{it}	0.024 (0.451)	1.786 (0.560)
INST-OWNSHP _{it}	-0.043 (-0.964)	1.273 (0.786)
BRD-SIZE _{it}	-0.072 (-1.633)	1.224 (0.817)
BRD-INDP _{it}	-0.022 (-0.520)	1.180 (0.847)
BRD-MEET _{it}	-0.087 * (-1.765)	1.526 (0.655)
AUDT-COMM-SIZE _{it}	0.011 (0.231)	1.477 (0.677)
AUDT-COMM-MEET _{it}	-0.014 (-0.312)	1.275 (0.784)
PROFT _{it}	0.027 (0.651)	1.111 (0.900)
F-SIZE _{it}	0.134* (1.776)	1.425 (0.302)
LEVRG _{it}	0.052 (1.124)	1.381 (0.724)
IND_EFFECT		Included
YEAR_EFFECT		Included
F-test		4.039***
Adjusted R-Squared (%)		0.156
Observations		483
Note(s): This table shows the results of Model 2.		
*, **, & *** present significance at the 0.1, 0.05& 0.001 levels, respectively.		

8. Additional Analysis

The frequency of the COVID-19 pandemic infections increased, which had a direct impact on every aspect of life and led to the implementation of regulations on advancement in society and the economy. The social science of accounting changed to reflect these developments. A few studies have examined the effect of COVID-19 on the financial environment, (Pham et al., 2023) shown how a pandemic decreases the usefulness of financial information. Besides, (Hsu and Liao 2022) argue that corporate governance may reduce COVID-19's negative effect on stock price volatility. Moreover, (Ding et al., 2021) found that board independence and board size do not affect the stock returns during the COVID-19 pandemic. In addition to, (Diab and Eissa, 2023) found that the COVID-19 pandemic moderates the relationship between ESG performance, auditor choice, and audit opinion. Therefore, the effect of the COVID-19 on the accounting environment is not clear. Thus, this section will try to fill this research gap from the perspective of the study variables. In order to show the effect of COVID-19 pandemic on the study's models, by adding COVID-19 as an independent variable. To re-examine this study's hypotheses, the study run the empirical models [1, and 2], by adding COVID-19 and some variables that may affect the firm value, as identified in prior studies (Naceur and Goaied, 2002; Ammann et al., 2011; Rizqia and Sumiati, 2013; Siahaan, 2014; Fosu et al., 2016; Husna and Satria, 2019). These variables are profitability, firm size, leverage, board size, board independence, board meetings, audit committee size, and audit committee meetings. In addition, the effect of corporate cash holding as a moderator variable on the relationship between earnings management and firm value. Besides, year and industry fixed effects to mitigate invariant time and unobserved industry-effects. This study reruns the empirical models by regressing the firm value (TOBIN'S Q) on the earnings management, corporate cash holding, and control variables.

Table VII: The Impact of COVID 19 on the Study's Models

	Panel (A)		Panel (B)	
	Coefficients	VIF	Coefficients	VIF
	(t-statistics)	(tolerance)	(t-statistics)	(tolerance)
Intercepts	22.076**		22.180**	
	(3.642)		(2.564)	
EARN_MNGT _{it}	-0.085**	1.163	-0.094**	1.171
	(-2.017)	(0.860)	(-2.197)	(0.854)
CASH_HOLD _{it}			0.108**	1.554
			(2.182)	(0.643)
EARN_MNGT _{it} × CASH_HOLD _{it}			-0.148**	3.019
			(-2.022)	(0.292)
COVID-19-EFFECT _{it}	0.047	1.058	0.041	1.069
	(1.176)	(0.946)	(0.996)	(0.935)
INSDR-OWNSHP _{it}	0.031	1.771	0.026	1.788
	(0.593)	(0.565)	(0.631)	(0.559)
INST-OWNSHP _{it}	-0.061	1.243	-0.043	1.273
	(-1.391)	(0.805)	(-0.971)	(0.786)
BRD-SIZE _{it}	-0.070	1.230	-0.075	1.230
	(-1.604)	(0.813)	(-1.697)	(0.813)
BRD-INDP _{it}	-0.017	1.178	-0.026	1.788
	(-0.408)	(0.849)	(-0.481)	(0.559)
BRD-MEET _{it}	-0.110**	1.353	-0.089*	1.531
	(-2.412)	(0.739)	(-1.817)	(0.653)
AUDT-COMM-SIZE _{it}	0.039	1.421	0.012	1.478
	(0.835)	(0.704)	(0.247)	(0.677)
AUDT-COMM-MEET _{it}	-0.023	1.263	-0.015	1.275
	(-0.529)	(0.792)	(-0.329)	(0.786)
LEVRG _{it}	0.050	1.350	0.051	1.383
	(1.107)	(0.741)	(1.085)	(0.723)
F-SIZE _{it}	0.137**	1.764	0.141*	1.542
	(2.593)	(0.567)	(1.966)	(0.648)
PROFT _{it}	0.014	1.099	0.026	1.113
	(0.351)	(0.910)	(0.612)	(0.898)
INDUSTRIAL_EFFECT	Included		Included	
YEAR_EFFECT	Included		Included	
F-test	4.341***		3.946***	
Adjusted R ² %	0.154		0.153	
Observations	483			

*, **, & *** present significance at the 0.1, 0.05 & 0.001 levels, respectively.

Panel [A & B] in Table VII presented the results of the empirical models. The coefficient shows a significant negative relationship between $EARN_MNGT_{it}$ and $TOBIN'S Q_{it}$ at a level of 5%, suggesting that earnings management reduces the firm value. Likewise, the results show a significant positive effect of corporate cash holding on the association between earnings management and firm value, this result indicates that firms with a higher level of cash holding ratio and a lower level of earnings management have a higher level of firm value. Moreover, there is no effect of COVID-19 on the firm value. These results are consistent with the primary analysis results tabulated in Tables V, and VI.

9. Conclusion

Based on the agency theory, this study examines the relationship between earnings-management practice and firm value. Likewise, it investigates how corporate cash holding influences the nexus of earnings management and firm value in Egypt. This study uses a sample from Egyptian firms listed in the EGX 100 index from 2015 to 2021. The earnings management is measured using the modified Jones model. The firm value is measured using Tobin's Q. The results found that Egyptian firms smoothed their income. Likewise, the firm value is a negative function of earnings management practices. Moreover, the corporate cash holding directly influences the firm value. However, it reduces the negative direct association between earnings management and firm value.

This study contributes to the literature by providing the first evidence of interactions between earnings management and, and corporate cash holding on the firm value, in an emerging economy. Moreover, examines the effect of COVID-19 on this relationship. The study provides practical implications for investors and firms. It is recommended that investors seek out firms that intentionally participate in earnings management and avoid investing in these due to the potential negative impact on the performance of the firm, and modify their investing strategy accordingly. Moreover, Managers are

recommended to minimize earnings-management procedures to avoid its detrimental effect on the value of the firm. Finally, there is a limitation on the study. The study's exclusive emphasis on Egyptian companies included in the EGX 100 index might limit the generality of its findings to other contexts or economies.

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