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Earnings management and audit report lag: The role of audit risk-Tunisian evidence

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Abstract

Research question: This study investigates and analyzes the influence of earnings management on audit report lag. It also intends to develop a thorough understanding regarding the mediating effect of audit risk on this relation.

Motivation: The outcomes of this paper will help to bridge the knowledge gap related to this issue in developing countries due to the importance of audit delay as it relates to corporate transparency.

Idea: The issue of reporting delay is important as it relates to corporate transparency.

Data: This study is based on a sample consisting of 28 Tunisian companies listed in the Tunis Stock Exchange (TSE) over the periods 2005 to 2010 (pre-2011 revolution) and 2011 to 2017 (post-2011 revolution).

Tools: Consisting of 364 observations for the whole period, Structural Equation Modeling (SEM) approach is applied and three models are developed to examine the direct and the indirect link between earnings management and audit report lag.

Findings: The results show that firms which manage their earnings upward are more likely to accelerate the release of their financial statements. In addition, in the Tunisian context, audit risk mediates the relationship between earnings management and audit report lag.

Contribution: This study extends the existing literature by examining the mediation effect of audit risk on the relationship between earnings management and audit report lag.

Keywords: Audit risk, earnings management, audit report lag, mediation, Tunisian firms.

JEL codes: M41

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1. Introduction

The issue of reporting delayⁱ is important as it relates to corporate transparency. The financial information should be of higher quality before it is delivered to outside stakeholders because users of financial information demand for complete, transparent and timely information. Thus, timely financial reporting is considered as one of the qualities of financial reporting that leads to quality decision making (Mathuva *et al.*, 2019; Habib & Bhuiyan, 2011). Audit delayⁱⁱ is a useful proxy that allows outsiders to gauge audit efficiency. Then, it has also been a variety of interest in many studies. First, thank to its use as a proxy for the occurrence of auditor-client management negotiations and audit efficiency. Second because long audit report lags delay the release of earnings information to the market (Seifzadeh *et al.*, 2021; Durand, 2019). All additional audit procedures and the expanded scope of any audit require auditors to make more audit effort, which increases audit hours. Prior research studies (Habib, 2013; Mitra *et al.*, 2015; Rusmin & Evans, 2017 ; Durand, 2019) have documented that the delay in audit reports can be attributed to auditor-related factors (Lee *et al.*, 2009 ; Habib *et al.*, 2019 ; Escaloni & Mareque, 2021) specific firm characteristics (Habib & Bhuiyan, 2011; Hassan, 2016 ; Rusmin & Evans, 2017; Swanson & Zhang, 2018) and corporate governance (Sultana *et al.*, 2015 ; Ghafran & Yasmin, 2017 ; Nassir Zadeh *et al.*, 2018 ; Baatwah *et al.*, 2019, ; Bhuiyan and D'Costa, 2020 ; Nouraldeen *et al.*, 2021). However, there has been a little examination of the effect of earnings management and audit risk on audit report lag. This study contributes to the growing literature on auditing and earnings management in two ways.

First, our paper investigates the direct effect of discretionary accruals on audit risk. Auditors face a much greater risk when the client manages income upward (Miller *et al.*, 2012; Salehi *et al.*, 2020). Then, as known, few studies have dealt with this issue in emerging countries related to Tunisian market which has different economic, political and social characteristics compared to developed countries.

Second, prior research on auditing, focused on the determinants of audit report lag more than audit risk. Previous studies failed to provide evidence on the mediating role of audit risk on the relationship between earnings management and timing of audit report. We aim to reduce this gap in the literature, by examining whether earnings management increases audit risk or leads to longer audit report delays.

The sample of the study consists in firms listed on the Tunisian Stock Exchange (TSE) over the period 2005-2017. It is a period which incorporates the promulgation of Tunisian Financial Security Law (2005), global financial crisis (2008) and Tunisian revolution (2011). In fact, after the global financial crisis, some researchers analyzed the audit risk and determined that there was an increase of the client's business risk (Xu *et al.*, 2013). Then during the revolution transitional phase in 2011,

Tunisia aimed to enhance economic growth and to establish general strategic governance of the country. Indeed, Tunisia provides an interesting setting for examining the earnings management and audit risk importance on audit report lag for three reasons. First, regulators and policy makers in Tunisia have introduced several reforms which provide particular guidelines and recommendations to enhance financial statements transparency (i.e., The Tunisian Financial Security Law No. 2005-96 of October 18th, 2005, The Best-Governance Practices Handbook, 2012). Second, the Tunisian Accounting Standards offer certain flexibility for managers to select accounting practices. Tunisia is characterized by the dominance of family, government and institutional investors in listed firms. Then, a characteristic of Tunisian company is that the institutional environment and the agency conflict differ from those in Anglo-Saxon countries.

Undoubtedly, in such economic environment, managers have a strong motivation for manipulating the accounting figures in financial statements so as to mask the poor financial performance of their own companies (Salehi *et al.*, 2018). It is anticipatable that the audit risk for Tunisian audit firms is not as similar as the US audit firms. This study is going to clarify the association between ARL and abnormal accruals in an emerging market in which firms have financial problems.

This paper has been divided into six sections: Section 2 provides the theoretical framework. Section 3 presents a literature review and the research hypotheses. Section 4 presents the research design, which takes into account a description of the sample, a definition of the variables, and the analyses used. Section 5 presents the main empirical results. The final section 6 offers the conclusion.

2. Theoretical framework

The study focus on agency theory which has primarily been used to explain why organizations provoke monitoring costs to reduce agency conflicts (Jensen & Meckling, 1976). Agency theory underscores the importance of the board and external auditors to protect shareholder interests from adverse decisions by the management (Fama & Jensen, 1983). It can mislead both shareholders and readers of financial statements by manipulating earnings and by enhancing the significance of the earnings. Additionally, management can mislead shareholder's understanding by revealing confidential information that supports the required financial targets and, hence, increases the rewards for management (Lee & Lue, 2015). An audit provides an independent check of the work of agents and of the information provided by an agent, which helps to maintain confidence and trust. If after a long negotiation, auditor disagree about some critical accounting issues audit risk level will be high (Dabor & Uyagu, 2018). Auditors could take necessary useful measures to tackle these problems and to reduce their exposure to litigation and bad reputation (Heninger, 2001). Hence, it increased the need of extensive substantive testing. Thus,

a mediation analysis assists in a better understanding of whether audit risk complements (complementary hypothesis) the oversight of earnings management on audit lag. In summary, earnings management increases audit risk and auditors' work, subsequently increasing ARL.

3. Literature review and hypotheses development

3.1 Relationship between earnings management and audit report lag

Management that manages earnings may influence audit delay of financial reporting to achieve specific interests. Entrenched managers may cover their opportunistic behavior such as earnings management under the unclear financial notes (Seifzadeh *et al.*, 2021). Management may accelerate the announcement of financial statements to gain some privileges, such as the disposition of holding shares. Conversely, management may choose to accelerate the announcement of financial reporting to defer some bad effects of the earnings. Then the auditor-client management negotiations about the contents of the financial statements and/or the audit report can be a substantive source of audit delay (Salterio, 2012; Habib, 2013).

Our study revisits the relationship between audit reporting lag and earnings management. The literature provides mixed evidence on the nature of this relationship. Some previous studies have supported that audit report lag increase with higher levels of earnings management (Lee *et al.*, 2009; Habib & Huang, 2019). However, others researches argue that audit report lag decrease when earnings management is high (Asthana, 2014; Ezat, 2015; Luypaert *et al.*, 2016; Lambert *et al.*, 2017). Then, Aubert (2009) found that earnings management does not impact the earnings announcement date.

Ezat (2015) found that Egyptian companies are likely to accelerate the release of their financial statements when they perform real earnings management to manage earnings upward to impart a positive impression. Egyptian companies are likely to manage earnings upward, while late reporter Egyptian companies delay the release of their financial statements when they manage earnings downward to defer bad implications from the market. Similarly Asthana (2014) showed that abnormal delays in the audit process are inversely associated with earnings quality.

However, Susak (2020) showed that companies with longer financial reporting delays tend to have higher earnings management. Companies were more inclined to manipulate financial statement items, due to financial difficulties and uncertainty caused by coronavirus. He supported that reporting delays after regulatory changes during pandemic is attributed to earnings management activities.

Taken together, earnings management can influence audit report lag. Managers have incentives to do two conflicting things: to disclose accounting information as soon as possible, and to delay disclosure as long as possible. We predict that firms that manage their earnings upward are more likely to accelerate the release of their financial statements. Hence the following hypothesis is stated:

H1: *Earnings management is negatively associated with audit report lag.*

3.2 Relationship between earnings management and audit risk

Auditing is a process of reducing to a socially acceptable level the information risk to users of financial statements. Auditors perform many tasks designed to reduce audit risk. They carefully gather data and analyze the assertions in financial statements. In addition, they take steps to ensure that they have properly examined financial statements when there is adverse information. These audit procedures are closely aligned with the underlying concept of accruals quality. Then, the increase of managerial ability elevates the quality of internal control, and the stronger internal control could reduce the risk of significant distortion and consequently lower the risk of auditing (Salehi *et al.*, 2020).

Prior studies have highlighted the link between earnings management and audit risk. Fakhfakh & Jarboui (2020), for example, demonstrated that firms with high level of discretionary accruals are characterized by a lower level of audit risk. However, Neffati *et al.* (2011) found that earnings management is positively correlated with risk, whatever type it might be, thus denoting that good governance practices tend to decrease risk. Furthermore, Bedard and Johnstone (2004) discovered that auditors undertake to plan increased effort for clients with earnings manipulation risk. In the same context, Choi *et al.* (2018) reported a positive link between real earnings management and audit fees for firms with financial constraints. For these firms, the real earnings management is attributed to managerial opportunism. It will be riskier for auditors.

Miller *et al.* (2012) found that consideration of incentives, such as management compensation being closely tied to earnings, in concert with reporting history, and the propensity to meet/beat earnings forecasts for public clients, are important steps in assessing financial statement fraud risks regardless of internal controls to prevent fraud. This paper is different from other studies since it examines directly the effect of earnings management on audit risk. We predict that when earnings management in financial statements are suspected and high, audit risk will be high. If auditors view earnings management as affecting risk, and adjust effort in response to risk, we expect a relation between discretionary accruals and audit report lag. It can be postulated that earnings management activities increase audit risk. We will attempt to examine this relationship in the Tunisian context. Based on the above argument; the following hypothesis can be derived:

H2: *Earnings management is positively associated with audit risk.*

3.3 The mediating effect of audit risk

Guidance from standard setters is important for audit effectiveness and efficiency, as inherent risk and control risk are the primary inputs for determining the nature, timing and extent of audit tests. The POB Panel on Audit Effectiveness stated in its 2000 report that “the professional standards [. . .] need strengthening, given the emphasis on inherent risk assessments in determining the nature, extent and timing of audit tests”.

Johnstone (2000) found that auditors’ assessment of audit risk (the risk of issuing a clean opinion on materially misstated financial statements) is positively associated with their assessment of auditor business risk, and that increased audit risk results in more audit work. This supports the link between auditor business risk and audit report lag proposed by Bamber *et al.* (1993), as more audit work should lengthen fieldwork lag. In the same context, Gul (2006), in a study of Malaysia firms, found that auditors perceived greater risk inherent in politically connected firms leads to extra audit work.

Prior literature has provided some consistent support on the positive association between ARL and material weakness in internal control (Dao & Pham, 2014; Blankley *et al.*, 2014; Azami & Salehi, 2017). Indeed, Ineffective internal control increases business risk, exacerbates agency problems, and reduces contracting efficiency (Doyle *et al.*, 2007; Mitra *et al.*, 2013). Bhuiyan and D’Costa (2020) documented that financial reporting quality mediate the positive relationship between audit report lag and audit committee ownership for Australian listed companies. Then, effective internal control can eliminate potential accounting errors or accrual adjustments, both intentional and unintentional, and minimize the chance of financial misstatements (Doyle *et al.*, 2007). Conversely, ineffective internal control has a negative and significant impact on earnings quality. Since the latter increases clients' business risk and, accordingly, audit risk, it is hypothesized that disclosure of internal control weakness will increase ARL (Habib *et al.*, 2019). Auditors may respond to greater engagement risk by appointing some different procedures in order to rectify potential engagement risk (Salehi *et al.*, 2020).

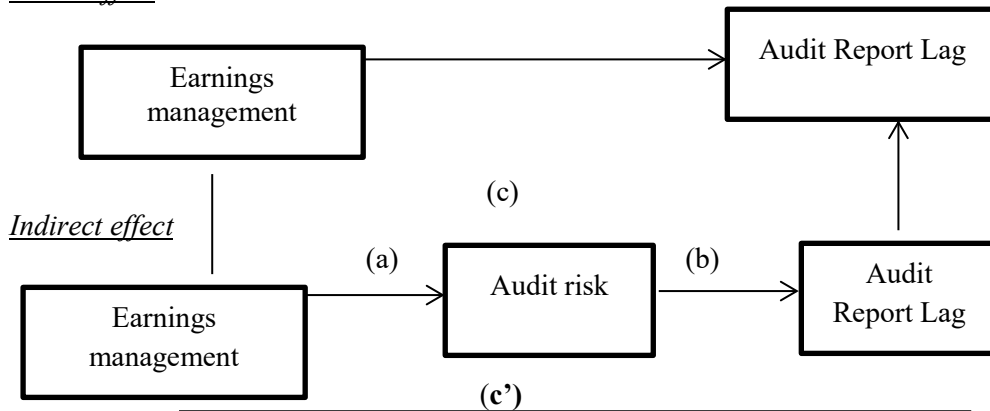
According to Bae & Woo (2015), auditors spend more time and effort in completing audit procedures if earnings management is suspected or audit risk is high. This extra time spent increases audit report lag. The above discussion indicates that earnings management positively affects audit risk, which, in turn, positively affects ARL.

Then, because of limited or no attention to the mediating effect of audit risk on the relationship between audit report lag and earnings management, we will predict the sense of the indirect effect in the Tunisian context. Thus, our study tests the following hypothesis:

H3: *Audit risk mediates the relation between earnings management and audit report lag.*

**Figure 1: The mediating role of audit risk
on the relation between earnings management and ARL**

Direct effect



As shown in Figure 1, path (c) shows the direct effect of the earnings management on audit report lag. On introducing audit risk as a mediator variable, the indirect effect is produced by the path coefficients (a) and (b). The total effect is decomposed into a direct effect (c') and indirect effect (ab).

4. Research design

4.1 Sample data

Our sample comprises listed companies on the Tunis Stock Exchange (TSE) during the period over the period 2005 to 2017. We split the study periods into two: 2005 to 2010 (pre- 2011 revolution) and 2011 to 2017 (post -2011 revolution). These two periods represent the major economic events, for example, the promulgation of Tunisian Financial Security Law (2005), the recent financial crisis (2008) and Tunisian revolution (2011). In fact, during the post crisis period, the practice of earnings management increased (Kumar & Vij, 2017; Bepari *et al.*, 2013; Filip & Raffournier, 2014). Thus, it allowed to increase surveillance of government

authorities and auditors during such periods of economic distress (Turegun, 2019) and after 2011 revolution.

The initial sample comprised 77 companies in 2005, but we eliminated 47 financial companies as they operate in a different, stricter and regulatory environment, and possess different characteristics. These firms are governed by a special Tunisian legislation and specific sector accounting standards to prepare their financial statements. Then, companies with uncomplete data were excluded. The sample size included 28 companies over the period 2005 to 2017. Table I provides more details about the sample composition.

Table 1. Sample selection

	Period (2005-2017)	
	No. of firms	Observations
Initial sample	77	1001
Subtracting : Finance-related firms	47	(611)
Firms with insufficient data	2	(26)
final sample	28	364

We present the distribution of firms across sectors (Table 2). Four sectors, Goods and services, industrials, consumer services and Basic materials represent a large portion of the total number of firms, unlike the remaining sectors.

Table 2. Sample distribution across sectors

Sectors (13 years)	No. of firms	Observations
Consumer services	5	65
Health care	2	26
Telecommunications	2	26
Oil and gas	1	13
Basic materials	4	52
Industrials	7	91
Goods and services	7	91
Total	28	364

4.2 Variables measures

Audit Report Lag: Consistent with Mathuva *et al.* (2019) and Baatwah *et al.* (2019), we define audit report lag as the days' number between the fiscal year-end and audit report signature date (natural logarithm).

Earnings management: The prior literature on earnings management suggests that managers are more likely to manage earnings through accruals, as it is more difficult

to be detected by outsiders (Dechow *et al.*, 1996; Kothari *et al.*, 2005) and they do artificially inflate or deflate earnings by the use of income-increasing or decreasing discretionary accruals, which involves making opportunistic estimates and judgments. Recently, the model of Raman & Shahrur (2008) has been used to estimate discretionary accruals. They proposed additional variables into the previous accrual-based models like the use of return on assets (ROA) integrated by Kothari *et al.*, (2005) to the model of Dechow *et al.*, (1996) and the “book to market” ratio as a measure of business growth prospects. More specifically, accruals have been assessed via the model as follow:

$$TA_{it} / A_{it-1} = \beta_0 (1/A_{it-1}) + \beta_1 ((DREV_{it} - DREC_{it}) / A_{it-1}) + \beta_2 (PPE_{it}/A_{it-1}) + \beta_3 ROA_{it} + \beta_4 BM_{it} + \varepsilon_{it}.$$

Where,

TA_{it} ²= Total accruals of firm i in year t.

A_{it-1} = total assets of firm i in year t-1;

$DREV_{it}$ = change in revenues of firm i in year t;

$DREC_{it}$ = change in net account receivables of firm i in year t;

PPE_{it} = stands for the gross value of property, plant and equipment of firm i in year t;

ROA_{it} = return on assets of firm i in year t;

BM_{it} = book-to-market ratio of firm i in year t.

Total Accruals (TA) = Normal Accruals (NA) + Discretionary Accruals (DA)

Then:

$$DA_{it} / A_{it-1} = TA_{it} / A_{it-1} - [\beta'_0 (1/A_{it-1}) + \beta'_1 ((DREV_{it} - DREC_{it}) / A_{it-1}) + \beta'_2 (PPE_{it}/A_{it-1}) + \beta'_3 ROA_{it} + \beta'_4 BM_{it}]$$

Audit risk index: As the literature review has not identified a single quantitative measure of the audit risk, we refer to Fakhfakh & Jarboui (2020) to measure audit risk as a quantitative variable. Items are factors elaborated from the work ofwork elaborated by Brumfield *et al.* (1983) and from the Commercial Companies' Code, which can be specific for the Tunisian context. Each of the 17 factors has been coded 1 for a high risk level and 0 otherwise (Appendix). ARI has been calculated as the total score of individual firm/expected score of all the items. Thus, higher values have indicated higher audit risk.

Table 3 shows the dependent, independent and control variables ‘measurements.

Table 3. Summary of variables definitions

Variables names		Mesures	Autors
Audit report lag	AUDIT LAG	Number of days between the fiscal year-end and the external auditor's signature date (log)	Mathuva <i>et al.</i> , (2019) Baatwah <i>et al.</i> , (2019)

² TA_{it} = Net income – Net operating cash flows.

Variables names		Mesures	Autors
Discretionary accruals	DA	Absolute value of discretionary accruals estimated via Raman and Shahrur (2008) model.	Raman & Shahrur (2008)
Audit risk index	ARI	Audit risk index consisting of 17 items, which takes a value 1 for a high risk level, and 0 otherwise (value is between 0% and 100%).	Fakhfakh & Jarboui (2020)
Modified Audit opinion	MAO	"1" if the auditor issued a modified audit opinion,"0" otherwise	Salehi <i>et al.</i> , (2018); Salehi <i>et al.</i> ,(2020)
Audit size	BIG	"1" for Big 4 audit firm, ,"0" otherwise	Ezat (2015) ; Chang <i>et al.</i> , (2013) ; Shukeri & Islam (2012).
Auditor industry specialization	SPEC	"1" for specialised auditor (have > 10% market share in an industry, based on its client's total asset) and "0" otherwise	Bhuiyan & D'Costa (2020)
Auditor tenure	TENURE	"1" if the number of years spent as auditor for sample firm > 3 years and "0" otherwise	Dao & Pham (2014) Lee <i>et al.</i> , (2009)
Auditor rotation	ROTATION	"1" if the firm's auditor was rotated in that year, 0 otherwise	Ahmed & Houssain (2010); Caramanis & Lennox (2008)
Firm size	SIZE	Log of the firm's sales	Satyawan & Aisyahurahmami (2020); Shukeri & Islam (2012)
Leverage	LEV	Total debts to total assets	Seifzadeh <i>et al.</i> (2021) ; Nouraldeen <i>et al.</i> , (2021) ; Salehi <i>et al.</i> , (2019); Nassir Zadeh <i>et al.</i> , (2018)
Firm performance	ROE	Net income to shareholder equity	Nouraldeen <i>et al.</i> , (2021) ; Al-Ajmi (2008)

4.3 Research methodology

The mediating role of audit risk is tested using the mediation procedure outlined by Baron and Kenny (1986) and Kenny *et al.* (1998). A mediator variable serves to

clarify the nature of the relationship between the independent and dependent variables. The following conditions must support mediation:

- In the first regression equation, the independent variable is shown to significantly influence the dependent variable
- In the second regression equation, independent variable is shown to significantly influence the mediator. Mediator must significantly influence the dependent variable in third equation. Here, the independent variable and mediator are entered as predictors.
- Complete or full mediation is presented when the independent variable has no longer influenced the dependent variable after the mediator has been controlled and all of the above conditions are met. Partial mediation occurs when the independent variable's influence on the dependent variable is reduced after the mediator is controlled.

We estimate three Models to test the direct and indirect relationship between earnings management and audit report lag:

Model 1: $AUDIT\ LAG_{i,t} = \beta_0 + \beta_1 DA_{i,t} + \beta_2 MAO_{i,t} + \beta_3 BIG_{i,t} + \beta_4 SPEC_{i,t} + \beta_5 TENURE_{i,t} + \beta_6 ROTATION_{i,t} + \beta_7 SIZE_{i,t} + \beta_8 LEV_{i,t} + \beta_9 ROE_{i,t} + \varepsilon_t$

Model 2: $ARI_{i,t} = \beta_0 + \beta_1 DA_{i,t} + \beta_2 MAO_{i,t} + \beta_3 BIG_{i,t} + \beta_4 SPEC_{i,t} + \beta_5 TENURE_{i,t} + \beta_6 ROTATION_{i,t} + \beta_7 SIZE_{i,t} + \beta_8 LEV_{i,t} + \beta_9 ROE_{i,t} + \varepsilon_t$

Model 3: $AUDIT\ LAG_{i,t} = \beta_0 + \beta_1 DA_{i,t} + \beta_2 ARI_{i,t} + \beta_3 MAO_{i,t} + \beta_4 BIG_{i,t} + \beta_5 SPEC_{i,t} + \beta_6 TENURE_{i,t} + \beta_7 ROTATION_{i,t} + \beta_8 SIZE_{i,t} + \beta_9 LEV_{i,t} + \beta_{10} ROE_{i,t} + \varepsilon_t$

Where:

AUDIT LAG = Audit report Lag, DA= discretionary accruals absolute value, ARI=Audit risk index; MAO= Modified Audit opinion; BIG = audit size; SPEC= Auditor industry specialization; TENURE= Auditor tenure; ROTATION=Auditor rotation; SIZE=Firm size; LEV= leverage; ROE= firm performance; β_0 = constant; β_1 ; β_2 ; β_3 ; β_4 ; β_5 ; β_6 ; β_7 ; β_8 ; β_9 ; β_{10} = parameters to be estimated, and ε = model residue.

Structural Equation Modeling (SEM) approach is applied for a panel data. The choice of this approach is due to its flexibility. It can generate an exact and precise estimate during prediction. SEM simplifies testing of mediation hypotheses because it is designed, in part, to test these more complicated mediation models in a single analysis. To test mediation via SEM through the method of bootstrapping is the most powerful method which accurately detects the mediation relationships.

SEM analysis goes through the steps of model specification, data collection, model estimation, model evaluation and also model modification (Zainudin, 2012). All of these estimations in this study use the STATA12 program.

5. Empirical results

5.1 Descriptive statistics

Table 4 provides descriptive statistics for the regression variables. The table reports the descriptive statistics for mean, standard deviation, minimum and maximum.

Table 4. Descriptive statistics

Numeric variables' descriptive statistics				
Variables	Minimum	Maximum	Mean	Std. Deviation
AUDIT LAG	60.00	325.00	128.52	36.08
ARI	0.157	0.684	0.371	0.100
DA	0.001	1.235	0.618	0.196
SIZE	13.708	19.853	17.284	1.295
LEV	0.106	2.643	0.560	0.402
ROE	-2.360	1.087	0.098	0.282
Dichotomous variables' descriptive statistics				
Variables	Frequency		Percentage (%)	
	Variable = 0	Variable = 1	Variable = 0	Variable = 1
MAO	265	99	72.80	27.19
BIG	203	161	55.76	44.23
SPEC	145	219	39.83	60.16
ROTATION	270	94	74.17	25.82
TENURE	204	160	56.04	43.95

All variables are defined in Table 3.

The descriptive statistics results indicate that the AUDIT LAG variable has an average rate of 128.52 days after the closure of the fiscal year, ranging between 60 and 325 days. This implies that most Tunisian firms are committed to the legal period (four months for publication) of releasing the financial statements.

The result indicates that audit risk, as measured by a risk index, has an average rate of 37.1 per cent. Thus, it indicates that companies in our sample do not show a high audit risk, which appears to vary between 0.157 and 0.684. Then, the maximum and minimum score recorded by the discretionary accruals variable are 1.235 and 0.001, respectively. These results lead us to conclude that for the majority of the Tunisian companies' discretionary accruals appear to have a large impact on the level of published results and their reliability. Moreover, Table 4 indicates that Big N audit firms audited about 44.23 per cent of our sample firm-years. Then, about 25.82 per cent of the sample had an auditor rotation (ROTATION) and 43.95 per cent auditor tenure (TENURE). Finally, almost 27.19 per cent of the sampled companies received modified audit reports (MAO).

5.2 Correlation analysis

Table 5. Pearson Correlations analysis

Variables	DA	ARI	MAO	TENURE	SPEC	ROTATION	BIG	SIZE	LEV	ROE	VIF
Panel A : Pre-revolution											
DA	1										1.16
ARI	0.3742*	1									1.83
MAO	0.1725*	0.4072*	1								1.34
TENURE	0.0892	0.1365	-0.1752*	1							1.25
SPEC	-0.0854	-0.2730*	-0.0738	0.1024*	1						1.92
ROTATION	0.0628	0.2384*	0.0451	-0.1687*	-0.0258	1					1.16
BIG	0.0251	0.0248	0.0858	-0.0012	0.1625*	-0.0654	1				1.23
SIZE	0.0548	-0.0325	-0.1326*	0.2423*	0.5933*	-0.0216	0.2965*	1			1.65
LEV	0.1755*	0.3748*	0.1754*	-0.0426	0.0669	0.0467	0.0656	0.1647*	1		1.27
ROE	-0.0212	-0.2402*	0.0242	-0.0226	0.0712	-0.0116	0.3246*	0.1333	-0.0328	1	1.22
Panel B : Post-revolution											
DA	1										1.26
ARI	0.4562**	1									1.89
MAO	0.1523*	0.2071	1								1.27
TENURE	0.1256	0.1285	-0.2320*	1							1.38
SPEC	-0.0694	-0.2920*	-0.0751	0.2013**	1						1.98
ROTATION	0.0728	0.2372*	0.0521	-0.1581*	-0.0253	1					1.33
BIG	0.0181	0.0447	0.1749	-0.1243*	0.1556*	-0.1653	1				1.45
SIZE	0.0553	-0.0149	-0.2515*	0.1587*	0.5941*	-0.0251	0.2725*	1			1.78
LEV	0.1583*	0.2749*	0.1814*	-0.0502	0.0579	0.0415	0.0656	0.2346*	1		1.29
ROE	-0.0321	-0.2513*	0.1252*	-0.0117	0.0624	-0.0154	0.2536*	0.2823	-0.0378	1	1.18

Table 5 shows Pearson correlations between independent variables. All correlation coefficients are less than 0.9. Therefore, the problem of multicollinearity does not appear Tabachnick & Fidell (2007). The table also indicates that the variance inflation factors (VIFs), relevant to the entirety of our independent variables set, prove to be much lower than the 10-cutoff point, as set by Greene (2008). The findings show that the highest VIF value is 1.47. The multicollinearity is not likely to present an issue in the analysis.

5.3 Results of structural equation model

In testing the mediation effect, this study follows the three-step regressions as suggested by Baron and Kenny (1986) and Kenny *et al.* (1998). This regression analysis was performed to examine the direct and indirect effect between earnings management and audit report lag. Using a SEM approach, a panel data and a path modeling were expressed as a series of regression equations. The results are listed in Table 6.

Model 1 seeks to analyse the effect of earnings management on audit report lag: In the first regression, the product term of the independent variable must significantly predict the dependent variable. The results, as shown in Table 6, for panel A indicate that DA is negatively and significantly associated with AUDIT LAG ($\beta = -0.291$, $p < 5$ per cent). On pre-revolution, our findings suggest that firms that manage their earnings upward are more likely to accelerate the release of their financial statements. Thus hypothesis H1 is confirmed. This finding is consistent with prior study (Asthana, 2014; Ezat, 2015; Luypaert *et al.*, 2016; Lambert *et al.*, 2017). However, on post-revolution (panel B), the relation will be positive and significant ($\beta = 0.112$, $p < 1$ per cent). This result is consistent with prior research on developed countries (Lee *et al.*, 2009; Salterio, 2012; Habib, 2013; Habib *et al.*, 2019) that audit delay is longer for companies with higher discretionary accruals. The increase in complexity and uncertainty associated with discretionary accruals leads to an increase in detection risk. Because of the heightened risk, auditors need to put more effort into, and expand the scope of the audit work. This interpretation is inconsistent with Caramanis and Lennox (2008), Aubert (2009) who found a weak or insignificant association between audit hours and the magnitude of negative abnormal accruals. Auditors have relatively weak incentives to prevent income-decreasing earnings management. Hence, the first condition for the mediation was confirmed and H1 was supported on the pre-revolution period.

Table 6. Results of regression analysis for mediation

Variables	Panel A: Pre-revolution			Panel B : Post-revolution		
	AUDIT LAG	ARI	AUDIT LAG	AUDIT LAG	ARI	AUDIT LAG
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
DA	-0.291** (0.001)	0.164*** (0.000)	-0.411** (0.004)	0.112*** (0.000)	0.231*** (0.000)	-0.356* (0.080)
ARI	-----	-----	0.542** (0.018)	-----	-----	0.325* (0.052)
BIG	-0.053 (0.101)	0.016 (0.138)	-0.065 (0.127)	-0.038 (0.201)	0.125 (0.325)	0.087 (0.231)
MAO	0.157*** (0.000)	0.063*** (0.000)	0.121** (0.011)	0.012*** (0.000)	0.089*** (0.000)	0.125* (0.091)
SPEC	0.008 (0.813)	- (0.000)	0.037 (0.295)	0.009 (0.714)	-0.092*** (0.000)	0.056 (0.298)
TENURE	-0.025 (0.306)	0.039*** (0.000)	-0.048 (0.289)	-0.059 (0.432)	0.037*** (0.000)	-0.025 (0.365)
ROTATION	-0.058** (0.014)	0.057*** (0.000)	-0.087*** (0.040)	-0.074** (0.016)	0.087*** (0.000)	- 0.126*** (0.048)
SIZE	-0.062*** (0.000)	0.015** (0.018)	-0.076*** (0.000)	-0.462*** (0.000)	0.112** (0.019)	- 0.078*** (0.000)
LEV	0.192*** (0.000)	0.078*** (0.000)	0.146*** (0.003)	0.182*** (0.000)	0.045*** (0.000)	0.189*** (0.002)
ROE	-0.026 (0.748)	- 0.086*** (0.000)	0.115 (0.127)	-0.056 (0.587)	-0.088*** (0.000)	0.117 (0.136)
N= 364 R ² =0.3583***	N= 364 Log likelihood = -663.5867		N= 364 R ² = 0.4251***		N= 364 Log likelihood = -671.3267	

Notes: ARI=Audit risk index; AUDIT LAG= audit report lag. A **model (1)** shows the direct effect of earnings management on audit report lag. The dependent variable is AUDIT LAG. **Model (2)** shows the effect of earnings management on audit risk. The dependent variable is ARI. **Model (3)** analyzes the mediating effect of audit risk on the relationship between earnings management and audit report lag. The dependent variable is AUDIT LAG.

All variables are defined in Table 2. t-statistic values are in the parentheses.

*, **, ***Significant at the 10, 5 and 1 percent levels, respectively

Model 2 seeks to analyse the effect of earnings management on audit risk: In the second regression, the product term of the independent variable must significantly predict the mediator variable.

With respect to model 2, Table 6 shows, that earnings management affects positively and significantly ($\beta = 0.164$, $p < 1$ per cent), ($\beta = 0.231$, $p < 1$ per cent) ARI, for panel A and panel B respectively. This result indicates that firms with high discretionary accruals are associated with higher audit risk. This finding is consistent with prior

study (Bedard & Johnstone, 2004; Miller *et al.*, 2012) heightened discretionary accruals is associated with an increase in planned audit effort, with increasing audit lag.

In line with our results, Miller *et al.* (2012) found that auditors should take into account all of their knowledge about a client and its control environment is appropriate, recommended and consistent with the standards in a continuing audit engagement. Consideration of incentives such as earnings management, is an important step in assessing financial statement fraud risks regardless of internal controls to prevent fraud (Choi *et al.*, 2018). In this regard, Salehi *et al.* (2020) propose similar finding. Using sample of companies listed on the Tehran Stock Exchange, they found that increase of managerial ability elevates the quality of internal control, and the stronger internal control could reduce the risk of significant distortion and consequently lower the risk of auditing.

The same finding on panel A and panel B suggest that 2011 Tunisian revolution did not allow to minimize audit risk despite that the transitional government introduced new guidelines for the corporate governance.

Hence, the second condition of the mediation was confirmed and H2 was supported. Model 3 seeks to analyse the mediation effect of audit risk on the relationship between earnings management and audit report lag: In this model, the dependent variable is AUDIT LAG. This step allows us to test that mediator variable must significantly predicts the dependent variable. The results, as shown in Table 6, indicate that there is a significant and positive correlation between ARI and audit report lag in model 3 ($\beta = 0.411$, $p < 5$ per cent), ($\beta = 0.080$, $p < 10$ per cent) for panel A and panel B respectively. The findings is consistent with previous studies (Johnstone, 2000; Gul, 2006) who have demonstrated that there is a positive relationship between auditors' assessment of audit risk and long audit fieldwork lag. This finding denotes well that if the audit risk increases, audit delay will be long.

Partial mediation is revealed when the effect of the independent variable on the dependent variable is less in the third regression than in the first one. Perfect mediation is revealed if the independent variable has no effect when the mediator is controlled.

Model 3 shows that the coefficient on DA is significant ($\beta = -0.542$, $\beta = -0.325$, $p < 5$ per cent) for panel A and panel B respectively, but less significant than model 1. Thus, a partial mediation was found according to Baron and Kenny (1986). H3 was supported, suggesting that audit risk mediates the relation between earnings management audit report lag.

The results for the control variables in the full-sample analysis are generally consistent with prior studies. The result is consistent with that of Shukeri and Islam

(2012); Khoufi & Khoufi (2018). Therefore, the firm size coefficient is significant at the 1 per cent level with a negative sign. It appears that prompt audit reporting is associated with a large firm. This might be because of the large resources that the company has and able to hire personnel to properly control the internal functions. As shown in Table 6, auditors spend more time for highly leveraged firms (LEV). This result is consistent with prior study (Ezat, 2015; Cho *et al.*, 2015 ; Nouraldeen *et al.*, 2021). This indicates that auditors paid more attention to highly leveraged firms because their financial statements are more likely to be strictly monitored by creditors.

6. Conclusion

In this study, we investigate the mediating effect of audit risk on the relation between earnings management and audit report lag in the Tunisian context for the period ranging from 2005 to 2017. Findings are consistent with prior study (Ezat, 2015; Luypaert *et al.*, 2016; Lambert *et al.*, 2017) that firms that manage their earnings upward are more likely to accelerate the release of their financial statements. Moreover, results show that the influence of earnings management on audit report lag is more significant after than before the 2011 revolution. This finding can be explained by the impact of the Tunisian Revolution on the discretionary behavior of Tunisian firms. The findings highlight, through a composite measure, that earnings management is an important step towards assessing financial statement fraud risks. Then, audit risk partially mediates the relationship between earnings management and audit report lag.

This paper is one of few studies which have examined the association between earnings management and audit report lag in an emerging market. The study makes a meaningful contribution to the financial reporting literature by investigating the mediation role of audit risk on the relationship between earnings management and ARL. Then, the main contribution of our study was to systematize features that could be encompassed in each component of the audit risk in the perception of Tunisian auditors.

Considering the findings, the results have considerable implications for managers, investors, stakeholders, analyst, regulators and auditors. For managers, specifically board of directors, it is better to employ high-ability managers, since they would adopt efficient and effective internal controls, as a consequence, it may lead to reduction in potential risks of misreporting and earning management. Findings may be of interest to investors and stakeholders aware of this fact that minimize auditor risk will be effective in reducing the manipulation of financial reporting and agency problems in emerging markets, like Tunisia, where the controlling shareholders (e.g. families, individuals, institutions and government) are considered as the backbone of the economy. For Tunisian regulators, this study can help to create audit report

requirements and enforce the rules to provide effective monitoring of earnings management. This would help to improve the Tunisian economic potential in periods of instability such as “revolutionary” transitional phase. Then, researchers can investigate this issue on other emerging markets.

However, similar to any research, the present study has some limits. First, the study is a preliminary investigation on a small sample of firms; therefore, it deserves further investigation. Second, our study regards the fact that we included items in the measurement of audit risk index which is a vulnerable subjective judgment. Future research should be continued to examine the impact of various auditor characteristics on ARL. For example, little research can be conducted on the influence of audit partner characteristics, such as partner tenure and specialization, on audit report lag.

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Appendix

Factors	Level of risk	
	Lower	Higher
The economy in which the company operates	Healthy	Depresses; stagnant
The industry in which the company operates	Established; stable; relatively uninfluenced by external conditions	Relatively new; unstable; greatly influenced by external conditions.
The location of the company	Large city	Small community
The structure of the company	Absence affiliates	existence affiliates
The company's control environment, including the possibility of management override.	<ul style="list-style-type: none"> Strong administrative controls; control-conscious management; low possibility of management override. Internal audit effectiveness 	<ul style="list-style-type: none"> Weak administrative controls; management isn't control conscious; high possibility of management override. Internal audit failure
The company's previous audit history.	Unqualified opinions for previous audits; no prior disagreements with auditors; few adjustments.	No prior audit history; qualified or adverse opinions for previous audits; prior disagreements with auditors; numerous adjustments.

Factors	Level of risk	
	Lower	Higher
The company's financial position and operating performance.	<ul style="list-style-type: none"> • Strong performance • Low debt level 	<ul style="list-style-type: none"> • Weak performance • High debt level
The business reputation of the company's management and principal owners.	<ul style="list-style-type: none"> • Good (Low probability of bankruptcy, Altman Z-score) 	<ul style="list-style-type: none"> • Poor (High probability of bankruptcy, Altman Z-score)
Company ownership: <ul style="list-style-type: none"> • Institutional ownership • Ownership concentration 	<ul style="list-style-type: none"> • Existence • capital percentage held by the largest shareholder is less than 20% 	<ul style="list-style-type: none"> • Inexistence • capital percentage held by the largest shareholder is more than 20%
The relevant characteristics of the company's management and principal owners. <ul style="list-style-type: none"> • Independance • Separation between the CEO and the chairman functions • composition/size 	<ul style="list-style-type: none"> • More than 50% independent members • Separation of both functions • Majority of members 	<ul style="list-style-type: none"> • Less than 50% independent members • Accumulation of both functions • Minority of members
<ul style="list-style-type: none"> • Conflicts of interest, regulatory problems • auditor independence problems. • Co-commissary problems 	Insignificant	Significant.
Client understanding of the auditor's responsibilities (auditor change).	Clear.	Unclear.

ⁱ The extant literature search included many words: audit timeliness, audit report lag, audit report delay, audit reporting lag, audit delay, audit efficiency and audit effort.

ⁱⁱ Audit report lag is defined as the number of days from a company's fiscal year-end to the date of its auditor's report.