

# EARNINGS MANAGEMENT DETERMINANTS: A STUDY OF EGYPTIAN LISTED FIRM CHARACTERISTICS POST THE EGYPTIAN REVOLUTION

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## Abstract

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This research aims to look at how firm characteristics and audit quality can affect the earning management practices in the Egyptian context, within the period of 2011–2019. This period was after the Egyptian revolution and has not been well investigated in Egypt, especially after the new release of corporate governance rules for listing firms. A sample of 157 non-financial listed companies in the Egyptian stock exchange is selected for achieving the research objective through analysing their financial reports. The panel least squares, using the fixed-effect model, is used to test the hypotheses and investigate the relationship between discretionary accruals and firm characteristics, where the dependent variable is the earnings management, measured by the discretionary accruals and the independent variables are the firm characteristics (size, financial leverage, age, survival and audit quality). The results illustrate that the relationship between a firm's financial leverage and earnings management is positive. This study may help the firms to control their financial leverage for avoiding any earnings management practice. The stakeholders should notice such significant firm characteristics in making their own decisions, especially after the COVID-19 pandemic crisis, which may expectedly increase the firm financial leverage, and in turn, some earning management practices can be used intentionally to hide the bad firm performance.

**Keywords:** Earnings Management, Egyptian Revolution, Financial Reporting Quality, Audit Quality, Information Asymmetry, Financial Leverage, Firm Characteristics, Egyptian Stock Exchange, Panel Least Squares Method

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## 1. INTRODUCTION

Enron, WorldCom, and Xerox are amongst those in Europe and the USA who were involved in corporate accounting misconducts during the 21st century. The core of these scandals was mainly the phenomenon of earnings management (Goncharov, 2005). The accounting and audit industry has been criticized both globally and in the USA because this phenomenon resulted in the collapse of these firms (Alareeni & Branson, 2013). Kim and Yoon (2009) argue that company managers' main aims are to maintain the running of the business by securing its finances, so external parties can gain the benefits they need from the business. Uwuigbe, Uwuigbe, and Bernard (2015) explain that managers create a positive image for the company they work for by exercising earnings management (Giosi, Caiffa, Pera, & Ferro, 2017; Alsharairi & Iqtait, 2017; Kolsi & Attayah, 2017). Consequently, stakeholders doubt the credibility and reliability of the financial reports. Due to this, investors and stakeholders value financial reporting that of the highest quality because it reduces information asymmetry, as Jensen and Meckling (1976) mention. Additionally, quality financial reporting gives a company's users more trust in them so that they can take effective business decisions, and it also gives users a positive reflection of the company (Wawero & Riro, 2013). Watts and Zimmerman (1978) also add that high-quality financial reporting enables a company to be more transparent, as well as contributing to more reliable contracts. In this context, Shuli (2011) confirms that earnings management does decrease an investor's trust and confidence in a company because its financial reporting is not honest.

Focusing on the Egyptian context, there tend to be many limitations in comparison to developed markets. Hassan (2008) mentions that Egyptian firms follow the Egyptian accounting standards (EAS) in their financial reporting processes, which is mainly based on IFRS, with a few exceptions. Kamel and Elbanna (2010) point out that following IFRS does not guarantee law enforcement, especially when earnings management practices are well accepted among Egyptian firms. Additionally, in this regard, Farag (2009) refers to the low level of conformity with financial accounting and taxation Egyptian standards. Moreover, Khalil (2010) states that the Egyptian Corporate Governance Code is unbinding, which is a major limitation, specifically in an environment where law enforcement is weak. Consequently, strong managers may be encouraged to manipulate earnings because the accounting policies and practices allow too much flexibility (Garrouh, Hadriche, & Omri, 2014; Houcine & Halaoua, 2017).

Moreover, referring to the impact of the Egyptian revolution on listed firms' earnings management, Abdallah (2018) argues that the Egyptian revolution financial crisis, initiated in 2011, adversely impacted reported earnings and the Egyptian Exchange (EGX) performance, shook investor confidence and caused many listed EGX firms to fail.

Since the Egyptian revolution and the updated Egyptian Corporate Governance Code, there have been few literature studies on how a company's characteristics can impact earning management practices. However, numerous studies examining

the relationship of corporate governance practices on earnings management in the Egyptian capital market and among developing markets, in general, found that there is a significant relationship between both (Boghdady, 2019; Abdou, Ellelly, Elamer, Hussainey, & Yazdifar, 2020).

Accordingly, the authors find it of great interest to investigate how firm characteristics did impact a firm's earning management during the Egyptian revolution, 2011, and the issuance of the most recent corporate governance code (CG code). The effectiveness of this code will also be tested during such a critical period and thus, recommendations can be made for its future amendment to be more eligible in facing any other crisis such as the global COVID-19 pandemic crisis of 2019.

Thus, this study's main contribution to the limited research on earnings management in emerging markets is to investigate the relationship between firm characteristics and earnings management in a developing country, Egypt. In addition, it will focus on five main types of firm characteristics: firm size, firm financial leverage, firm age, firm's audit quality, and firm survival for the post-revolution period 2011-2019.

Accordingly, the findings of the paper will provide regulators and policymakers with a clear picture of problem areas related to earnings management within the CG code, and it will help them to enhance any future CG code updates to decrease such practices. The research will also be useful for all stakeholders, including corporate managers, banks, shareholders, government, and creditors in making their own decisions, especially after the COVID-19 pandemic crisis, which may expectedly increase a firm's financial leverage. Thus, earning management practices may increase in order to boost a company's financial records and image.

This paper starts with a literature review and hypothesis development in Section 2. Section 3 outlines the research methodology. Section 4 discusses the results, and Section 5 concludes the paper and offers recommendations for further research.

## 2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Many previous literature studies investigated the determinants of earnings management (EM) (Wijaya, Pirzada, & Fanady, 2020; Ado, Rashid, Mustapha, & Ademola, 2020; Nyoka, 2018). In developed countries within Europe and in the USA, studies have investigated the effect of firm-specific characteristics on EM, yet in these countries, investors and financial statement users are generally covered by the legal system where the level of transparency in a company is expected to be very high (Pincus & Rajgopal, 2002; Anagnostopoulou & Tsekrekos, 2017; Anagnostopoulou, Gounopoulos, Malikov, & Pham, 2021) While research has covered developed countries, limited research has been done with regards to the impact of firm characteristics on earnings management in emerging markets (Mostafa 2018).

In Egypt, despite the intensive efforts that have been exerted by the Egyptian Government towards the corporate governance reform, the Egyptian

capital market still faces many limitations. Egyptian firms are operating under an unbinding corporate governance code, and this enables companies to practice earnings management. In other words, organizations can manipulate their finances to look better to stakeholders because the Egyptian accounting standards are overly flexible to allow such manipulation. Metawee (2013) and Abdul Rahman and Ali (2006) state that earnings management falls in line with the GAAP (Generally Accepted Accounting Principles), which means it is not classed as an act of fraud. However, even though it is not classed as fraud, earnings management still leads stakeholders and investors to be misled about the image and information of the company.

Focusing on Egypt, and despite the Egyptian Corporate Governance Code not being legally binding, several studies investigated the impact of corporate governance mechanisms (as a determinant) on earnings management. Findings indicate that a significant relationship exists between different corporate governance mechanisms and earnings management (Aleqab & Ighnaim, 2021; Ebaid, 2013; Hassan, Soliman, Ragab, & Rageb, 2020). In 2011, after the Egyptian revolution, the Egyptian Government attempted to enhance corporate governance by introducing a new code of corporate governance, seeking to keep up to date with the best practices at the international and regional levels (Cigna, Djuric, & Sigheartau, 2017). In this context, Egyptian literature does not attempt to study the impact of the most recent Egyptian Corporate Governance Code, issued in 2011, on earnings management. The most up-to-date study by Bassiouny (2016) examined the relationship between firm characteristics (as a determinant) and earnings management. However, the researcher used data for the period 2007–2011, which is before the issuance of the most recent Egyptian Corporate Governance Code and before the revolution.

Due to the lack of research on earnings management in emerging companies, this study aims to investigate organizations in Egypt, a developing country, and how a firm's five main characteristics, firm size, age, financial leverage, audit quality, and company survival, impact earning management practices. Furthermore, this study will focus specifically on the years 2011–2019 (post-Egyptian revolution).

### 2.1. The size of a company on earnings management

Generally, the determinants of earning management and their impacts are still a controversial topic (Trang & Mai, 2021). Accordingly, literature studies argue about the impact of firm size on the quality of reported information. Ball and Foster (1982), as well as Meek, Roa, and Skousen (2007), state that, as per the asymmetry theory, big companies have stronger governance and controls; therefore, they have a lower existence of asymmetry. Thus, this leads to a decrease in earnings management practice. In contrast, Jensen and Meckling (1976) stated that, as per the agency theory, large-sized organizations have larger agency costs, which means an increase in opportunistic practices. In addition, Doyle, Ge, and McVay (2007), Ashbaugh-Skaife, Collins, and Kinney (2007) mentioned that small companies are more prone to weaker internal control, thus, they are more likely to manipulate their reported earnings.

Watts and Zimmerman (1986) predicted that firm size is *negatively* associated with earnings quality because larger firms would make income-decreasing accounting method choices in response to greater political/regulatory scrutiny. More recent studies (Wuryani, 2012, Behrghani and Pajoochi, 2013, Swastika, 2013, in Indonesia; Hassan and Farouk, 2014, Yasser and Soliman, 2018, in Egypt; Khanh and Khuong, 2018, Matonti, Iuliano, Palazzi, and Tucker, 2021, in Italy) found that larger organizations have tighter internal controls than smaller firms, which assist in decreasing financial manipulation. Furthermore, large companies tend to be audited by one of the four famous and more reputable auditing firms, which means that they are less likely to be involved in financial manipulation and their reliability will increase. Thus, the company is far less likely to be involved in earnings management.

On the other side, the size of the company has a positive relationship with earnings management because large companies face more pressures to meet the analysts' expectations (Ali, Noor, Khurshid, & Mahmood, 2015; Uwuigbe et al., 2015; Asim & Ismail, 2019; Nalarreason, Sutrisno, & Mardiaty, 2019; Trang & Mai, 2021). Additionally, large-sized firms have greater bargaining power with auditors, which can enable them to negotiate with auditors.

Another group of studies concludes there is no relationship between firm size and earnings management practices. Burgstahler and Dichev (1997), Bassiouny (2016), El Deeb and Ramadan (2020) in Egypt, and Alareeni (2018) in GCC (Gulf Cooperation Council), found that whether a company is big or small, earnings management can still take place because all businesses will do anything to avoid a loss or decline in profits. To conclude, a body of the accounting literature has investigated the relationship between firm size characteristics and earnings management practices, and the results, as shown above, are inconsistent as documented by Siregar and Utama (2008). Based on such literature review discussion, the following first hypothesis is formulated to test the effect of firm size on EM practices in Egypt as follows:

*H1: There is a significant relationship between firm size and earnings management.*

### 2.2. Firm age and earnings management

Prior research, such as Akhtaruddin (2005) and Gul, Fung, and Jaggi (2009), suggest that older companies are more established in the market, and as they have worked hard to build up their reputation, they are more eager to protect it. Furthermore, they have more experience in the business and are more aware of the policies and procedures that govern their company. As a result, older organizations have fewer earnings management. Adding to this opinion, Alsaeed (2006) states that older firms have higher quality financial reporting processes because of their long experience in the market, and Akhtaruddin (2005) states that older companies are less likely to involve themselves in earnings management practices.

Additionally, DeAngelo (1981) argues that companies that have been established for longer are more likely to be audited by bigger and more reputable audit firms, who themselves want to

protect their own image and reliability, thus are driven to report any financial misstatements. Moreover, Chalaki, Didar, and Riahinezhad (2012) mention that governmental agencies monitor older organizations more than new ones and as a result, the companies are less likely to manipulate financial reports.

On the other hand, other studies, such as Ideh, Jeroh, and Ebiaghan (2021) and Khanh and Khuong (2018), contradict the above opinions. They state that in the Nigerian context, there is a positive relationship between firm age and earnings management. In addition, Marchellina and Firnanti (2021), as well as Teymouri and Sadeghi (2020), in Tehran, find no significant relationship between firm age and earnings management interpreting that companies that are just starting to operate are not recognized to be more aggressive in performing earnings management in order to avoid earnings losses.

To conclude, findings seem to contradict the relationship between firm age and earnings management. Thus, the second tested hypothesis is:

*H2: There is a significant relationship between firm age and earnings management.*

### **2.3. Firm's financial leverage and earnings management**

Bowen, DuCharme, and Shores (1995) stated that for decreasing the debt covenant costs, managers may try to make their financial reports seem more attractive so that the company has more creditworthiness. As a result, they will adopt specific accounting methods that give them more room to do this, proving the relationship between the debt level and the choice of accounting policy. Additionally, Waweru and Riro (2013) mention that debt covenant amounts are devised on what has been reported in the accounting numbers, so in order to hide debt, it will impose extra costs on the organization. Consequently, companies may practice earnings management to reduce the image of any financial distress (Easton, Eddey, & Trevor, 1993).

The financial distress theory by Fung and Goodwin (2013) examines organizations in financial bother. The authors state that in order to persuade their creditors that their financial bother is a temporary phase, managers are more likely to manipulate earnings to seem more reliable. Furthermore, as per the information asymmetry theory (Beck, Frost, & Jones, 2013), larger loans do not have as much asymmetry because the fixed costs of finding out information about a borrower is not an obstacle. The theory suggests that there is a higher asymmetry of information for small loans, therefore, loan size is positively correlated with its borrower's size. Beatty and Weber (2003) state that when an organization is in debt, managers select certain accounting policies that increase its revenue, so they can abide by any debt covenants imposed on them by banks and bondholders. This way, they can prevent any renegotiation costs. Some studies, such as Yasser and Soliman (2018) in Egypt, Dang et al. (2018), Asim and Ismail (2019) in Pakistan, Nalarreason et al. (2019) in Indonesia, Teymouri and Sadeghi (2020) in Tehran, and Matonti et al. (2021) in Italy, claim that companies that have higher debt financing practice earnings management, thus, there is a significantly positive relationship.

Based on the previous studies (Farouk & Hassan, 2014; Soliman & Ragab, 2014; Shirzad & Haghghi, 2015; Ado et al., 2020; Amake & Akogo, 2021), these authors state that organizations that are high in leverage, in fact, decrease the ability for a manager to manipulate earnings and increase accruals. This negative relationship between a company's financial leverage and earnings management is based on two reasons. Firstly, managers will not have availability to cash because if the company is in leverage, they are bound to debt repayment. Secondly, Jensen (1986) illustrates that a company is bound to a lender-induced spending restriction if they employ debt financing.

On the contrary, Ardison, Martinez, and Galdi (2013), Uwuigbe et al. (2015), Jang and Kim (2017) in Korea, Alareeni (2018) in GCC countries, except for Oman, Ghani, Azemi, and Puspitasari (2019) in Malaysia, find no significant relationship between financial leverage and earnings management.

Accordingly, the findings are inconclusive as to the impact of firm financial leverage on earnings management. In this context, the third hypothesis is as follows:

*H3: There is a significant relationship between firm financial leverage and earnings management.*

### **2.4. Firm survival and earnings management**

Many previous studies have investigated the relationship between firm survival and earnings management (Nwaobia, Kwarbai, and Fregene, 2019, in Nigeria, Anagnostopoulou et al., 2021, in the UK). Others used it as a control variable, such as Bassiouny (2016) in the Egyptian context, Hassan and Ahmed (2012) and Nwaobia et al. (2019) in Nigeria, find that the firm survival has a negative significant impact on earnings management. Accordingly, the impact of firm survival on earnings management is studied in this paper. Consequently, the fourth hypothesis is formulated as follows:

*H4: There is a significant relationship between firms' survival and earnings management.*

### **2.5. Audit quality and earnings management**

Alsughayer (2021) points that as time passes there tends to be a growing literature on audit quality mainly due to its importance. Literature studies used many proxies for audit quality, however, in this paper, audit quality is measured in terms of whether the listed company is measured by one of the big four companies or not. In this regard, DeAngelo (1981) states that a high-quality audit is more likely to detect and report errors and irregularities, thus serving as an effective barrier to earnings manipulations.

Watts and Zimmerman (1983) stress that auditing reduces agency costs and asymmetries between managers and shareholders and acts as a monitoring method used by firms. Rusmin (2010) and Chung et al. (2005) confirm that the four big auditing firms aim to maintain a high audit quality due to having a numerous number of clients, besides having better resources such as technology, training programs, and experience. Their main concern is protecting their reputation, which might be lost if a misstatement or manipulation is not reported.

Many studies that have investigated the impact of audit quality and earnings management have been highly debatable. Swastika (2013) in Indonesia, Soliman and Ragab (2014), Susanto, Pradipta, and Djashan (2017), and El Deeb and Ramadan (2020) in Egypt, find a negative significant relationship with earnings management because audit quality helps to minimize earnings management problems arising from free cash flow. Other prior research has shown a positive association between audit quality and earnings management (Alzoubi, 2018; Ghosh & Moon, 2005; Gul et al., 2009; Rusmin, 2010).

On the other hand, studies such as Yasar (2013) and Shams (2021) find that with regard to discretionary accruals, the quality of an audit has no effect. Therefore, it does not matter which audit firm audits a company. In other words, whether it is one of the four big auditing firms or not, it makes no difference in terms of decreasing earnings management. Piot and Janin (2007) and Alhadab and Clacher (2018) also agree with this finding. Consequently, the fifth hypothesis is:

*H5: There is a significant relationship between firms' audit quality and earnings management.*

### 3. RESEARCH METHODOLOGY

#### 3.1. The sample

The sample used in the study is the non-financial companies listed on the Egyptian stock exchange for the period from 2011 until 2019. It is selected using the purposive (or selective) sampling technique. It is a non-probability sample, which the researchers have selected, based on the characteristics of the population for achieving the objective of the study (Sekaran & Bougie, 2013). There was a total of 260 listed companies in February 2020. After excluding the banks and financial institutions that have different corporate governance code and regulations, and the companies that do not have sufficient financial reports on December 31, the total final selected companies, under the study, reaches 157 companies, from different industries, during an eight-year period (2011–2019). Thus, the number of observations is 1,395 firm-year observations (157 firms × 9 years). Table 1 presents the industry breakdown of the sample. This table shows that the industrial economic sector is studied, as it plays a vital role in the Egyptian economy.

**Table 1.** Industry breakdown

<i>Industry type</i>	<i>No. of companies</i>	<i>% of the sample</i>
Accommodation and food services	11	7%
Administrative, waste management and remediation services	1	0.6%
Agriculture, fishing and hunting	8	5%
Construction	17	10.8%
Educational services	2	1.3%
Health care and social assistance	2	1.3%
Information	5	3%
Manufacturing	80	51%
Mining, quarrying, and oil and gas extraction	6	4%
Real estate and rental and leasing	16	10%
Retail trade	2	1.3%
Transportation and warehousing	4	2.5%
Utilities	1	0.6%
Whole sale trade	2	1.3%
<i>Total selected companies</i>	<i>157</i>	

#### 3.2. Measurement of the key variables

The data needed for measuring the key variables were obtained from the Thomson Reuters Eikon database. Table 2 presents the measurement tools used for the dependent and independent variables. The panel data analysis is the statistical method is used here for analyzing two-dimensional (typically cross-sectional and longitudinal) data, as it assumes that firms are heterogeneous. Panel data models are either fixed-effects or random-effects models. The panel least squares, using the fixed-effect

model, is used to test the research hypotheses. The advantages of using panel data are that it gives a lot of information, has more variability and less collinearity than other variables. Therefore, its results are more trustworthy and unbiased (Baltagi, 2011). The Jarque-Bera test is used for testing the normality of the research variables; the group unit root is also used for testing stationary in a time series, in addition to the Engle-Granger test for cointegration and the correlated random effect Hausman test.

**Table 2.** Measurement of the variables

<i>Variables</i>	<i>Measuring tool</i>
	<i>Dependent variable</i>
Discretionary accruals	Modified Jones model
	<i>Independent variables</i>
Firm size ( <i>F SIZE</i> )	Natural log of total assets
Firm financial leverage ( <i>FLEV</i> )	Total debt ratio (Total debt/Total equity)
Firm age ( <i>FAGE</i> )	Log of the number of years since the firm's foundation
Audit quality ( <i>AUQUL</i> )	Dummy variable, 1 if the auditor is a Big 4 firm and 0 otherwise
Survival ( <i>FSUR</i> )	Dummy variable, 1 if a firm is active in a year and 0 otherwise

### 3.2.1. Measurement of the dependent variable

Earnings management (*EM*) is used as a dependent variable in this study. As per most of the recent earnings management literature, this study uses discretionary accruals (*DAs*) as a proxy for earnings management. Most researchers prefer to use the cash flow statement approach as it is more useful than the balance sheet approach (Shah, Butt, & Hasan, 2009; Soliman & Ragab, 2014). Total accruals are calculated using the balance sheet approach as the change in current assets (excluding cash items) minus the change in current liabilities (excluding the current portion of long-term debt) minus depreciation. The cash-flow-statement approach, on the other hand, calculates total accruals as the difference between earnings before extraordinary items and discontinued operations and operating cash flows. According to Hribar and Collins (2002), the cash flow statement approach is more reliable. They discovered that studies that use a balance sheet approach to test for earnings management may be contaminated by measurement error in accruals estimates. If the partitioning variable used to indicate the presence of earnings management is correlated with the occurrence of mergers and acquisitions or discontinued operations, tests will be biased, and researchers will be led to believe that earnings management occurs when it does not. Additional findings reveal that errors in estimating balance sheet accruals can skew returns regressions with discretionary and non-discretionary accruals as explanatory factors. Although the modified Jones model considers the possibility of manipulating accounts receivable during the event period, it ignores this fact during the estimation period, resulting in calculation inconsistency (El Diri, 2018). This implies that using cash sales in both periods, rather than just the event period, is a better approach and can alleviate the simultaneity problem caused by having accounts receivable on both sides of the equation (Ronen & Yaari, 2008). Consequently, this study will use the cash flow statement approach

to calculate the total accruals. Accordingly, the total accruals can be calculated as follows:

$$TA_t = NI_t - CFO_t \quad (1)$$

where,  $TA_t$ : total accruals in year  $t$ ;  $NI_t$ : net income in year  $t$ ;  $CFO_t$ : cash flows from operating activities in year  $t$ .

Total accruals are not the proxy for earnings management; on the contrary, earnings management is the part of the accruals that managers can have control over and are able to practice manipulations. According to this, the total accruals are divided into two parts, which are the discretionary accruals and the non-discretionary accruals. So, to calculate the discretionary accruals, non-discretionary accruals are subtracted from total accruals (Shah et al., 2009).

$$TA = DA + NDA \quad (2)$$

where:

$TA$ : total accruals;

$DA$ : discretionary accruals;

$NDA$ : non-discretionary accruals.

Many models and methods exist to calculate the discretionary accruals, the Healy 1985 model, the DeAngelo 1986 model, Jones 1991 model and finally the modified cross sectional Jones 1995 model (Callao, Jarne, & Wróblewski, 2017). Previous studies reported that the modified Jones 1995 model is the best measurement of  $DA$  and the most common model in estimating the  $DA$  (Dechow, Sloan, & Sweeney, 1995; Francis, Maydew, & Sparks, 1999; Saleh & Ahmed, 2005; Alareeni & Branson, 2013; Uwuigbe, Fagbemi, & Anusiem, 2012; Atieh & Hussain, 2012; Walker, 2013; Alareeni & Aljuaidi, 2014; Uwuigbe, Ranti, & Sunday, 2014; Ipino & Parbonetti, 2016; Nam & Park, 2016; Alareeni, 2018). Consequently, based on the modified Jones 1995 model, that this study uses, the equation to be used in calculating the  $NDA$  is as follows (Uwuigbe et al., 2015; Shah et al., 2009):

$$NDA_t = \beta_1_j [1/A_{t-1}] + \beta_2_j [\Delta REV_t - \Delta AR_t/A_{t-1}] + \beta_3_j [PPE_t/A_{t-1}] \quad (3)$$

where:

$NDA_t$ : non-discretionary accruals for firm  $j$  in year  $t$ ;

$A_{t-1}$ : total assets for firm  $j$  in year  $t-1$ ;

$\Delta REV_t$ : change in the revenues (sales) for firm  $j$  in year  $t$  less revenue in year  $t-1$ ;

$\Delta AR_t$ : change in accounts receivables for firm  $j$  in year  $t$  less receivable in year  $t-1$ ;

$PPE_t$ : gross properties, plants, and equipment for firm  $j$  in year  $t$ ;

$\beta_1_j, \beta_2_j, \beta_3_j$  are firm-specific parameters.

In order to find the firm-specific parameters to be used in the  $NDA$  equation, a regression equation is used to find those parameters and this equation is as follows (Ahmad, Anjum, & Azeem, 2014; Salleh & Haat, 2014; Uwuigbe et al., 2015):

$$TAC_t/A_{t-1} = \beta_1_j [1/A_{t-1}] + \beta_2_j [(\Delta REV_t - \Delta AR_t)/A_{t-1}] + \beta_3_j [PPE_t/A_{t-1}] + \varepsilon_t \quad (4)$$

The equation of the modified Jones 1995 model, the discretionary accruals can be calculated using

the following equation (González & García-Meca, 2014; Salleh & Haat, 2014; Uwuigbe et al., 2015):

$$DA_{jt} = TAC_{jt}/A_{jt-1} - NDA_{jt} \quad (5)$$

### 3.2.2. Measurement of the independent variable

The independent variables that are used in this study are the specific firm's characteristics ( $FSIZE$ ,  $FLEV$ ,  $FAGE$ ,  $AUQUL$ , and  $FSUR$ ), and these are used to examine their effects on EM practices.  $FSIZE$  is measured by the natural log of total assets, in

accordance with the previous studies (Chen, Elder, & Hsieh, 2007; Hassan & Ahmed, 2012; Llukani, 2013; Hassan & Farouk, 2014; Bassiouny, 2016; Habbash & Alghamdi, 2016; Hamdan, Buallay, & Alareeni, 2017; Alareeni, 2018). Firm financial leverage ( $FLEV$ ) is calculated by the total debt-to-equity ratio (Waweru & Riro, 2013; Llukani, 2013; Jang & Kim, 2017). Firm

audit quality is measured by the auditor if it is one of the Big 4 firms (Chen et al., 2007).

### 3.3. Model specification

To test the hypotheses, this research uses the panel data type and the following multiple regression

$$DAC = \beta_0 + \beta_1 FSIZE + \beta_2 FLEV + \beta_3 FAGE + \beta_4 AUQUL + \beta_5 FSUR + \varepsilon \quad (6)$$

where:

*DAC*: the discretionary accrual;

*FSIZE*: the firm's size;

*FLEV*: the firm's financial leverage;

*FAGE*: the firm's age;

*AUQUL*: the audit quality;

*FSUR*: the survival variable and the  $\varepsilon$  is the error term;

$\varepsilon$  is the error term.

The dependent variable is the discretionary accruals for each firm based on the modified Jones 1995 model, which was developed by Dechow et al. (1995). The independent variables are the firm characteristics in terms of firm size, firm financial leverage, firm age, firm audit quality, and firm survival.

## 4. DISCUSSION OF THE RESULTS

### 4.1. Descriptive analysis

#### 4.1.1. Jarque-Bera test

To measure the normal distribution of all research panel data, in terms of dependent and independent variables, the Jarque-Bera (JB) normality test is used in this research. According to Table 3, the research

model to examine and test for the impact of multiple independent variables, which are the firm characteristics on the dependent variable, which is the earnings management practice in the 157 most active non-financial firms in the Egyptian stock exchange.

variables in terms of *DA*, firm age, firm size, and firm financial leverage are not normally distributed as the probability associated with their JB test is significantly less than 0.05. Since the Pearson skewness coefficient is less than or equal to 1 or greater than or equal to -1 ( $-1 \leq PSC \leq 1$ ), it can be concluded that the data are not significantly skewed (Bluman, 2012).

From Table 3 results, it is shown that the mean value of *DA* is 0.024 with the minimum value is found to be -0.50 and the maximum is 0.67, which indicates a significant range. The natural logarithm of firm size mean value is 13.5 with a minimum value of 9.9 and a maximum value of 18.1. The firm financial leverage mean value is 23.8%, which is a good percentage for the investigated companies with a minimum value of 0 and a maximum value of 97.7%. The firm age mean value is 30 years with a minimum of 0 years and a maximum of 71 years.

From Table 4 it is found that:

- *Firm survival*: The statistics show 98% of these selected companies are active in the market for the investigated period (2011-2019).

- *Firm audit quality*: 28% of the companies have external auditors from one of the Big 4 audit firms.

Table 3. Descriptive analysis

Statistics	DA	LNF_SIZE	FLEV	FAGE
Mean	0.024074	13.57749	23.87622	30.49104
Median	0.012989	13.51254	12.07000	28.00000
Maximum	0.673283	18.10760	97.67000	71.00000
Minimum	-0.497570	9.935288	0.000000	0.000000
Std. Dev.	0.125248	1.668198	27.21073	15.41942
Skewness	1.028987	0.259022	0.952035	0.557392
Kurtosis	8.089059	2.579600	2.689298	2.562289
Jarque-Bera	1751.526	25.87183	216.3422	83.37072
Probability	0.000000	0.000002	0.000000	0.000000
Observations	1395	1395	1395	1395

Table 4. Frequency table for the firm audit quality and firm survival independent variables

Variables	Dummy variable	Frequency	Percent
Firm audit quality	0 (if the auditor is not one of Big 4 firms)	1000	71.7
	1 (if the auditor is one of the Big 4 firms)	395	28.3
Firm survival	0 (if a firm is inactive)	23	1.6
	1 (if a firm is active in a year)	1372	98.4

#### 4.1.2. Group unit root test

Time series are stationary if they do not have a trend or seasonal effects. The stationary in a time series is studied by using the unit root test. The reason is to ensure that the mean and variance are constant and do not change over time, and also that

the covariance value between two time periods does not depend on the actual time, but rather depends only on the distance between the two time periods. The covariance is computed for *DA*, firm size, firm leverage, firm age, audit quality, and survival in Table 5.

**Table 5.** Group unit root test for all the dependent and independent variables

Group unit root test: Summary. Series: DA, LNF_SIZE, FLEV, FAGE, AUQUL, FSUR. Sample: 1395. Exogenous variables: Individual effects. Automatic selection of maximum lags. Automatic lag length selection based on SIC: 1 to 13. Newey-West automatic bandwidth selection and Bartlett kernel.				
Method	Statistic	Prob.**	Cross-sections	Obs.
Null: Unit root (assumes common unit root process)				
Levin-Lin-Chu test*	-8.31510	0.0000	6	8328
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat. (IPSW)	-21.4675	0.0000	6	8328
ADF – Fisher Chi-square	458.183	0.0000	6	8328
PP – Fisher Chi-square	672.051	0.0000	6	8364

Notes: \*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

The Table 5 results revealed the stationary of the time series of the DA, firm size, firm leverage, firm age, audit quality, and firm survival at level 1 > 0 based on the constant level, due to the following criteria: Levin-Lin-Chu, IPSW, PP, ADF, at a significance level less than 0.05.

be stationary if the variables are cointegrated. Accordingly, it is used here to measure if there are long-run equilibrium relationships between the nonstationary time series variables in terms of DA, firm size, firm leverage, and firm age, audit quality, and firm survival in Table 6 as follows:

#### 4.1.3. Cointegrating equation model

Engle-Granger cointegration test indicates that the residual of the cointegrating regression should

**Table 6.** Cointegration test for the dependent and independent variables

Series: DA, LNF_SIZE, FLEV, FAGE, AUQUL, FSUR. Sample: 1 1395. Included observations: 1395. Null hypothesis: Series are not cointegrated. Cointegrating equation deterministic: C. Automatic lags specification based on Schwarz criterion (maxlag = 23).				
Dependent	Tau-statistic	Prob.*	Z-statistic	Prob.*
DA	-15.93899	0.0000	-625.0886	0.0001
LNF_SIZE	-10.09284	0.0000	-193.1063	0.0000
FLEV	-12.68869	0.0000	-364.8601	0.0001
FAGE	-8.286853	0.0000	-137.5604	0.0000
AUQUL	-8.829590	0.0000	-297.4646	0.0000
FSUR	-4.974258	0.0246	-102.9139	0.0000

Note: \* MacKinnon (1996) p-values.

From Table 6, it is found that there are long-term equilibrium relationships between the variables DA, firm size, firm leverage, and firm age, audit quality, and firm survival, based on the tau-statistic and z-statistic, at a significance level less than 0.05.

#### 4.2. Correlation analysis

This study uses the Pearson correlation to measure the correlations between the earnings management

and firm characteristics variables. The correlation coefficients have been checked to find out if there is high multi-collinearity among variables or not. The highest correlation coefficient is equal to 0.51 between DA and firm financial leverage. This coefficient is less than 80%, thus, there is no multicollinearity problem that can affect the interpretation of regression coefficients of the independent variables in this model (Murtagh & Heck, 1987).

**Table 7.** Pearson correlation matrix between the control variables with the ROA

Covariance analysis: Ordinary. Sample: 2011-2019. Included observations: 1395.						
Correlation						
Probability	DA	LNF_SIZE	FLEV	FAGE	AUQUL	FSUR
DA	1.000000					
LNF_SIZE	-0.32327 0.0000	1.000000				
FLEV	0.51032 0.0000	0.206135 0.0000	1.000000			
FAGE	-0.4186 0.0000	-0.091141 0.0007	-0.030919 0.2485	1.000000		
AUQUL	0.028886 0.2810	0.403478 0.0000	0.208451 0.0000	-0.164745 0.0000	1.000000	
FSUR	-0.159228 0.0000	-0.010772 0.6877	0.008685 0.7459	0.157880 0.0000	-0.118545 0.0000	1.000000 —

Note: \* Significant at a level less than 0.05.



To test the research hypotheses, the correlation results from Table 7 can be used as follows:

1. There is a negative significant relationship between *DA* and firm size at a significant level less than 0.05. Thus, *H1* is accepted.

2. There is a negative significant relationship between *DA* and firm age at a significant level less than 0.05. Thus, *H2* is accepted.

3. There is a positive significant relationship between *DA* and firm financial leverage at a significant level less than 0.05. Thus, *H3* is accepted.

4. There is a negative significant relationship between *DA* and firm survival at a significant level less than 0.05. Thus, *H4* is accepted.

5. There is no relationship between *DA* and audit quality. Thus, *H5* is rejected.

In terms of *DA*, firm size, firm age, and firm survival have a negative relationship. However, there is a positive relationship between *DA* and a company's financial leverage. Audit quality has no effect on *DA*.

The acceptance of *H1* and the significance of the *firm size* effect on discretionary accruals is consistent with the findings of other studies (Rangan, 1998; Naser, Al-Khatib, & Karbhari, 2002; Lee & Choi, 2002; Xie, Davidson, & DaDalt, 2003; Glaum & Street, 2003; Kim, Liu, & Rhee, 2003; Abdul Rahman & Ali, 2006; Akhtaruddin, 2005; Wuryani, 2012; Behrghani & Pajoochi, 2013; Swastika, 2013; Hassan & Farouk, 2014; Yasser & Soliman, 2018; Khanh & Khuong, 2018; Matonti et al., 2021). Companies that are medium or large have more room to report positive changes in earnings rather than positive earnings; therefore, they may partake in earnings management to avoid reporting a decline in revenue. On the contrary, small organizations will find it harder to manipulate their earnings due to having a lower revenue. In other words, they will easily get caught because their income is lower. When the firm size increases, the manager's engagement in managing accruals decreases, as they are being monitored by external parties and their performance is relatively stable (Ahmad et al., 2014).

On the other hand, Myers, Myers, and Skinner (2007), Kim et al. (2003), Gray and Clarke (2008), Athanasakou, Strong, and Walker (2009), Naz, Bhatti, Ghafoor, and Khan (2011), Atieh and Hussain (2012), Rahmani and Akbari (2013), Ali et al. (2015), Uwuigbe et al. (2015), Asim and Ismail (2019), and Nalarreason et al. (2019), find that the firm size has a positive impact on earnings management. Based on the agency theory, large-sized firms have greater agency costs, and, in turn, more opportunistic practices. Large firms have more bargaining power to negotiate with the auditors, which makes it easier to manipulate the earnings. They also face more investors and financial analysts' pressure to show earnings increments and meet their expectations. Other studies suggested that relationships do not exist. Waweru and Riro (2013) in Kenya, Llukani (2013) in Albania, Bassiouny (2016) in Egypt, El Deeb and Ramadan (2020) in Egypt, and Alareeni (2018) in GCC, find that the firm size has an insignificant impact on earnings management, which in turn goes against the opinion that bigger companies are more tempted to manage their income.

In terms of the *firm age* result and the acceptance of *H2*, Akhtaruddin (2005), Alsaed

(2006), and Gul et al. (2009) believe that the older the company, the less likely they are to involve themselves in earnings management. When a company becomes well-known and reputable to the public, they want to protect the image they have built over time. They gain experience and as a result, they have better financial reporting practices and follow the company's policies and procedures in order to maintain their high standard. However, this result is inconsistent with Olowokure, Tanko, and Nyor (2015) and Teymouri and Sadeghi (2020), who find that there is no relationship between firm age and earnings management. In addition, Khanh and Khuong (2018) reveal a positive association between firm age and earnings management.

The significance of the *firm financial leverage* relationship with the earnings management result (*H3*), is consistent with that of Waweru and Riro (2013), Bekiris and Duokakis (2011), Fung and Goodwin (2013), Hassan and Farouk (2014), Bassiouny (2016), Xu and Ji (2016), Anagnostopoulou and Tsekrekos (2017), Yasser and Soliman (2018), Asim and Ismail (2019), Nalarreason et al. (2019), Teymouri and Sadeghi (2020), and Matonti et al. (2021). In accordance with the signaling theory, managers of highly leveraged firms would engage in earnings management and employ discretionary accruals to have reports that will enable them to attract more capital at reasonable rates and avoid debt covenant violation (Klein, 2002; Jiang, Lee, & Anandarajan, 2008). In contrast, Ardison et al. (2013), Uwuigbe et al. (2015), Jang and Kim (2017), Alareeni (2018) find that the firm leverage has an insignificant impact on earnings management practices. On the other hand, Aivazian, Ge, and Qiu (2005), Jelinek (2007), López-Iturriaga and Saona Hoffmann (2005), Farouk and Hassan (2014), Soliman and Ragab (2014), Shirzad and Haghighi (2015), Ado et al. (2020), and Amake and Akogo (2021) find a negative significant relationship as the highly leveraged firms may limit managers' ability to manipulate income and increasing accruals.

The acceptance of *H4*, that the *firm survival* has a negative significant impact on earning management, is consistent with Hassan and Ahmed (2012) and Nwaobia et al. (2019). EM practices can affect the firm performance, in a way that threatens its survival. Hassan and Ahmed (2012) had submitted that firm performance and shareholders' wealth are affected by earnings management, which by extension constitutes a threat to an entity's going concerned and eventual survival. Solvency and liquidity are two of the most important key indicators of a company's survival (Nwaobia & Jayeoba, 2016). These refer to the firm's ability to pay its debts as they become due, whether in the short or long term. If a company's resources are insufficient to meet long-term debts, it may be able to meet its obligations in the short term but face long-term solvency problems. Thus, long-term solvency and financial stability are important determinants of a company's risk of failure due to its inability to meet its obligations. Any manipulated accrual-based financial information that exceeds the "normal" bounds permitted by the accounting framework poses a risk. Whatever name they go by, "earnings management", "innovative accounting", or

“creative accounting”, they deviate from the rules of standard accounting practices (Hosho, Matowanyika, & Chinoda, 2013), and lead to low earnings quality and do not fairly approximate cash flows. In such a scenario, managing liquid resources is likely to be difficult, and the organization’s survival is jeopardised due to the likely disconnect between profits and cash flows (Nwaobia et al., 2019).

The rejection of  $H_5$  and the insignificance of the *audit quality* effect is consistent with Piot and Janin (2007) and Alhadab and Clacher (2018), who find evidence that the presence of high-quality auditors does not constrain all forms of earnings management but it may constraint the manipulation of discretionary accruals. However, this finding is inconsistent with that of Swastika (2013) in Indonesia, Soliman and Ragab (2014) in Egypt,

Susanto et al. (2017), and El Deeb and Ramadan (2020) in Egypt, who find a negative significant relationship with earnings management as audit quality can reduce earnings management problems arising from free cash flow. Some prior research has shown a positive association between audit quality and earnings management (Alzoubi, 2018; Ghosh & Moon, 2005; Gul et al., 2009; Rusmin, 2010).

#### 4.3. Kao residual cointegration test

The Kao test, as shown in Table 8, follows the same basic approach as the Pedroni test, but specifies cross-section specific intercepts and homogeneous coefficients on the first-stage regressors under the null hypothesis of no cointegration for panel data.

**Table 8.** Kao residual cointegration test for panel data

Series: <i>DA, LNF_SIZE, FLEV, FAGE, AUQUL, FSUR</i> .		
Sample: 2011-2019.		
Included observations: 1395.		
Null hypothesis: No cointegration.		
Trend assumption: No deterministic trend.		
User-specified lag length: 1.		
Newey-West automatic bandwidth selection and Bartlett kernel.		
<b>ADF</b>	<b>T-statistic</b>	<b>Prob.</b>
Residual variance	-7.571234	0.0000
HAC variance	0.024446	
	0.011820	

According to Table 8, it can be revealed that there are long-term equilibrium relationships among the dependent and independent variables of the panel data model (firm size, age, leverage, audit quality, and firm survival), based on the Kao-statistic, at a significant level less than 0.05.

#### 4.4. Hausman test for correlated random effects

With regards to the random effects and the explanatory variables, it is presumed that there is no correlation. The test that is often used to test this presumption and to compare the fixed- and random-effect estimates of coefficients is the Hausman (1978) test.

In the Hausman test, the null hypothesis is that the fixed-effect model and random-effect model estimators do not differ significantly. The test statistic developed by Hausman has an asymptotic  $\chi^2$  distribution. If the null hypothesis is rejected, the conclusion is that the fixed-effects model is better to be used and the random-effects model is not appropriate. To perform the Hausman test, you must first estimate a model with your random effects’ specification as in Table 9.

From Table 9, the Hausman test statistic calculated value is significant at a significance level less than 0.001, thus, rejecting the null hypothesis that supports the appropriateness of the random-effects model and accepting the alternative hypothesis of the fixed-effects model.

**Table 9.** Correlated random effects

Correlated random effects: Hausman test.			
Equation: Untitled.			
Test cross-section random effects.			
<b>Test summary</b>	<b>Chi-square statistic</b>	<b>Chi-square df</b>	<b>Prob.</b>
Cross-section random	18.308002	5	0.0026

#### 4.5. Total panel estimation fixed-effects model

To test the hypotheses and investigate the relationship between discretionary accruals and firm characteristics, the correlation results from

Table 6 are used in addition to the results of the panel estimation fixed-effects model using least squares for determining the effect of independent variables on *DA* in Table 10 as follows:

**Table 10.** Total panel estimation fixed-effects model to determine the effect of independent variables on ROA

Dependent variable: DA. Method: Panel least squares. Sample (adjusted): 2012–2019. Periods included: 8. Cross-sections included: 155. Total panel (balanced) observations: 1240. White cross-section standard errors and covariance (no df correction).				
Variable	Coefficient	Std. Error	T-statistic	Prob.
DA(-1)	-0.112131	0.114870	-0.976157	0.3292
LNF_SIZE	-0.036711	0.014676	2.501460	0.0125
FLEV	0.000208	9.98E-05	2.082727	0.0375
FAGE	-0.001050	0.000526	1.995885	0.0462
AUQUL	0.021471	0.023507	-0.913404	0.3612
FSUR	-0.040453	0.062619	-0.646020	0.5184
C	-0.466598	0.176496	-2.643674	0.0083
<b>Effects specification</b>				
Cross-section fixed (dummy variables)				
Period fixed (dummy variables)				
R-squared	0.310871	Mean dependent variable	0.022552	
Adjusted R-squared	0.203516	S.D. dependent variable	0.126020	
S.E. of regression	0.112468	Akaike info criterion	-1.406922	
Residual sum of squares	13.55967	Schwarz criterion	-0.712856	
Log-likelihood	1040.292	Hannan-Quinn criterion	-1.145896	
F-statistic	2.895724	Durbin-Watson statistic	2.194134	
Prob. (F-statistic)	0.000000			

$$DA = -0.112131235802 * DA(-1) - 0.0367110167692 * LNF\_SIZE + 0.000207815880251 * FLEV - 0.00104955418841 * FAGE + 0.0214713817013 * AUQUL - 0.0404532007801 * FSUR - 0.466598118621$$

According to the panel estimation model using least squares, it can be concluded that:

- The coefficient of determination ( $R^2$ ), in Table 10, shows the value of the model to determine how the independent variables can affect the dependent variable ( $DA$ ), which is equal to 31%. This percentage implies that the independent variables in terms of firm size, firm leverage, firm age, audit quality, and firm survival explain 31% of the total variation of the dependent variable ( $ROA$ ). A high  $R^2$  value may suggest a better fit for the model.
- The F-test is generally used to determine if there is a linear relationship between the dependent variable and some independent variables. Since the value of the F-test is 2.8 at a significant level less than 0.05, it is concluded that the independent variables have affected the level of  $DA$ .
- The t-test is important to determine each of the individual independent variables' coefficient significant value in the regression model. Table 10 shows that the most significant independent variables for the model:  $FSIZE$ ,  $FAGE$ , and  $FLEV$ , at a significant level less than 0.05. This result supports the Pearson correlation test discussed above in Table 7 and helps in testing the research hypotheses regarding the impact of the firm characteristics on the  $DA$ . Accordingly, only  $H1$ ,  $H2$ , and  $H3$  are accepted. The significance of the firm size impact on earnings management is consistent with previous studies (Hassan & Farouk, 2014; Swastika, 2013; Khanh & Khuong, 2018; Matonti et al., 2021) as it is easier for large firms to report positive earnings changes than small ones. Regarding the significance of the firm age, this result is consistent with that of Akhtaruddin (2005), Alsaeed (2006), and Gul et al. (2009), as the old firm has less tendency than the new one to perform earnings management practices. The firm financial leverage

has also a significant effect on earnings management, which is consistent with Hassan and Farouk (2014), Bassiouny (2016), Xu and Ji (2016), Anagnostopoulou and Tsekrekos (2017), Asim and Ismail (2019), Nalarreason et al. (2019), Teymouri and Sadeghi (2020), and Matonti et al. (2021). The highly leveraged firms would use the discretionary accruals to have reports that are more attractive.

- The Durbin-Watson statistic test has the null hypothesis that the ordinary least-squares regression has residuals that are not auto-correlated. This is tested against the alternative hypothesis that the residuals are an autoregressive integrated (AR1), positive first-order autocorrelation process. The Durbin-Watson statistic value ranges from 0 to 4. Non-autocorrelation exists when the value is close to 2; a value toward 0 indicates positive autocorrelation; negative autocorrelation is when the value is toward 4. Since the test statistic value (2.19) for the model is greater than  $dU$ , the null hypothesis would not be rejected.

- For the Jarque-Bera test, since it is found that the significance value of the test statistic is less than 0.05 for the model (Figure A.1 in the Appendix), then the null hypothesis ( $H_0$ ), that the residuals are normally distributed, is rejected. Since the Pearson skewness coefficient is less than or equal to 1, or greater than or equal to -1 ( $-1 \leq PSC \leq 1$ ), it can be concluded that the data are not significantly skewed (Bluman, 2012).

- Theil's inequality coefficient  $U$  is used to measure the accuracy of the estimates of the fixed-effects model. Its value is between 0 and 1, where 0 shows a perfect fit. Since a value reaches 0.52 for the model (Figure A.2 in the Appendix) indicating the goodness of fit of the panel model, at a percent of not less than 48% for the model.

**Table 11.** Residual cross-section dependence test

Null hypothesis: No cross-section dependence (correlation) in residuals. Equation: EQ01. Periods included: 8. Cross-sections included: 155. Total panel observations: 1240. Cross-section effects were removed during estimation.			
Test	Statistic	df	Prob.
Breusch-Pagan LM	15045.78	11935	0.0000
Pesaran scaled LM	19.13136		0.0000
Bias-corrected scaled LM	8.059936		0.0000
Pesaran CD	1.180470		0.2378

• For the residual cross-section dependence test, Table 11 shows the significance of Breusch-Pagan LM, Pesaran scaled LM, and Bias-corrected scaled LM tests as the p-values are less than 0.05. Accordingly, the null hypothesis of no correlation will be rejected at conventional significance levels. While the last Pesaran CD test is asymptotically standard normal, and the null hypothesis of no correlation is strongly accepted due to the test statistic results at conventional levels, i.e., there is no cross-section dependence (correlation) in residuals.

## 5. CONCLUSION

The earnings management practices can negatively affect the financial reporting quality and credibility, especially in the emerging markets. The information asymmetry problem in the inefficient market reduces the financial reporting quality in terms of reliability, transparency, comparability, and understandability. This problem can be solved by enhancing the market efficiency and the investors' confidence when the firms try to have high audit quality and thus, offer more reliable financial reports. Earning management practice, especially in the Egyptian emerging market, may come from the application of accrual base rather than the cash base, which helps the managers in manipulating the financial reports (Chen, Kong, & Wang, 2014) through controlling the timing of revenues and expenses recognition for a certain period (Shah et al., 2009). The accruals proportion that managers opt to report are called discretionary accruals (Gul, Leung, & Srinindhi, 2003). Accordingly, this paper uses discretionary accruals as a measurement for earning management (the dependent variable). This study contributes to the existing earning management literature by investigating the relationship between firm characteristics, audit quality, and earnings management in Egypt, as one of the developing economies for the period 2011-2019, after the Egyptian revolution of 2011. It focuses on investigating the main types of firm characteristics, which are often used in previous literature, and they are the independent variables: firm size, firm financial leverage, firm age, firm survival, and the firm's audit quality.

The preliminary analysis of the collected data was evaluated using descriptive and correlation analyses. The descriptive analysis shows that 98% of the selected companies are active in the market and 28% of them have their external auditors from one of the top Big 4 audit firms. The correlation analysis finds that there is a positive significant relation between firm financial leverage and discretionary accruals, which is consistent with the previous studies (Hassan & Farouk, 2014; Bassiouny, 2016;

Xu & Ji, 2016; Anagnostopoulou & Tsekrekos, 2017; Asim & Ismail, 2019; Nalarreason et al., 2019; Teymouri & Sadeghi, 2020; Matonti et al., 2021), as the highly leveraged firms would use the discretionary accruals to have more attractive reports. Then, there is another negative significant one between the firm age, firm size, and firm survival, and discretionary accruals (Alsaeed, 2006; Gul et al., 2009; Hassan & Ahmed, 2012; Hassan & Farouk, 2014; Khanh & Khuong, 2018; Matonti et al., 2021). Audit quality has no significant impact on earnings management, as the presence of high-quality auditors does not constrain all forms of earnings management (Piot & Janin, 2007; Alhadab & Clacher, 2018). The panel estimation fixed-effects model is then used to test the research hypotheses and investigate the relationship between discretionary accruals and firm characteristics. The regression results show that a 31% change in the firm's earnings management practice is explained by the firm characteristics, which is to some extent moderate but not so strong percentage. However, it is a higher percentage than that of other studies analyzed the same relation in Egypt (Bassiouny, 2016) before the Egyptian revolution and the new changes in the corporate governance codes and regulations in the Egyptian stock market.

However, this study has been limited by studying the effect of only five independent variables including the firms' characteristics and audit quality. This is because these characteristics have been used the most in previous literature that tests their impact on earnings management. As there may be other existing characteristics that impact earnings management and the level of  $R^2$ , this could be seen as a limitation to this research. Furthermore, this research has concentrated on the non-financial companies listed in the EGX, and it also eliminated banks and financial institutions, because they follow different laws and regulations, therefore, this could be another limitation to this research. Further to this, as the researchers could not access all the required data, the research is constrained to organizations in Egypt only. Lastly, as the researchers could only access the disclosure book as a source of data, this may limit the study because the last disclosure was issued in the year ending 2019.

The findings of the study may help the corporate managers to control the firm financial leverage in order to avoid any earnings management practice. This will enhance the confidence of their investors, and it will improve the firm profitability and the value of its shares. At the same time, the stakeholders should notice such significant firm characteristics (financial leverage, size, age, and survival) in making their own decisions, especially after the COVID-19 pandemic crisis, which may

expectedly increase the firm financial leverage and in turn, some earning management practices that can be used intentionally to make the firm be perceived more favorably and look better. Unfortunately, these effects have not yet been reflected in the 2019 financial statements under the study. The financial effect of such a global outbreak of the pandemic has been disclosed in the financial reports for the year ending 2020. The regulatory bodies in Egypt are expected to guide firms toward the best practices of voluntary disclosures. They play a motivating role in this new era of information disclosure.

Therefore, it can be recommended for future research to study other countries and consider

other firm characteristics or attributes and other corporate governance variables, rather than the audit quality variable used in this study, like cultural dimensions, that might have a greater impact on the earnings management. The Egyptian banks and financial sector can also be studied for identifying other determinants of earnings management practices. It is also recommended to study the effect of the COVID-19 crisis on earnings management and financial reporting quality, as it was another important challenge, in Egypt, since the 2011 revolution. The political and economic instability at such two crises can easily affect the financial reporting quality and increase the management manipulation practices.

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APPENDIX

Figure A.1. The Jarque-Bera test

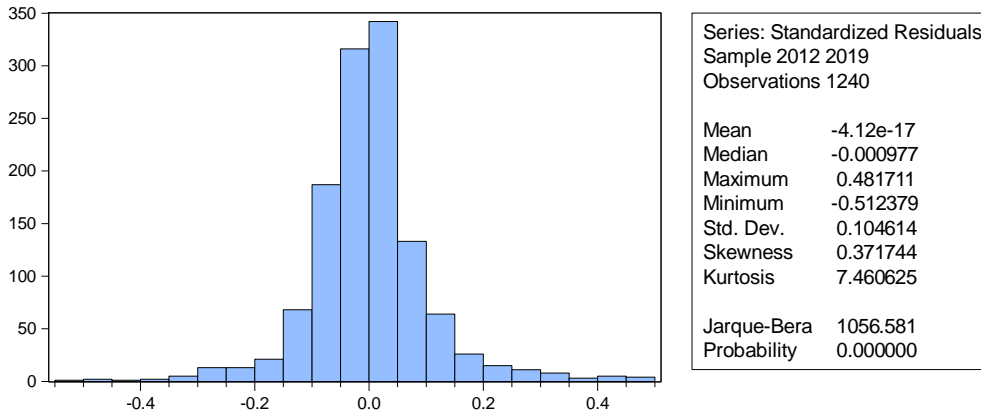


Figure A.2. Theil's inequality coefficient U (Part 1)

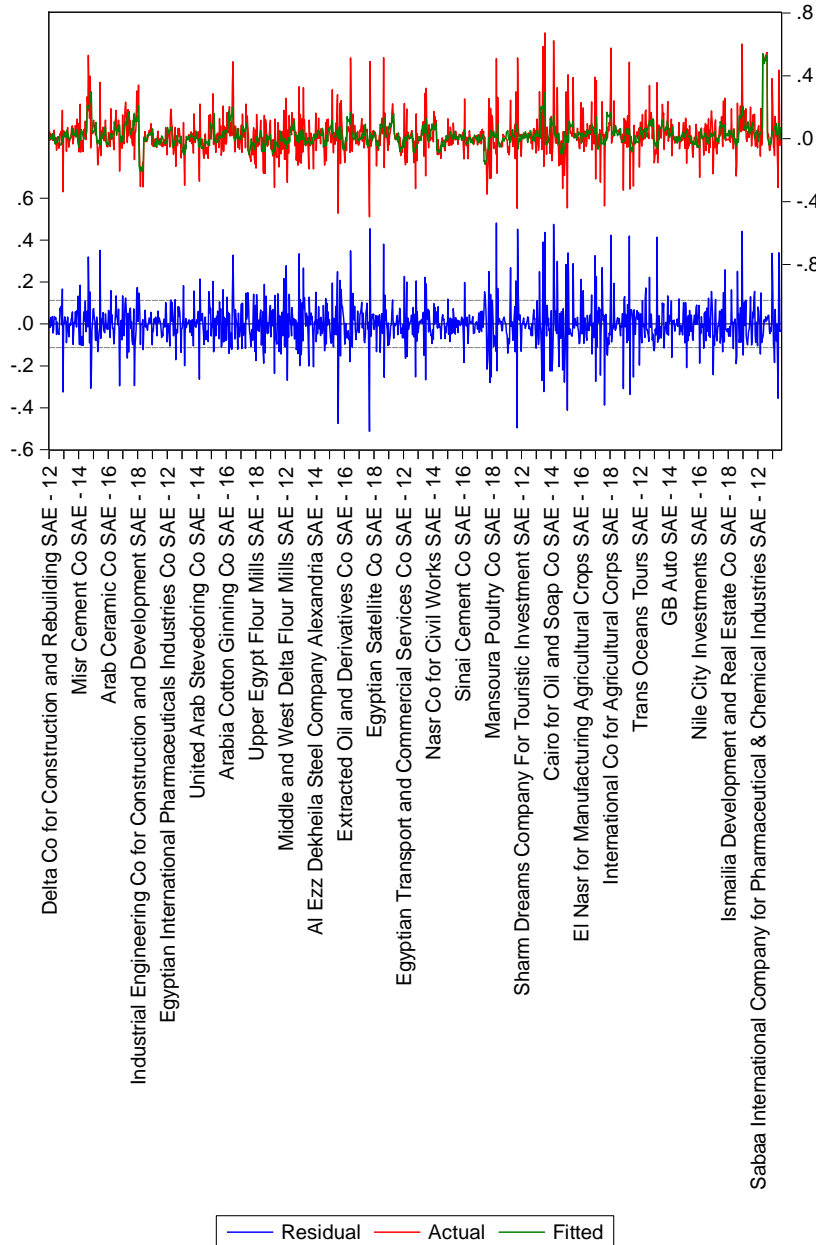


Figure A.2. Theil's inequality coefficient  $U$  (Part 2)

