The impact of firm characteristics on earnings management: an empirical study on the listed firms in Egypt

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Abstract

Earnings management has been a great and consistent concern among practitioners and regulators and has received considerable attention in the accounting literature. Several techniques and reasons exist for the practice of earnings management each is based on the management's objectives. This paper aims to assess the impact of firm characteristics on earnings management of the listed firms in Egypt. It selects the 50 most active firms in the Egyptian stock exchange and the analysis is done using the financial statements from the disclosure book for the period 2007-2011.After excluding banks and insurance companies, for having different disclosure requirements and different corporate governance code, the final count for the firms included in the paper is 60 firms in five years so this leave us with a total of 300 observations. The tests for this research are done using the random effect generalized least square regression model using the stata program. Findings found that there is a significant positive relationship between firms' financial leverage and earnings management while other variables of the firm characteristics which are firm size, firm age and firms' audit quality have an insignificant relationship with earnings management.

1. Introduction

A series of corporate accounting scandals were witnessed at the beginnings of the 21st century across Europe and the United States and this includes several examples like Enron, WorldCom and Xerox. It is found that the core of these scandals was usually the phenomenon of earnings management (Goncharov 2005). Managers always aim to secure all the funds needed to keep the business running so that no external party can interfere, and at the same time managers aim to gain whatever kind of benefit they can from the business (Kim and Yoon 2009). Since the accounting earnings are of great importance to the stakeholders given the fact that it's the end product of the accounting process and based on the many problems and acts by the managers to try practicing earnings management, stakeholders doubt the credibility and reliability of the financial reports hence and (Uwuigbe *et al* 2015).

High quality financial reporting is highly appreciated by investors and other stakeholders for several reasons. One of them is that it reduces the information asymmetry problem as (Jensen and Meckling 1976) state in their research. In addition to that it provides users with more reliable information to take decisions and better reflection for the company (Wawero and Riro 2013). Moreover, as (Watts and Zimmerman 1978) add, high quality financial reporting boosts the level of transparency and helps in executing better contracts. Finally, the International Chamber of Commerce (ICC 2005) clarifies that the market efficiency and the confidence of the investors are enhanced when the reporting information is reliable and of high quality in the sense of consistency, comparability and understandability.

The next section of the paper shows the literature and develops the research hypotheses; section 3 presents the methodology, section 4 is the findings and the conclusion, finally section 5 provides the limitations and few recommendations.

2. **Literature Review**

In spite of all the mechanisms adopted in the last decade in Egypt, which aim to increase the level of transparency and confidence in the content of financial reporting, the ability of companies to manipulate financial reports through the earnings management practice still exists, especially since these management practices are legal and within the flexibility allowed by the accounting standards which differ from illegal practices and that are classified as cases of fraud (Metawee 2013). And it is added in a research by (Abdulrahman and Ali 2006) that earnings management practice adheres with GAAP (Generally Accepted Accounting Principles) so the practice falls within the bounds of accepted manipulations of accounting procedures and this differentiates earnings management from fraud as no violation for the rules took place, however this practice leads to inaccurate information about the company.

Earnings management is defined by (Blom 2009) as a purposeful intervention by the management in the process of financial reporting in order to gain personal benefit or for the organization. Based on this definition, earnings management is not informative for shareholders, and therefore it's opportunistic. Earnings management practice is explained by several theories, according to the signaling theory earnings is considered the indicator to the capital market to test whether the firm engaged in value adding activities during a certain period or not (Waweru and Riro 2013). While the stakeholder's theory explains that managers might manipulate earnings in order to enhance their private interests and benefits on the expense of shareholders and additionally the rest of stakeholders (Prior *et al* 2008). A third theory is the famous agency theory that explains the agency problem which is due to the agent (management) acting in their own benefit and in an opportunistic manner on the expense of the principal (owners/shareholders), as proposed by (Jensen and Meckling 1976).

The rise of earnings management comes from the application of the accrual base rather than cash flow that makes it easy for the management to manipulate the financial information as accruals are less observable (Chen et al 2014). Accrual-based accounting leads to the division of total accruals into non-discretionary and discretionary components. The discretionary accruals are the proportion of accruals that management chooses to report (Gul *et al* 2003). This indicates that by using accrual accounting managers can control the timing of revenue and expense recognition and thus can manipulate the firm's earnings for a given period (Shah et al 2009).

Many prior literature study the determinants of earnings management however very limited research is done to investigate the impact of firm characteristics on earnings management and especially in the developing nations, so this study attempts to study the relation between firm characteristics and earnings management in a developing country, Egypt, focusing on four main types of firm characteristics which are the ones commonly used and those are firm size, firm financial leverage, firm age, and firm's audit quality.

2.1 Firm size and earnings management

The size of a firm varies in many ways and it's essential to consider how the size affects the quality of reported information. It is argued by (Meek *et al* 2007) that based on the information asymmetry theory, large firms have lower information asymmetry as they have strong governance and control so this leads to the reduction of the earnings management practice. While based on the agency theory, large sized firms witness greater agency costs and this means more opportunistic practices (Jensen and Meckling 1976).

Several reasons exist to prove a negative relation between firm size and earnings management as explained by (Ahmad *et al* 2014 and Kim *et al* 2003), Large-sized firms may have stronger internal control system and may have more competent internal auditors as compared to small-sized firms therefore; an effective internal control system helps in publishing reliable financial information to the public, so this will likely reduce the ability of the management to manipulate earnings. Also large firms are usually audited by one of the big four auditing firms and this helps prevent earnings management due to the efficient and effective audit performed. A third reason is the reputation cost, in large firms the reputation cost is higher than that in the small firms as large firms have better appreciation of market environment, better control over their operations and better understanding of their businesses relative to small-sized firms, therefore this might prevent large firms from engaging in earnings management practices

On the other side, a positive relation exists as large-sized firms face more pressures to meet the analysts' expectations (Barton and Simko 2002). In addition, large-sized firms have greater bargaining power with auditors so the larger the firm size, the more bargaining power they have in negotiations with auditors.

2.2. Firm financial leverage and earnings management

Prior literature link between the debt level and the choice of accounting policy and that's because debt covenants are based on the accounting numbers reported and any violation in the debt covenants imposes costs on the company (Waweru and Riro 2013).

One of the theories linking the two variables is the financial distress theory explained by (Fung and Goodwin 2013) which examines earnings management incentives among managers in financial distress firms. They argue that when managers manipulate the firm's earnings, they are doing that to convince their creditors that the financial distress is temporary nature and will be able to recover soon. Another theory would be the information asymmetry, According to (Jones *et al* 2005); information asymmetries tend to be less severe for large loans, since any fixed costs associated with obtaining information about a borrower are less of an obstacle for large loans. It is also suggested that small borrowers have greater information asymmetries, and a loan's size is typically positively correlated with its borrower's size.

When a company relies on debt, the managers tend to choose accounting policies that increase the income so that they abide by the debt covenants imposed by banks and bondholders and this allows them to avoid any renegotiation costs (Beatty and Weber 2003). Based on the prior literature a negative relation is proposed to exist between firma financial leverage and earnings management mainly for two reasons, first, leverage requires debt repayment, thus reduces cash available to management for non-optimal spending. Second, when a firm employs debt financing, it undergoes the scrutiny of lenders and is often subject to lender-induced spending restriction (Jensen 1986).

2.3. Firm age and earnings management

As time passes, firms discover what they are good at and learn how to do things better as they specialize more and new techniques are found to standardize, coordinate, and speed up their production processes, as well as to minimize costs and improve quality (Arrow 1962, Ericson and Pakes 1995).

Based on prior research, Firms that have been in the market for long times tend to have low level of earnings management than beginners as they are well known companies, that have a great value in the market and they have a reputation to protect, also they are aware of the rules and codes that govern their practices. Moreover, Old firms might have improved their financial reporting practices over time (Alsaeed 2006) and secondly they try to enhance their reputation

and image in the market (Akhtaruddin 2005) so the older the firm the less tendency to perform earnings management practices.

2.4. Firm's audit quality and earnings management

High quality audit is more likely to detect and report errors and irregularities. Thus, it is an effective barrier to earnings manipulations (DeAngelo 1981). Auditing reduces asymmetries between managers and shareholders by allowing outsiders to verify the validity of financial statements and by that it is a valuable monitoring method used by firms to reduce agency costs (Watts and Zimmerman 1983). The big four auditing firms have a very huge incentive to maintain a high audit quality due to the following reasons, the first one is that they have large number of clients, in addition, better resources employed like the technology, training programs and experience, finally the last reason is having a reputation that might be lost if they didn't report a misstatement or a manipulation (Rusmin 2010, and Chung *et al* 2005).

Firms audited with auditors other than the big four report significantly greater discretionary accruals as stated by (Lenard and Yu 2012) confirming this inverse relation (Bartov *et al* 2000) suggest that higher quality auditors tend to report any error and have no willingness to accept any manipulations. The study by (Yasar 2013) finds that the audit quality doesn't have an impact on discretionary accruals so there is no difference in audit quality between Big Four and non-Big four audit firms in constraining the practice of earnings management (Piot and Janin 2007) agreed to this finding.

Based on previous studies and results, it can be seen that large sized firms, firm financial leverage level, firm's age and audit quality and being audited by one of the big 4 audit firms can have significant effect on management opportunistic behavior such as earnings management. Consequently, this paper proposes the following hypotheses:

- H1: There is a significant relationship between Firm size and earnings management
- H2: There is a significant relationship between Firm Financial Leverage and earnings management
- H3: There is a significant relationship between Firm Age and earnings management
- H4: There is a significant relationship between firms' audit quality and earnings management

3. Methodology

3.1. Sample selection and data collection

The unit of analysis in this research is constituted of a population of firms that are listed in the Egyptian stock exchange (EGX) as the data will be easily accessible. Specifically, a sample of the 50 most active firms listed in the (EGX) is used from the year 2007-2011 excluding the financial institutions due to their specific and different corporate governance and disclosure requirements. Secondary data type is used as the data gathered to measure the dependent and independent variables is from the financial statements. Data source is mainly the disclosure book and some data is purchased from the Egyptian Company for Information Dissemination (EGID).This study is considering a panel data type and this will require conducting the random effect generalized least square (GLS) regression using the Stata program.

3.2. Panel Data

This section proposes the use of panel data instead of the cross sectional assumption and this means that the observations contain both time series and cross sectional units. As defined by (Brooks 2008), "Panel data will embody information across both time and space". Panel analysis begins with determining the type of regression needed for the study and the panel data models are either fixed effects or random effects models. The panel data methodology has an important

advantage which is the assumption that firms are heterogeneous, and this is an advantage over studies that use time series or cross sectional data. Other advantages for panel data are added like being very informative and having more variability and less collinearity among the variables, therefore using panel data is better for having unbiased and more reliable results, this is proposed in a book by (Baltagi 2011)

In models with fixed effects, as explained by (Pintea *et al* 2014), the error component can be correlated with regressors; research hypothesis states no correlation between regressors and random error component. While the random effects model assumes that the error component is a totally random error, and the assumption is that the error does not correlate with regressors (Baum 2001 and Baltagi 2008). The rationale behind random effects model is that, unlike the fixed effects model, the variation across entities is assumed to be random and uncorrelated with the predictor or independent variables included in the model, so the entity's error term is not correlated with the predictors which allows for time-invariant variables to play a role as explanatory variables. (Kohler and Kreuter 2012 and Greene 2008)

3.3. Measurement of the dependent variable

The majority of recent earnings management literature relies primarily on discretionary accruals as a proxy for earnings management and so this study will use the discretionary accruals 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 *et al.,* 2009, Soliman and Ragab 2014).

This study will use the cash flow statement approach to calculate the total accruals, so based on that approach the total accruals can be calculated as follows:

$TA_t = NI_t - CFO_t$

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 on 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 and Butt 2009)

TA = DA + NDA

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 De Angelo 1986 model, Jones 1991 model and finally the modified cross sectional Jones 1995 model.

Consequently, based on the modified Jones model 1995, that this study uses, the equation to be used in calculating the NDA is as follows: (Uwuigbe *et al* 2015 and Shah *et al* 2009)

$NDA_t = \beta 1j\,[1/A_{t-1}] + \beta 2j\,[\Delta REV_t - \Delta AR_t/A_{t-1}] + \beta 3j\,[PPE_t/A_{t-1}]$

Where: **NDA_t** : Non discretionary accruals for firm j in year t, **A_{t-1}**: Total assets for firm j in year t-1, **ΔREV_t:** Change in the revenues (sales) for firm j in year t less revenue in year t-1 , **ΔAR_t** : Change in accounts receivables for firm j in year t less receivable in year t-1 , **PPE_t :** Gross properties, plants and equipments for firm j in year t , **β1j, β2j, β3j** 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 *et al* 2014, Salleh and Haat 2014 and Uwuigbe *et al* 2015)

$TAC_t/A_{t-1} = \beta 1j\,[1/A_{t-1}] + \beta 2j\,[(\Delta REV_t - \Delta AR_t)]/\,A_{t-1} + \beta 3j\,[PPE_t/\,A_{t-1}] + \varepsilon_t$

After calculating the total accruals using the cash flow statement approach and calculating the non-discretionary accruals through the equation of the modified Jones model 1995, the discretionary accruals can then be calculated using the following equation: (Salleh and Haat 2014 and Uwuigbe *et al* 2015)

$DA_{jt} = TAC_{jt}/A_{jt-1} - NDA_{jt}$

3.1. **Measurement of the independent variables**

Variables	**Measuring tool**
Dependent Variable	
Discretionary accruals	Modified Jones Model 1995
Independent Variables	
Firm Size (FSIZE)	Natural log of total assets
Firm Financial leverage (FLEV)	Total debt ratio (Total debt/Total Assets)
Firm Age (FAGE)	Log of the number of years since the firm's foundation
Audit Quality (AUQUL)	Dummy variable, 1 if the auditor is a big 4 firm and 0 otherwise
Survival (FSUR)	Dummy variable, 1 if a firm is active in a year and 0 otherwise

3.4. Model Specification

To test for the hypotheses, this research utilizes the following regression 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 50 most active firms in the Egyptian stock exchange.

$DAC = \beta 0 + \beta 1\ FSIZE + \beta 2\ FLEV + \beta 3\ FAGE + \beta 4\ AUQUL + \beta 5\ FSUR + \varepsilon$

Where: **DAC:** is the discretionary accrual**, FSIZE**: is the firm's size**, FLEV:** is the firm's financial leverage**, FAGE**: is the firm's age**, AUQUL:** is the audit quality, **FSUR:** is the survival variable and the **ε** is the error term.

4. Findings and discussion

The analysis will start by the descriptive statistics, followed by the correlation analysis and then the results of the regression analysis are shown and discussed to see whether the hypotheses are validated or not. The analysis is done using the Stata program.

4.1. Descriptive Statistics

The descriptive statistics shows the mean, minimum and maximum values and the standard deviation of the dependent and independent variables. The variables used in this research are the independent variables (firm size, firm age, firm financial leverage and firm audit quality) and the dependent variable which is earnings management.

Descriptive Statistics					
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
DAC	297	-0.4625478	0.8624406	0.0428084	0.1290379
Firm Size	300	16.989	24.21654	21.05643	1.594065
Leverage	300	0.0001148	0.9709026	0.3903224	0.23564
Age	300	16	41	27.96667	6.788834

Audit Quality	300	0	1	0.2833333	0.4518738
Survival	300	0	1	0.6722222	0.4707127

Table 1: Descriptive statistics

As it's shown in table 1, the results state that the mean value of the dependent variable (Discretionary Accruals "DAC") for the selected sample of firms is equal to (0.0428084) with a standard deviation of about (12.9%). This average implies that about (4%) on average of the earnings management practices practiced by the sampled firms, are having an upward direction which means manipulating the earnings level by increasing it.

Moving to the independent variables, the results show that the average firm size for the sample is about 21% with a minimum of 16.9% and a maximum of 24.2% and a standard deviation of 1.59, the second independent variable which is the firms' financial leverage averaged to 39% of the total assets which means that the average of the firms depend a little bit more on equity rather than debt. The average age for the sampled firms is 27.96 years, while the minimum firm age for the sample is 16 years and the maximum firm age is 41 years. The fourth independent variable is the firms' audit quality which is measured by a dummy variable so the minimum value is 0 and the maximum value is 1 and it has an average of 28% which means that 28% of the sample firms is audited by one of the big four auditing firms.

4.2. Correlation analysis

This analysis aims to check the relationship between dependent and independent variables as well as the independent variables among each other and helps to check for the multicollinearity problem. It is stated by (Ho 2006) that the correlation must be two tailed if the hypotheses are not stating a particular direction for the relation between the independent variables and the dependent variable and that's the case in this study.

The Pearson's correlation matrix is used and it shows the degree of correlation between the independent variables and based on (Soliman 2013, cited in Bryman and Cramer 1997), the Pearson's correlation between independent variables should not exceed 0.8 to prove that there is no multicollinearity problem among the variables. As shown in table 2, the highest correlation is between audit quality variable and the firm survival variable with the amount of 0.4128 and this shows that there is no multicollinearity problem between the independent variables used in this research model, as it does not exceed the 0.8.

Correlations						
	DAC	Firm Size	Leverage	Age	Audit Quality	Survival
DAC	1					
Firm Size	0.0451	1				
Leverage	.-0.0563	0.2625	1			
Age	-0.0553	-0.3967	-0.1203	1		
Audit Quality	-0.0531	.0.3528	0.0352	0.0650	1	
Survival	-0.0551	0.0807	-0.1183	0.0682	0.4128	1

Table 2: **Correlation analysis**

4.3. Regression Analysis

Hausman test is carried out for the sample of 60 firms for the period from 2007 to 2011, using the discretionary accruals as a dependent variable. The result indicates an insignificant

level equals to (0.1316) compared to (0.05) and this indicated that the random effect regression should be used instead of the fixed effect.

	Discretionary Accruals (DAC)
Hausman Test	Prob>chi2= 0.1316

Table 3: Hausman test results

DAC = β0 + β1 FSIZE **+ β2** FLEV **+ β3** FAGE **+ β4** AUQUL **+ β5** FSUR **+ ε**		
Variables	**Coefficient**	**Significance**
Firm Size	-.0242015	0.326
Firms' Financial Leverage	.7404609	0.000
Firm Age	-.0867313	0.790
Firms' Audit Quality	-.1216824	0.232
Survival	.1678682	0.043
* Adjusted R Square = 0.1675 * Model Significance (Prob>chi2) = 0.0000		

Table 4: Random Effect GLS Regression

A random effect model is estimated by Generalized Least Squares (GLS) regression as shown in table 4. The model is found to be highly significant as the significance level is shown to be (0.0000) and the adjusted R Square is equal to (0.1675) which means that 16.75% variation in the dependent variable (earnings management) is explained by the independent variables (firm characteristics) this is similar to the results of (Waweru and Riro 2013) conducting a study on Kenyan listed firms. Regarding the significance level between each independent variable and the dependent variable it was found that only the firms' financial leverage has a significant relationship with earnings management with a significance level of (0.000) leading to the second hypothesis of the study to be accepted, in addition the coefficient is equal to (0.74046090), which shows a positive relationship between both variables, this is similar to the findings of (Weber 2006).

The rest of the independent variables show an insignificant relationship with the dependent variable as their values are greater than 0.05 and even greater than 0.1, as shown in table 4, which leads to the rejection of their hypotheses and these results regarding the relation between the firm size, firm age and firms' audit quality are similar to the findings of (Al saeed 2006, and Chung *et al* 2005).

5. Conclusion

This paper examines the impact of firm characteristics on earnings management in the 50 most active firms listed in the Egyptian stock exchange from the year 2007-2011 taking four firm characteristics to conduct the research model which are the firm size, firm financial leverage, firm age and firm's audit quality. The study extends research on the quality of financial reporting and its importance. The findings are of great importance for future researchers who aim to conduct further studies in this topic in the Egyptian market and generally speaking the finding are important for investors in developing countries as well as other stakeholders as they depend on the reported financial information to take investment and other decisions.

Findings from the tests conducted indicate that only 16.75% change in the firm's earnings management practice is explained by firms' characteristics, which is not a high percentage however very close and similar to other studies analyzing the same relation. Based on the results of this study, the firms' financial leverage has a significant positive relation with earnings management which gives an indicator for the firms to control the level of leverage as to avoid

the existence of the earnings management practice, and this might be a guidance for the stakeholders to focus and understand the leverage level of the firm before taking any decision.

6. Research limitations and direction for further research

External Validity is defined by (Saunders et al 2009) as the extent to which the research results are generalizable, that is, whether the findings may be equally applicable to other research settings, such as other organizations. Based on the above statement, this research faces several limitations.

First of all, this research showed the effect of only four independent variables constituting the firms' characteristics. Those are the most commonly used characteristics in the prior literature testing their effect on earnings management. So this could be a limitation as there might be other characteristics that can explain earnings management and raise the level of the adjusted R square. Another limitation is that the research is conducted only on a sample of the 50 most active firms listed in the Egyptian Stock Exchange (EGX). A third limitation is the inability to access all the needed data so this research is constrained only to the firms located in Egypt. Finally, the use of the disclosure book as a data source is considered a limitation as the last disclosure book issued is that of the year ending 2011.

Future research could consider other firm characteristics rather than those used in this study and other independent variables like corporate governance variables and cultural dimensions that might have a greater impact on the dependent variable (earnings management, measured by the discretionary accruals.

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