

# The Effect of Audit Quality on Real Earnings Management: Evidence from Jordan

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## Abstract

*The purpose of the current study is to examine whether audit quality is capable of restricting real earnings management in a developing country such as Jordan. The fixed effect method was used to study the association between two audit quality (audit fees and audit firm size), and cash flow from operations (CFO), discretionary expenditure (DISX), and production cost (PROD) as proxies of real earnings management, for the industrial and service firms listed on the Amman Stock Exchange (ASE) during the period 2014-2023. Using 740 firm-year observations, the results showed that the audit fees (AFEE) are significantly and negatively related to cash flow from operations (CFO) and discretionary expenditure (DISX), and also significantly and positively related to production cost (PROD). Meanwhile, the result showed that the existence of audit firm size (B4) has a negative and significant effect on cash flow from operations (CFO) and production cost (PROD), and a positive and significant effect on discretionary expenditure (DISX). Further, for the control variables, the results showed that the firm size (FSIZE) has an insignificant effect on all model variants of real earnings management (REM). Meanwhile, financial leverage (LEV) has a negative effect on all model variants of real earnings management (REM). Thus, these findings provide sbreds of evidence for all the regulators, investors, and executives in Jordan due to the significant impact on public policies and interest to the regulators and standard setters.*

**Keywords:** *Audit Quality, Real Earnings Management, Cash Flow from Operations, Discretionary Expenditure, Production Cost.*

## Introduction

The recent scandals involving corporate accounting have sparked curiosity regarding the role of auditing in guaranteeing the accuracy of reported earnings and the reliability of financial statements (Lin & Hwang, 2010). Also, it has raised concerns about external audit quality and its capacity to restrict earnings management (Almarayeh et al., 2020). Furthermore, investors are now questioning the management systems of businesses that have been subject to collapse because they want to know whether the company's internal controls are effective and whether the auditors are to blame for the failure of the company (Geisler & Turchetti, 2018).

Numerous studies have looked at the connection between audit quality and earnings management over the last 20 years. However, most of those studies have emphasized that regional cultural, economic, institutional, and legal variations can impact the auditing function in limiting earnings management (Pacheco Paredes & Wheatley, 2017). The effectiveness of corporate governance mechanisms provided by firms to market participants and the level of investor protection are thus different in developing countries than they are in developed countries (Bao & Lewellyn, 2017), which encourages earnings management (Lai & Chen, 2014).

In this context, Almarayeh et al. (2020) pointed out that nations with less developed capital markets, limited investor protection, concentrated ownership, and lax legal enforcement are typically ones where earnings management is more common. As a result, the directors of the companies who accepted them may use this flexibility to pursue personal objectives, such as working to attain the specified level of profit to keep their job and receive higher compensation (Tangenés & Steen, 2017). The amount of revenue for the accounting period that may have an impact on the interests of other linked parties reflects the achievement of this level of intended profits. This has, in turn, caused what is known as the phenomena of earnings management to

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evolve, claim (Saxunova & Szarkova, 2018). Thus, this paper aims to shed light on the extent to which audit quality is capable of restricting real earnings management in Jordan.

Empirical evidence on Jordan is limited. Shahwan (2021) found that Big Four audit firms are not significantly different in their ability to restrict earnings management practices. Similarly, Warrad and Nassar (2017) indicated an insignificant effect of audit firm size on earnings management. On the other hand, Alzoubi (2017) noted evidence that audit quality negatively affects earnings management. Meanwhile, Al-Omush et al. (2018) reported results revealed that the organizations that are audited by Big 4 companies, tend to manage lesser earnings than other companies audited by non-Big 4.

Thus, the current study aims to contribute to the literature on audit quality and real earnings management through the understanding of the link between audit quality and real earnings management, and how empirical evidence can offer pertinent insight into audit quality to limit real earnings management in emerging markets. Also, the current study's findings could provide valuable information to regulators and policy setters, both in Jordan and other countries with a similar economic and institutional environment, to restrict real earnings management. Consequently, to investigate the effect of audit quality on real earnings management, two proxies for audit quality were considered: audit firm size (Big4) and audit fees. Real earnings management examines through proxies which are: cash flow from operations (CFO), discretionary expenditure (DISX), and production cost (PROD) for Jordanian industrial and service sectors listed on the Amman Stock Exchange (ASE) from 2014 to 2023.

## Literature Review

### *Agency Theory*

The question of the agency problem emerges from the division of ownership and management in modern companies in which shares are dispersedly held (Fama & Jensen, 1983; Jensen & Meckling, 1976). Managers make decisions on behalf of shareholders relating to all firm policies and processes that often trigger struggle in terms of party-related interests, leading to earnings management. The relationship between managers and principal agents is structured by a contract that outlines all the terms and conditions that the agents abide by (Shakir, 2008). Nonetheless, such a contract is nearly impossible to control all the agents' actions that have more knowledge about the organization. So, the knowledge asymmetry and multiple priorities generate an incentive for managers to magnetize with manipulating earnings. Jensen and Meckling (1976) recommend using good governance mechanisms to monitor management's discretionary actions and discourage them from handling earnings violations, while dramatically reducing agency costs. There have been several attempts to clarify the relationship between mechanisms of corporate governance and earnings management according to the theory of agency. According to the theory of agency, boards, and committees with a majority of independent non-executive members would supervise the management better and minimize the risk of earnings management (Coles et al., 2006).

### *Real Earnings Management*

One of the biggest issues affecting a company's effectiveness is earnings management (Alyaarubi et al., 2021). Poor earnings management causes stakeholders or organization owners to lose their credibility, which has negative effects like a loss of confidence (Flayyih et al., 2018). Additionally, according to other studies, managers can manipulate their contractual agreements with owners or deceive stakeholders as part of the earnings management process (Kurniawan & Antonio, 2022). Therefore, there are two types of earnings management. One of these is accrual earnings management, which, according to Challen & Siregar (2012), involves the manipulation of targets through the choice of accounting policies and estimates to meet profit expectations, in addition to earnings management as a manipulation activity to achieve targets.

Real earnings management means accelerating earnings by altering certain company operations (Roychowdhury, 2006). The evidence shows managers favor the real earnings management approach (Graham et al., 2005). While Gunny (2010) indicated the management of real practices is much more costly to companies and their shareholders and less costly for managers. Real earnings management imposes high

long-term costs on shareholders (Roychowdhury, 2006; Cohen et al., 2008a). Additionally, Roychowdhury (2006) and Zang (2012) pointed out that real earnings management strategies do not help firms' growth and competitive characteristics because of their long-term impact on overproduction, income manipulation, and discretionary cost reduction. Since manipulating real activities leads to adverse economic consequences, understanding how to reduce these opportunistic behaviours is a critical issue.

### *Audit Quality*

According to Alabdullah and Ahmed (2020) auditing is the main contributor to financial stability, trust, and market confidence. According to the legislation, auditors oversee performing statutory audits and significantly impact the legal services' opinions on the accuracy and fairness of financial accounts (Nwoye et al., 2021). Accordingly, DeAngelo (1986) indicated the likelihood that an audit may find and identify substantial errors in financial statements by accounting standards. Thus, Auditing is an important contributor to monetary constancy, the re-establishment of the company, and market and consumer confidence Alabdullah and Ahmed (2020). Consequently, audit quality is one of the corporate governance mechanisms; where the auditor should have high-quality management to minimize managers' manipulation (Rahman et al., 2021).

In the Jordanian context, adopting the Securities Law No. 76 of 2002 and Company Law No. 22 of 1997 helped advance the audit profession. According to Al-Akra et al. (2009), these regulations govern Jordan's corporate financial reporting structure and mandate the use of IFRS and ISAs. Additionally, the International Financial Reporting Standards (IFRS) and the International Standards on Auditing (ISA) were officially accepted in Jordan for the first time through rules released in 1998 regarding the Companies Law of 1997 (Almarayeh et al., 2020; Aryan et al., 2023).

More recently, many of the requirements that auditors must meet to strengthen their independence were addressed by the Jordanian Corporate Governance Code (2009) and the last update of the regulations published by the Jordan Securities Commission (JSC) in 2017. Additionally, most of Jordan's audit market is made up of small businesses, even though many Big Four using their name or in association with Jordanian audit firms also operate there (Abdullatif & Al-Khadash, 2010; Abdullatif, 2016; Al Qudah et al., 2023).

### *Development of Hypotheses*

The importance of auditing is centered on how the company discloses its results, and as we are aware, earnings management has become a global phenomenon in recent years (Hashim et al., 2019; Alabdullah & Ahmed, 2020). Additionally, the practice of profit management has been unfolded extensively, and companies are now judged on both their short- and long-term success in how they manipulate their earnings (Nwoye et al., 2021). Therefore, audit fees and Big 4 audit firms are suggested as factors that can represent audit quality (Raghuveer & Rama, 2007; Chi et al., 2011; Ettredge et al., 2014).

### *Audit Fees and Earnings Management*

The literature has two contrasting arguments about the relationship between audit fees and earnings management. On the one hand, excessive audit fees may jeopardize auditor independence by creating an economic linkage between an audit company and its customers, creating incentives for auditors to facilitate earnings management (DeAngelo, 1981; Eshleman & Guo, 2014). On the other hand, high audit fees are associated with more audit effort and scrutiny, leading to greater earnings quality (Lin & Hwang, 2010; Alali, 2011). Furthermore, audit firms have competitive pressures to retain clients, particularly if their audit fees are quite high, and they may be ready to allow some discretion in reporting earnings by clients (Sharma et al., 2011).

Empirical evidence on the relationship between audit fees and earnings management is mixed (Lin & Hwang, 2010). Several studies confirm the first argument regarding the existence of a positive relationship between audit fees and earnings management (Sharma et al., 2011; Donatella et al., 2019). Also, Kim et al.

(2020) find that real earnings management is positively related to audit fees, and they suggested that managers may engage in real earnings management.

Likewise, Jayeola et al. (2017) reported that the result from a sample of 15 Nigerian banks for the period from 2005-2014, the audit fees have a significant positive effect on earnings management as managers deliver honourable costs and engage auditors in non-audit services to increase familiarity and reduce objectivity in the audit process thereby creating room for earnings management. Further, using a sample of financial Swedish companies for the period 2011-2013, Donatella et al. (2019) showed that the probability of earnings management increased if audit fees increased, which means a positive association between audit fees and earnings management.

Other studies support the second argument and document their negative association (Su et al., 2007). Likewise, Chi et al. (2011) examine the relationship between real earnings management and audit quality, and their findings reveal that higher audit fees constrain earnings management. Hence, managers switch to real earnings management. As Martinez and Moraes (2014) indicated a negative association between audit fees and earnings management in the Brazilian market.

Similarly, Houque et al. (2017) investigated the effects of audit quality (audit fees) on the earnings management of Indian listed firms, and they indicated that firms that employ high-quality auditors have a lower degree of earnings management, meaning a negative association for audit quality (audit fees) with accrual earnings management. Additionally, Chang et al. (2021) Analyzed a sample of 12,823 firm-year observations from U.S. companies in non-regulated industries for the period 2000–2018, and they pointed out that earnings management is negatively associated with audit fees.

In contrast, some studies found that there is no association between audit fees and earnings management. Whereas Sitanggang et al. (2020) pointed out that there is no evidence of a significant relationship between audit fees and real earnings management for a large sample of UK manufacturing companies for the period 2010–2013. Moreover, Almarayeh et al. (2020) reported that the audit fees had no significant effect on earnings management for a sample of Jordanian industrial firms during the period from 2012 to 2016.

These mixed findings can be caused by differences in economic conditions, audit markets, and regulatory environments across countries (Tendeloo & Vanstraelen, 2008). In this sense, Gu and Hu (2015) found that audit fees vary depending on the litigation environment, being higher in environments where litigation risk is higher. This situation, coupled with the low litigation risk in Jordan, leads to an expectation of a positive association between audit fees and earnings management (Almarayeh et al., 2020). Thus, based on prior studies that the audit fees constrain a company's ability to manage earnings, the hypotheses stated in the alternative form are:

H1: The audit fees positively affect real earnings management.

#### *Audit Firm Size and Earnings Management*

A big audit company is seen as renowned and reputable, conducting high-quality audits. The Big 4 auditors can maintain a high level of audit quality because they have a larger number of clients, therefore their revenue streams are not affected by a single client, making them more independent (Yasser & Soliman, 2018). Widiastuty and Febrianto (2010) also noted that if the audit firm is small-sized, the audit firm's income is likely to be based mostly on the audit fee charged by certain clients, indicating that non-big four businesses tend to be more reliant on their clients than big four firms.

According to Lawrence et al. (2011), the largest audit companies have greater resources – both financial and operational – and hence can deliver superior services. DeAngelo (1981) and Lawrence et al. (2011) have mentioned the stronger capabilities that major audit companies have as a result of huge investments in audit technology and personnel training. As a result, the larger the audit firm, the greater the quality of the audit and the accounting information given.

Empirical evidence showed mixed results, Soliman and Ragab (2013) and Inaam and Khamoussi (2016) confirmed that audit quality proxied by audit firm size is negatively associated with earnings management. Further, Orazalin and Akhmetzhanov, (2019) investigated earnings management and audit quality in public companies listed on the Kazakhstan Stock Exchange during 2011-2016. The findings show that audit firm size negatively and significantly correlates with discretionary accruals. Whereas Alzoubi (2016) documented a negative significant association between auditor size and earnings management.

Meanwhile, Al-Mousawi and Al-Thuneibat (2011) found that Big Four and non-Big Four audit firms are not significantly different in their ability to restrict earnings management practices. Alves (2013) also mentioned that Big 4 audit firms are positively related to earnings management. Furthermore, research by Choi et al. (2018) showed that when higher levels of real earnings management are noticed, audit firms are less likely to retain this client. In addition, Isaac (2022) studied a sample of French-listed firms covering a period from 2009 to 2016 and indicated that the clients of Big4 audit firms record higher levels of real earnings management and accruals earnings management, which means the positive association for audit firm size with real activities and accrual-based earnings management.

On another hand, by examining UK IPOs between 1998-2008, Alhadab and Clacher (2018) found that the presence of Big 4 auditors cannot constrain all forms of earnings management (real activities and accrual-based). Also, using a sample of 1687 firm-year observations on listed companies in Vietnam; Khanh and Khuong (2018) pointed out that there is an insignificant effect of the audit firm size (Big 4) in diminishing real earnings.

Furthermore, in a sample from Egyptian listed firms during the period 2012-2016, Yasser and Soliman (2018) pointed out there is no significant relationship between the audit firm size and earnings management. Whereas Almarayeh et al. (2020) confirmed through the Jordanian context that the auditor size (Big4) had an insignificant influence on the earnings management of the industrial sector during the period of 2012 to 2016. Thus, based on prior studies that the audit firm size (Big4) constrains a company's ability to manage earnings, the hypotheses stated in the alternative form are:

H2: The audit firm size (Big4) positively affects real earnings management.

## Research Methodology

### *Sample and Data Collection*

The sample of the current study consists of the industrial and service firms listed on the Amman Stock Exchange (ASE) from 2014-2023. The industrial sector is regarded as one of the most important engines of economic and social development; also, the services sector plays an essential part in Jordan's promising modern economy. Furthermore, both industry and service activities have become critical components in achieving highly efficient growth, and it is crucial to choose which should be invested in and further expanded (Dakhlallah et al., 2020). Meanwhile, the financial sector was excluded from the sample since they are subjected to dissimilar regulatory and procedural requirements. Thus, the final sample consisted of firms listed and traded on ASE for the industrial and service firms (33 industrial firms, 41 service firms) (74) firms which consist of 740 firm-year observations.

### *Measurement of Variables*

#### *Dependent Variable: Real Earnings Management*

We use (Cohen & Zarowin, 2010) and (Roychowdhury, 2006) models to measure a total estimate based on operating cash flows of abnormal (CFO), production costs of abnormal (PROD), and discretionary expense of abnormal (DISX) to calculate the manipulation of real operations.

#### *Cash Flow from Operations (CFO)*

This approach can enhance the current period's earnings and sales volume, dissembling a positive margin. In addition, saving price discounts and credit terms will further reduce the permissive current-period cash flow producing in operating cash flow of abnormal. Operating cash flows of abnormal value will decrease owing to sales manipulation so that real earnings management will be poor if the cash flows from abnormal value operations are high. The follows of the estimates:

$$CFO_{it}/A_{it-1} = \alpha_0 + \beta_1(1/A_{it-1}) + \beta_2 (S_{it}/A_{it-1}) + \beta_3 (\Delta S_{it}/A_{it-1}) + \varepsilon_{it} \quad (1)$$

Where  $CFO_{i,t}$  Cash flow operation,  $A_{i,t-1}$  total assets of firm  $i$  at the end of period  $t$ ,  $S_{i,t}$  is the Sales of firm  $i$  during period  $t$ ,  $\Delta S_{i,t}$  change of sales ( $\Delta S_{i,t} = S_{i,t} - S_{i,t-1}$ ). Abnormal CFO obtained residual value from equation (1).

#### *Discretionary Expenses (Disx)*

Corporations may reduce expenses of discretionary such as general management, expenditure related to development and research, advertisement, and sales. This scenario can improve current period earnings and cash flow with the risk of reducing future period cash flows. Reduction in discretionary load would reduce discretionary expenses with an abnormal value, thus, if the amount with abnormal discretionary expenses was high, REM would reduction. Hence, we estimate discretionary expenses are following:

$$DISX_{it}/A_{it-1} = \alpha_0 + \beta_1 (1/A_{it-1}) + \beta_2 (S_{it}/A_{it-1}) + \varepsilon_{it} \quad (2)$$

Where  $DISX_{i,t}$  is firm' discretionary expenditure  $i$  in period  $t$ , (amount of sales and general expense, the expense of advertising and expense of development and research),  $S_{i,t}$  is previously sales. Discretionary expenses of abnormal acquired residual value from equation (2).

#### *Production Cost (PROD)*

Companies should generate more good units than necessary in order to increase earnings so that operations would reduce the cost of the products sold. Due to the overproduced, that minimize the sold goods' cost is induced by the perversion of the costs of fixed overhead by a greater number of units. Furthermore, if management manipulates earnings through overproduction, it may result in an abnormally rise production costs' level. Therefore, the production cost is the change in inventory and the number of goods sold (Roychowdhury, 2006; Sun et al., 2014) .

$$PROD_{it} = COGS_{it} + \Delta INV_{it} \quad (3)$$

Where  $COGS_{i,t}$  are goods sold cost of the firm  $i$  in pierod  $t$ ,  $\Delta INV_{i,t}$  is the inventory' change of firm  $i$  in pierod  $t$ . We estimate the following regression model to calculate production costs of abnormal ( $PROD_{i,t}$ ):

$$PROD_{it}/A_{it-1} = \alpha_0 + \beta_1 (1/A_{it-1}) + \beta_2 (S_{it}/A_{it-1}) + \beta_3 (\Delta S_{it}/A_{it-1}) + \beta_4 (\Delta S_{it-1}/A_{it-1}) + \varepsilon_{it} \quad (4)$$

Where  $PROD_{i,t}$  Production cost,  $\Delta S_{i,t-1}$  sales' changing. Abnormal cost of production acquired residual value from equation (4). REM's final estimate is abnormal costs of production, calculated by equation's residual value (4). A large  $PROD_{i,t}$  value, shows high REM due to overproduction contributes to a higher value of elevated production costs.

#### **4.2.2 Independent Variable: Audit Quality**

Audit firm size: Audit firm size (B4) is defined as a dummy variable that obtains the value of 1 if the financial statements of the firm $_i$  in the period $_t$  were audited by a Big Four audit firm and zero (0) otherwise.

Audit fees: Audit fees (AFEE) are defined as the natural logarithm of audit fees consistent with former empirical examinations (Almarayeh et al., 2020; Sitanggang et al., 2020; Chang et al., 2021; Alyaarubi et al., 2021), audit fees (AFEE) are defined as the natural logarithm of audit fees.

### Control Variables

Firm size: Earlier earnings management research frequently employed the size of the company as a control variable. The mixed data indicate that there is no directional association between firm size and earnings management (Almarayeh et al., 2020). While Chung et al. (2002) find that larger enterprises manipulate earnings to report more predictable earnings, another study (Ballesta & Garcia-Meca, 2005) finds that large firms participate in earnings management to a lesser extent. Firm size (FSIZE) is computed as the natural logarithm of total capital.

Financial leverage: Many studies have demonstrated that financially challenged enterprises prefer to manage earnings to benefit from debt restructuring (Kim & Sohn, 2013). Another point of view is that heavily leveraged enterprises may face increased scrutiny from their lenders, reducing earnings management (Choi et al., 2004). Therefore, the sign for the relationship between company leverage and earnings management cannot be predicted due to such variable conditions (Almarayeh et al., 2020). Financial leverage (LEV) is calculated by dividing total debt by total assets.

### Regression Equation Model

The authors use panel data regression analysis for hypothesis testing for the dependent variable used in this research. This equation can be formulated as follows:

$$REM_{it} = \beta_0 + \beta_1 B4_{it} + \beta_2 AFEE_{it} + \beta_3 FSIZE_{it} + \beta_4 LEV_{it} + \varepsilon_{it} \quad Eq1$$

$REM_{it}$  represent the real earnings management,  $\beta_0$  is the constant value,  $\beta_1, \beta_2, \beta_3,$  and  $\beta_4$  are the slopes,  $\varepsilon_{it}$  is the error term,  $t$  represents the time series data, and  $i$  denotes the cross-sectional data. Following that,  $B4_{it}$  indicates the audit firm size (Big4);  $AFEE_{it}$  represents audit fees;  $FSIZE_{it}$  is the firm size;  $LEV_{it}$  is financial leverage.

## 5. Result and Discussion

### 5.1 Descriptive Statistics

Table 1 supplies descriptive statistics of the variables used in the regression analysis for the sample of 740 firm-year observations from 2014–2023. Table 1 provides the absolute values of cash flows from operations (CFO) have a mean of 0.005976 and a standard deviation of 0.116443, meaning that the total volume of cash flows from operations is 0.597% of lagged total assets. Further, the absolute values of production costs (PROD) have a mean of 0.010084 and a standard deviation of 0.438677, meaning that the total volume of real earnings management is 1.0084% of lagged total assets.

**Table 1: Descriptive Statistics**

	CFO	DISX	PROD	AFEE	B4	FSIZE	LEV
Mean	0.005976	-0.000876	0.010084	9.276571	0.439189	7.167015	0.361707
Maximum	0.608341	1.122650	3.673516	11.59910	1.000000	8.273001	1.060530
Minimum	-0.688776	-0.178923	-3.612941	6.684612	0.000000	5.744293	0.008158
Std. Dev.	0.116443	0.102132	0.438677	0.695490	0.496624	0.480935	0.237417
Observations	740	740	740	740	740	740	740

Meanwhile, the absolute values of discretionary expense (DISX) have a mean of 0.000876 and a standard deviation of 0.102132, meaning that the total volume of real earnings management is 0.0876% of lagged total assets. This indicates that these values are comparable with earlier evidence such as (Alzoubi, 2017; Habbash & Alghamdi, 2016).

Regarding the independent variables, Table 1 shows the proportion of audit fees (AFEE) paid to the audit firms by their clients has a mean of 9.2765, which indicates that audit firms earn fee premiums. While the proportion of audit firm size (B4) has a mean of 0.4392 (43.92%). Further, Table 1 displays the value of control variables, the mean of firm size (FSIZE) is 7.1670, meanwhile, 0.3617 is the mean of financial leverage (LEV).

### Correlation Analysis

The correlation coefficient of the variables is presented in the following Table 2. It is observed that all the coefficients are less than 0.8, which signifies fewer multicollinear problems. Yoshikawa and Phan (2003) mentioned that the model had no issues with multicollinearity, which generally requires 80% or more to confirm that the correlations between variables exist. Hence, the correlation analysis displays that multicollinearity is not a problem. Furthermore, variance inflation factors (VIF) are low (all values are smaller than 0.8), validating the preceding result.

**Table 2: Correlation Analysis**

Correlation Probability	CFO	DISX	PROD	AFEE	B4	FSIZE	LEV	VIF
CFO	<b>1.0000</b>							
DISX	0.13968*	<b>1.0000</b>						
PROD	-0.13738*	0.13633*	<b>1.0000</b>					
AFEE	-0.11621*	0.03903	0.17666*	<b>1.0000</b>				<b>1.5604</b>
B4	-0.12980*	0.00229	-0.19243*	-0.14168*	<b>1.0000</b>			<b>1.3899</b>
FSIZE	-0.00342	-0.14439*	-0.03548	-0.20403*	0.02779	<b>1.0000</b>		<b>1.1599</b>
LEV	0.13586*	-0.08604**	-0.13742*	-0.03603	-0.01758	0.19315*	<b>1.0000</b>	<b>1.0745</b>

\* significant at 1%. \*\* significant at 5%. \*\*\* significant at 10%.

CFO: cash flows from operations; DISX: discretionary expense; PROD: production costs; AFEE: audit fees; B4: audit firm size; FSIZE: firm size; LEV: financial leverage.

A consideration of correlation coefficients in Table 2 emphasizes several observations. First, the level of cash flows from operations (CFO) is negatively correlated with audit fees (AFEE) and audit firm size (B4) significantly at 1%, while discretionary expense (DISX) is insignificant with audit fees (AFEE) and audit firm size (B4), further, production costs (PROD) is positively correlated with audit fees (AFEE) and negatively with audit firm size (B4) significantly at 1%.

Second, in terms of the control variables, firm size (FSIZE) is insignificant with cash flows from operations (CFO) and production costs (PROD), while there is a negative correlation with the discretionary expense (DISX) significantly at 1%. Additionally, financial leverage (LEV) has a positive significance with cash flows from operations (CFO) and a negative significance with production costs (PROD) at 1% but has a negative significance with discretionary expense (DISX) at 5%.



Additionally, it is worth mentioning that one of the highest correlations found is between the audit fees (AFEE) and firm size (FSIZE) 0.20403 significantly at 1%, this correlation indicates that a larger firm size implies charging higher audit fees. Meanwhile, the second-highest correlation is between financial leverage (LEV) and firm size (FSIZE) 0.19315 significantly at 1%, meaning that large firms have high financial leverage (LEV).

### Regression Analysis Results

Table 3 shows the regression findings of the audit quality (audit fees and audit firm size) on cash flows from operations (CFO), production costs (PROD), and discretionary expense (DISX) as a proxy for real earnings management in Jordanian companies. As a balanced panel data is used, the Hausman test was run to choose which model is best suited to the data (fixed effect or random effect). The value was significant ( $P = 0.000$ ) and, therefore, the null hypothesis cannot be rejected. Thus, the fixed effect model is considered the most appropriate for the current study.

**Table 3: Regression Analysis Results**

Variable	Model 1		Model 2		Model 3	
	CFO		DISX		PROD	
	Coefficients	t-Statistic	Coefficients	t-Statistic	Coefficients	t-Statistic
<b>AFEE</b>	-0.0756	-2.558**	-0.530	-15.731*	0.181	2.322**
<b>B4</b>	-0.064	-2.530**	0.036	2.747*	-0.226	-7.338*
<b>FSIZE</b>	-0.068	-0.698	0.023	0.467	0.100	0.698
<b>LEV</b>	-0.068	-1.751***	-0.023	-1.652***	-0.366	-2.564**
<b>C</b>	0.605	0.850	-0.201	-0.547	-0.822	-0.441
<b>R-squared</b>	0.344982		0.472257		0.384142	
<b>F-statistic</b>	4.528035		29.15303		18.62180	
<b>Prob (F-statistic)</b>	0.000000		0.000000		0.000000	
<b>Mean dep. var</b>	0.005976		-0.000876		0.010084	
<b>S.D. dep. var</b>	0.116443		0.102132		0.438677	
<b>Durbin-Watson</b>	2.003483		1.948787		1.810115	

\* Significant at 1%. \*\* Significant at 5%. \*\*\* Significant at 10%.

**CFO:** cash flows from operations; **DISX:** discretionary expense; **PROD:** production costs; **AFEE:** audit fees; **B4:** audit firm size; **FSIZE:** firm size; **LEV:** financial leverage.

Table 3 above shows the effect of audit quality on real earnings management in Jordanian companies. The hypotheses evaluated in the current research are two. The research model shows that real earnings management is measured by cash flows from operations (CFO), production costs (PROD), and discretionary expense (DISX). The model generates an R-squared of 0.344982: 0.472257: 0.384142, F-value is 4.528035: 29.15303: 18.62180, and P value is 0.000: 0.000, Durbin-Watson is 2.003483: 1.948787: 1.810115 for cash flows from operations (CFO), production costs (PROD), and discretionary expense (DISX).

Table 3 documents that in Model 1, audit fees have a negative significant effect on cash flows from operations (CFO), this indicates that audit fees may motivate managers to reduce the practices of the cash flows from operations. Model 2 shows that audit fees have a negative significant effect on discretionary expense (DISX), meaning that audit fees could limit discretionary expense (DISX) practices. Furthermore,

Model 3 indicated that audit fees have a positive effect on production costs (PROD), which means the audit fees help managers to the production costs (PROD) practices. As a result, given Jordan's low level of audit fees and low litigation risk, audit fees are unlikely to serve as a motivator to increase audit efforts to limit production costs (PROD) practices. However, audit fees have the potential to limit genuine activities (cash flows from operations) and discretionary expenses. Thus, Hypothesis 1 is rejected related to cash flows from operations and discretionary expenses and accepted for production costs.

Furthermore, Table 3 indicates that models 1 and 3 have similar findings for the audit firm size (B4), which means that audit firm size (B4) is successful in restricting cash flows from operations (CFO) and production costs (PROD) in Jordanian companies. Thus, Hypothesis 2 is rejected related to cash flows from operations (CFO) and production costs (PROD). Meanwhile, Model 2 reported that the audit firm size (B4) failed to reduce production costs (PROD) practices. Thus, Hypothesis 2 is accepted and related to production costs. Therefore, these results can be explained by the plans that the government has developed in order to create a safe investment environment and create a legal environment that helps the auditor to carry out his duties with full transparency and integrity. So, auditors are motivated to determine real earnings management behaviors (cash flows from operations, production costs, and production costs).

Considering the findings of Hypotheses 1 and 2, it is possible to conclude that audit quality attributes (audit fees and audit firm size) do influence the level of real earnings management practiced by Jordanian firms. This achievement can be credited to the Jordanian institutional and economic context that the government has created, which encourages auditors to perform high-quality audits.

The findings in Table 3 reflect control variables indicating that the coefficient of firm size (FSIZE) has an insignificant effect on cash flows from operations (CFO), discretionary expense (DISX), and production costs (PROD). Secondly, the findings show that financial leverage (LEV) has a negative effect on cash flows from operations (CFO), discretionary expense (DISX), and production costs (PROD).

## Conclusions

The current study aimed to shed new light on how audit quality can limit earnings management in a developing country, Jordan, whose cultural, economic, and institutional context is very different from other countries. To achieve the objective of the current study, this study examined whether attributes of the audit quality (i.e., audit fees and audit firm size) have an influence on cash flows from operations (CFO), discretionary expense (DISX), and production costs (PROD), as proxies of real earnings management, for the industrial and service sector listed on the ASE during the period 2014–2023.

The findings suggest that audit fees and audit firm size significantly affect real earnings management. Furthermore, audit fees have a negative influence on cash flows from operations and discretionary expenses, and a positive effect on production costs. Therefore, the findings of this study present new evidence regarding the impact of the level of audit fees on real earnings management. Concerning audit firm size (B4), the findings showed that the B4 has a negative effect on cash flows from operations and production costs, and a positive on discretionary expenses. These findings support the authors' expectation that audit firm size (B4) affects real earnings management.

The findings of the current study corroborate the agency theory's view of auditing's role in limiting earnings management activities. As a result, this study adds to the ongoing debate and controversy about the role of audit quality in limiting earnings management. Therefore, the findings of the current study can be helpful for regulators and auditing standards-setters in Jordan and other countries with similar institutional settings, as they imply that recent regulatory reforms in Jordan have begun to be effective in limiting earnings management practices.

Finally, the current study adds new empirical evidence to the Jordanian literature. Furthermore, various proxies for audit quality, such as industry specialist auditors or tenure, are hampered in Jordanian enterprises due to a lack of information and varied reporting formats. As a result, just two variables (audit fees and audit firm size) were considered in this investigation. As a result, if such data become more readily available,

the relationship between audit quality and earnings management in Jordan should be explored further in future studies. In addition, other corporate governance structures, such as the board of directors and audit committees, should be considered by future researchers in constraining earnings management in Jordan.

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