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Earnings Management Constraints and Incentives: An Investigating of the Choice between Accruals and Real Earnings Management

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Abstract: *This study examines the extent to which the relative constraints of accrual earnings management (AEM) and real earnings management (REM), in addition to earnings management motives, affect the choice between both approaches. Following prior studies, measures of AEM constraints are audit quality and prior periods' accrual manipulation, and measures of REM constraints are institutional ownership and industry competition level, and using meeting or beating zero earnings as a proxy for earnings management incentives. There are four measures of earnings management are estimated through the models of Kothari et al. (2005) and Roychowdhury (2006). The hypotheses of this study are tested on sample of nonfinancial firms listed in Egyptian Stock Exchange over the period 2005 – 2014 using OLS regression analysis. The results of this study show that AEM is substituted for REM, if firms meet or beat zero earnings. While industry specialist auditors and a long-tenured auditor constrain AEM, firms with Big 4 auditors are more likely to engage in REM. This study reveals also that, firms with high prior periods' accrual manipulation, are more likely to substitutes REM for AEM. The results present also that firms, in high industries competition, use both AEM and REM. Finally, there is no evidence that the institutional ownership affects the choice between AEM and REM. The previous findings could be helpful for external auditors, regulators and legislators in their attempts to constrain earnings management.*

Keywords: *Accrual earnings management, real earnings management, audit quality, institutional ownership, industry competition*

1. Introduction

This study aims to examine the factors impacting the choice between accrual earnings management (AEM) and real earnings management (REM) in Egypt. AEM refers to managers' opportunistic use of the flexibility allowed under General Accepted Accounting Principles (GAAP) to change reported earnings without changing the underlying cash flows (Chen 2009), while REM is a purposeful action to alter reported earnings in a particular direction, which is achieved by changing the timing or structuring of an operation, investment, or financing transaction, and which has suboptimal business consequences (Roychowdhury 2006; Zang 2012). Prior studies have provided evidence that AEM (Healy 1985; Healy and Wahlen 1999; Jones 1991) and REM (Roychowdhury 2006; Graham et al. 2005; Gunny 2010; Zang 2012) are used to manage earnings.

The advantage of REM is that it is more difficult to detect than AEM

(Graham et al. 2005; Gunny 2010; Badertscher 2011). REM alters the execution of a real transaction taking place during the fiscal year, while AEM is achieved by changing the accounting methods or estimates used when presenting a given transaction in the financial statements at the end of the year. For example, changing the depreciation method for fixed assets and the estimate for provision for doubtful accounts can bias reported earnings in a particular direction without changing the underlying transactions (Zang 2012). REM may be viewed as an ex ante form of earnings management, whereas AEM is an ex post form of earnings management. Managers are likely to choose REM based on their expectations about how the year will be unfolded, while the decision of AEM is based on managers' privately observed operating results and any shortfall that managers' face to meet the short-term earnings target (Chen 2009).

Firms face different incentives with regard to taxation, meeting or beating earnings targets, and management compensation. These incentives might be favor one of the earnings management practices. Furthermore, both AEM and REM are constrained activities. Firms are likely to face different levels of constraints for each approach, which will lead to varying abilities to use them. Therefore, a manager's choice decision between AEM and REM depends on the incentives of earnings management and the relative constraints of the two methods. Hence, the researcher tries, in this study, to suggest the incentives – constraints approach as a tool revealing that how mangers choose between both methods.

Prior studies have presented evidence that firms use the two earnings management approaches as substitutes in managing earnings (Cohen et al. 2008; Chen 2009; Cohen and Zarowin 2010; Zang, 2012; Braam et al. 2015), and this study extends research on the choice between AEM and REM by examining whether the constraints of both approaches and meeting or beating zero earnings, as one of the earnings management incentives, affect the choice between them.

Zang (2012) provided evidence for the trade-off decision as a function of the relative costs of the two activities. She documented that if firms operate in an environment, where REM is constrained due to their less-competitive status in the industry, less- healthy financial condition, higher level of scrutiny from institutional investors, and higher marginal tax rates, then they will use AEM more and REM less. She showed also that if firms' accounting practice is constrained due to heightened regulatory scrutiny, prior periods' accrual manipulation, and shorter operating cycles, then the converse will be true.

On the other hand, Chen (2009) presented empirical evidence on how AEM and REM are jointly affected by firms' growth prospects, the sensitivity of managers' compensation to stock prices and the market pricing of earnings. Chen (2009) documented that when the firm's growth prospects are favorable, the firm will boost current-period earnings through AEM, not REM. Second, when the sensitivity of the manager's compensation to stock price goes up, the firm will use AEM, not REM, to inflate current period earnings. Third, when the market pricing of earnings becomes higher, the manager will prefer AEM to REM in order to achieve short-term earnings objectives.

Compared to prior studies, this study does not depend only on the relative constraints of the two AEM and REM (as in Zang 2012), but focus also on achieving short-term earnings (as in Chen 2009). This study is extending to the previous studies, where it sets certain variables may have impact on the choice between AEM and REM. These factors could be classified into three groups: The first group is concerned to the constraints of AEM that includes audit quality and prior periods' accrual manipulation. The second group is concerned to the constraints of REM that includes institutional ownership and industry competition. The last group is considered to achieve short-term earnings objectives as one of the incentives of earnings management.

Following prior studies, the researcher uses absolute value of discretionary accruals as a proxy for AEM by using a cross-sectional variation of the Jones model 1991, which is modified by Kothari et al. (2005). Also, the researcher examines REM through the abnormal levels of operating cash flows, the abnormal production costs, and the abnormal discretionary expenses (Roychowdhury 2006; Cohen et al. 2008; Cohen and Zarowin 2010; Zang 2012), and a combined measure of REM (Cohen et al. 2008; Zang 2012). The hypotheses are tested using a sample of non-financial firms listed in Egyptian Stock Exchange containing 424 firm-years observations over the period 2005–2014.

This study contributes to the earnings management literature in several ways: first providing a more complete image of how managers choose between AEM and REM, and This issue is important, as mentioned by Fields et al. (2001) that examining only one earnings management technique at a time cannot explain the overall effect of earnings management activities. In particular, if managers use AEM and REM as substitutes for each other, then examining either type of earnings management activities in isolation may lead to incorrect conclusions of the overall level of earnings management. Second, presenting a better understanding of how earnings management practices are applied at listed Egyptian firms. Third, this study provides evidence for the choice between AEM and REM as a function of the constraints of both approaches and the achieving short-term earnings objectives (incentives – constraints approach). Finally, the results of this study could be helpful for external auditors, regulators and legislators in their attempts to constrain earnings management.

The paper proceeds as follows: section 2 reviews the literature and develops the hypotheses. Section 3 describes the research design, sample and data sources, measurement of the variables, and specifies the empirical models. Section 4 presents empirical results. Section 5 presents the conclusions.

2. Literature and Hypotheses Development

Earnings Management Incentives

As mentioned before, achieving short-term earnings targets incentives are one of the main drivers for earnings management. Burgstahlcr and Dicliev (1997) found that both cash flow from operations and changes in current accruals are managed to increase earnings, and Burgstahler and Eames (2006) documented that both cash now from operations and discretionary accruals are managed upwards to avoid

reporting earnings lower than analyst forecasts.

REM are considered to be relatively less compared to AEM when firms meet or beat short-term earnings targets, because changing their operating activities, to meet or beat short-term earnings targets, has a direct cash flow consequences and also potential long-term consequences for their economic value (Graham et al. 2005). In the same line, Chen (2009) found that the manager will prefer AEM to REM in order to achieve short-term earnings objectives. Hence, managers might choose between two earnings management practices based on meeting or beating earnings benchmarking, and it is expected that AEM is preferred over REM. That is because that the accruals have no direct cash flow effect, and only temporarily increase or decrease earnings. This analysis of the incentives factors leads to the following hypothesis:

H1: Ceteris paribus, firms are more likely to substitute AEM for REM to achieve short-term earnings targets.

Constraints of AEM

As firms have incentives to manage earnings, the question arises which constraining factors limit managers to engage in AEM. Based on a cost approach as proposed by Zang (2012), the researcher argues that firms are more likely to substitute REM, when firms have high audit quality and prior periods' accrual manipulation, which makes REM more favorable to apply for firms.

First constraint of AEM is audit quality. Manager might find it harder to convince a high-quality auditor of his/her aggressive accounting estimates than a low-quality auditor. A manager might also feel that AEM is more likely to be detected (Zang 2012). Abundant research indicates higher audit quality mitigates AEM (Becker et al., 1998; Balsam et al. 2003; Chen et al. 2008; Boone et al. 2012), however, there are relatively fewer studies examining the impact of audit quality on REM (Chi et al. 2011; Cohen and Zarowin 2010), and there are studies examining the impact of audit quality on the choice between AEM and REM) (Yu 2008; Burnett et al. 2012; Inaam 2012; Zang 2012). The results of these studies indicate that there are a positive relation between high audit quality and REM, and there are negative relation between high audit quality and AEM.

According to the results of these studies, it is expected that firms with high audit quality are more likely to use REM and less likely to use AEM. This analysis of the constraints factors leads to the following hypothesis:

H2: Ceteris paribus, firms with high audit quality are more likely to substitute REM for AEM.

Another constraint of AEM is prior periods' accrual manipulation. The articulation between the income statement and the balance sheet ensures that biased assumptions reflected in earnings are also reflected in net asset values. Therefore, managers' ability to optimistically bias earnings decreases with the extent to which net assets are already overstated on the balance sheet, relative to what their values would have been under a neutral implementation of GAAP (Barton and Simko 2002).

Due to the limited flexibility within GAAP and the reversal of accruals, managers' ability to manipulate accruals upward in the current period is

constrained by accrual management activities in previous periods (Zang 2012). Barton and Simko (2002), and Zang (2012) used net operating assets as a proxy for prior periods' accrual manipulation, and suggested that there is a negative relation between prior periods' accrual manipulation and AEM. This analysis of the constraints factors leads to the following hypothesis:

H3: Ceteris paribus, firms with high prior periods' accrual manipulation are more likely to substitute REM for AEM.

Constraints of REM

As firms have constraints to engage in AEM, there are constraints to engage in REM, which include the higher level of industry competition and institutional ownership (Zang 2012).

First constraint of REM is industry competition. Some managers might find REM particularly constrained because their firms face intense competition in the industry. So, managers in market-leader firms may perceive real activities manipulation as less costly because the erosion to their competitive advantage is relatively small (Zang 2012).

Datta et al. (2013) and Markarian and Santalo (2014) used Herfindahl–Hirschman Index (HHI) as an inverse proxy to industry competition and find more competitive industries are associated with greater AEM. Furthermore, Wu et al. (2015) found the firms that follow cost leadership strategy (cost leaders) are more likely to have a higher level of REM. Firms that follow differentiation strategy (differentiators) are less likely to use REM. For cost leaders, the market competition further increases the REM. This analysis of the constraints factors leads to the following hypothesis:

H4: Ceteris paribus, firms in higher level of industry competition are more likely to substitute AEM for REM.

Second constraint of REM is institutional ownership. Managers might find it difficult to manipulate real activities when their operation is being monitored closely by institutional investors, because institutional investors are likely to have a better understanding of the long-term implication of firms' operating decisions, leading to more effort to monitor and reduce REM than AEM (Zang 2012).

Confirmating that, Roychowdhury (2006) found a negative relation between institutional ownership and REM to avoid losses, and suggested that institutional investors have a greater ability to analyze the long-term implications of current managerial actions. This would act as a disincentive for managers to engage in REM, particularly if such manipulation reduces long-run firm value.

As long as the previous results indicate that firms with high institutional ownership are more likely to engage in AEM rather than REM, others studies find a negative relation between institutional ownership and AEM (Abdul Jalil and Abdul Rahman 2010; Aygun et al. 2014; Kamran 2014; Lakhal 2015; Min 2015).

According to the previous analysis, it is expected that firms with high institutional ownership are constrained to engage in REM. This analysis of constraints factors leads to the following hypothesis:

H5: Ceteris paribus, firms with high of institutional ownership are more likely to substitute AEM for REM.

3. Research Design

3.1 Sample Selection and Data

The sample has been selected from the firms listed in Egyptian Stock Exchange and excludes: (1) financial institutions (given their specific capital structure and profits), (2) firms in sectors are less than 10 firms (to estimate earnings management), (3) firms for which the data could not be found. The final sample is 58 firms with 424 firm-years observations over the period 2005–2014.

The financial data needed to test the hypotheses are obtained from the annual reports that are available from the Egyptian Company for Information Dissemination (EGID).

3.2 Variables measurement

3.2.1 Accrual Earnings Management

Following prior literature, discretionary accruals are used as a proxy for AEM. Discretionary accruals are the difference between firms' actual accruals and the normal level of accruals. Normal level of accruals is estimated using the following Jones (1991) with adding return of assets as suggested by Kothari et al. (2005):

$$TA_{it}/A_{it-1} = \alpha_0 + \alpha_1 (1/A_{it-1}) + B_1 (\Delta REV_{it}/A_{it-1}) + B_2 (PPE_{it}/A_{it-1}) + B_3 (ROA_{it}/A_{it-1}) + \varepsilon_{it} \ldots\ldots\ldots(1)$$

Where; TA_{it} is total accruals for firm i in year t, and total accruals is the earnings before extraordinary items and discontinued operations minus the operating cash flows; A_{it-1} is total assets for firm i in year t-1; ΔREV_{it} is revenues for firm i in year t minus revenues in year t-1; PPE_{it} is the gross property, plant, and equipment for firm i in year t.

Total accruals are scaled by total assets to control for firm size, and to reduce heteroskedasticity in the residuals (Kothari et al., 2005). The cross-sectional regression is estimated for each industry grouping with at least 10 observations. The absolute value of estimated residuals from equation (1) is used as a proxy for AEM.

3.2.2 Real Earnings Management

Following Roychowdhury (2006), there are three real manipulation activities increasing earnings through; increasing sales by offering price discounts or more lenient credit terms, reducing the cost of goods sold by overproducing inventory, and cutting discretionary expenditures, including R&D, advertising, and selling, general, and administrative (SG&A) expenditures. The first activity is measured by the abnormal level of cash flow from operations (AB_CFO), the second activity is measured by the abnormal level of production costs (AB_PROD), and the third activity is measured by the abnormal level of discretionary expenditures (AB_DISEXP).

The normal level of operating cash flow could be estimated using the following equation (Roychowdhury 2006):

$$CFO_{it}/A_{it-1} = \alpha_0 + \alpha_1 (1/A_{it-1}) + \beta_1 (S_{it}/A_{it-1}) + \beta_2 (\Delta S_{it}/A_{it-1}) + \varepsilon_t \ldots\ldots (2)$$

Where; CFO_{it} is the operating cash flow for firm i in year t ; S_{it} is the net sales for firm i in year t; ΔS_{it} is the change in net sales for firm i in year t. Equation (2) is estimated cross-sectionally for each industry-year with at least 10 observations, and the abnormal level of operating cash flows (AB_CFO) is

measured as the estimated residual from equation (2), and this residual is multiplied by (-1) (Cohen et al. 2008), such that higher values indicate lower current-period of operating cash flows by firms to increase sales during the year by offering price discounts or more lenient credit terms.

The normal level of production costs could be estimated using the following equation (Roychowdhury 2006):

$$PROD_{it} / A_{it-1} = \alpha_0 + \alpha_1 (1 / A_{it-1}) + \beta_1 (S_{it} / A_{it-1}) + \beta_2 (\Delta S_{it} / A_{it-1}) + \beta_3 (\Delta S_{i-1} / A_{it-1}) + \varepsilon_t \quad \ldots\ldots (3)$$

Where; $PROD_{it}$ is the production costs (i.e., the sum of the cost of goods sold for firm i in year t and the change in inventory from year t-1 to year t); ΔS_{it-1} is the change in net sales for firm i in year t-1. Equation (3) is estimated cross-sectionally for each industry-year with at least 10 observations, and the abnormal level of production costs (AB_PROD) is measured as the estimated residual from equation (3). The higher the residual, the larger the amount of inventory overproduction, and the greater the increase in reported earnings through reducing the cost of goods sold to increase reported earnings.

The normal level of discretionary expenditures could be estimated using the following equation (Roychowdhury 2006):

$$DISEXP_{it} / A_{it-1} = \alpha_0 + \alpha_1 (1 / A_{it-1}) + \beta_1 (S_{it-1} / A_{it-1}) + \varepsilon_t \ldots\ldots (4)$$

Where; $DISEXP_{it}$ is the discretionary expenditures (i.e., the sum of R&D., advertising, and SG&A expenditures) for firm i in year t; S_{it-1} is the net sales for firm i in year t-1. Equation (4) is estimated cross-sectionally for each industry-year with at least 10 observations, and the abnormal level of discretionary expenditures (AB_DISEXP) is measured as the estimated residual from equation (4). The residual is multiplied by (-1) (Cohen et al. 2008; Zang 2012), such that higher values indicate greater amounts of discretionary expenditures cut by firms to increase reported earnings.

The researcher aggregates the three real activities manipulation measures into one proxy, REM, by taking their sum (Cohen et al. 2008; Zang 2012)

3.2.3 Earnings Management Incentives

Chen (2009) focuses on firms' growth prospects (long-term objectives), and the sensitivity of managers' compensation to stock prices and the market pricing of earnings (short-term objectives). In this study, the researcher focuses only short-term objectives, and uses meeting or beating zero earnings (MBZE) as a proxy for this measure. (MBZE) measured as an indicator variable that equals 1 if earnings per share (EPS) are equal or above zero and 0 otherwise (Eisele 2012).

3.2.4 AEM Constraint

AS determined above, there are two constraints of AEM. The first is audit quality. The audit activity is not objectively measurable and that the evaluation of the quality of the audit services must be based on indirect signals (Inaam 2012). In this study, following Chi et al. (2011), Inaam (2012), and Zang (2012), there are three factors which contribute to audit quality: big 4 auditors (Big4), industry specialization of auditor (SPEC), and auditor tenure (TENURE). These factors are measured as the following: (Big4) measure as an indicator variable that equals 1 if the firm is audited by a Big 4 auditor and 0

otherwise; (SPEC) measure as an indicator variable that equals 1 if the auditor is an industry specialist auditors and 0 otherwise. An auditor is classified as an industry specialist auditor, if auditor's market share (in terms of clients' total assets) is equal or above the median of auditor's market share in the industry each year; and (TENURE) measure as the number of years the auditor has audited the client.

The second constraint of AEM is prior periods' accrual manipulation. Following Barton and Simko (2002) and Zang (2012), the net operating assets at the beginning of the year (NOA_{t-1}) is used as a proxy for the extent of accrual management in previous periods. (NOA_{t-1}) is computed as shareholders' equity less cash and marketable securities plus total debt, then scaled by lagged sales

3.2.5 REM Constraint

The first constraint of REM is the institutional ownership ($INST_{t-1}$).The percentage of institutional ownership at the beginning of year t is used as a proxy for this measure (Roychowdhury 2006; Zang 2012).

The industry competition level is the second constraint of REM. Following (Cheng et al. 2013; Datta et al. 2013; Laksmana and Yang 2014; Markarian and Santalo 2014; Mohebbi and Kamyabi 2014), the Herfindahl–Hirschman Index (HHI) at the beginning of year t is used as an inverse proxy for this constraint. (HHI) is computed as the following;

$$HHI = \sum_{i=1}^{N} [s_i / S]^2$$

Where; s_{it} is the net sales for firm i in year t; S is the sum of net sales of all firms in the industry in year t; i is the number of firms in industry j. The above calculations are performed for each fiscal year for each industry. The high value of (HHI) indicates to a high level of industry concentration (low level of industry competition)

3.2.6 Control Variables

Control variables may have an effect on the dependent variable. Following prior studies, the size of a firm may affect earnings management choices, therefore the natural logarithm of total assets at the end of the year (SIZE) is included as a control variable (Inaam 2012, Zang, 2012). Leverage is included as second control variable, as highly leveraged companies may want to manage earnings (Zang 2012). Leverage is computed as the ratio of total liabilities (short-term + long-term) divided by total assets at the end of the year (LEV) (Inaam 2012; Zang 2012).

3.3 Empirical Model

To investigate the factors (incentives-constraints approach) impact on the choice between AEM and REM, the researcher estimates the following equations:

$$AEM = \alpha + \beta_1 MBZE_{it} + \beta_2 BIG4_{it} + \beta_3 SPEC_{it} + \beta_4 TENURE + \beta_5 NOA_{it-1} + \beta_6 INST_{it-1} + \beta_7 HHI_{it-1} + \beta_8 SIZE_{it} + \beta_9 LEV_{it} + \varepsilon_{it} \ldots\ldots (5)$$

$$REM = \alpha + \beta_1 MBZE_{it} + \beta_2 BIG4_{it} + \beta_3 SPEC_{it} + \beta_4 TENURE + \beta_5 NOA_{it-1} + \beta_6 INST_{it-1} + \beta_7 HHI_{it-1} + \beta_8 SIZE_{it} + \beta_9 LEV_{it} + \varepsilon_{it} \ldots\ldots (6)$$

Table 1: Variables Measurement

Variable	Measured by
Dependent Variables	
AEM	is the discretionary accruals are measured as the estimated residual from Equation (1).
REM	is proxy of real earnings management, and is measured as sum of (AB_CFO), (AB_PROD), and (AB_DISEXP).
Earnings Management Incentives	
MBZE	is an indicator variable that equals 1 if earnings per share (EPS) are equal or above zero and 0 otherwise.
AEM Constraint	
BIG4	is an indicator variable that equals 1 if the firm is audited by a Big 4 auditor and 0 otherwise.
SPEC	is an indicator variable that equals 1 if the auditor is industry specialist auditors and 0 otherwise.
TENURE	is the number of years the auditor has audited the client.
NOA_{t-1}	is the net operating assets at the beginning of the year.
REM Constraint	
$INST_{t-1}$	is the percentage of institutional ownership at the beginning of year t.
HHI_{t-1}	is the Herfindahl–Hirschman Index at the beginning of year t.
Control Variables	
SIZE	is the natural logarithm of total assets at the end of the year.
LEV	is the leverage is computed as the ratio of total liabilities (short-term + long-term) divided by total assets at the end of the year.

4. Results and Discussion

4.1 Descriptive Statistics

Table 2 reports the descriptive statistics of the variables in the main tests of the hypotheses. Among the 424 observations identified during the sample period 2005–2014, 373 observations have measures of AEM and independent variables (incentives and constraints) available. The sample size reduces to 330 observations due to the data requirements of REM calculated. All the non-indicator variables replaced the extreme observations with a less extreme value to eliminate any bias in the OLS estimators (Pallent 2007; Gujarati and Porter 2010).

Table 2: Descriptive Statistics

	N	Mean	Median	Std. Dev.	25%	75%
AEM	373	0.0710	0.0571	0.0564	0.0240	0.1069
REM	330	0.0118	0.0116	0.1397	-0.0745	0.1049
MBZE	373	0.8300	1.0000	0.3730	1.0000	1.0000
BIG4	373	0.3600	0.0000	0.4810	0.0000	1.0000
SPEC	373	0.6600	1.0000	0.4750	0.0000	1.0000
TENURE	373	4.0000	4.0300	1.6930	4.0000	4.0300
NOA t-1	373	3.1280	1.9876	2.8459	0.9330	4.5143
INST t-1	373	0.5616	0.6390	0.3138	0.3005	0.8213
HHI t-1	373	0.1595	0.1330	0.0695	0.1060	0.2170
SIZE	373	19.8196	19.8063	1.3965	19.0134	20.6458
LEV	373	0.4536	0.4383	0.2391	0.2588	0.6406

As shown in table 2, the mean value of AEM and REM are 7.10 % and 1.16 % of total assets respectively. These results indicate that the magnitude of REM is lower than AEM. There are 83% of the sampled firms meeting or beating zero earnings. Table 2 reveals that Big 4 auditors audit 36% of the sampled firms, the overall mean of industry specialist auditors is 66%, and the mean of audit tenure is 4 years. Table 2 shows also the mean of net operating assets 3.12, and firms have an institutional ownership of 56.6 % on average. The mean of HHI-index is 15.95%, which is used as an inverse proxy to industry competition level. Hence, the mean of HHI suggests that the higher level of industry competition. The mean of firm size, measured by the natural logarithm of total assets, is 19.81 with a standard deviation of 1.39, while the mean of LEV is 45.36 with a standard deviation of 0.2391.

4.2 Multivariate Analysis

Table 3 reports the Pearson correlations as the following:

Table 3: Pearson's correlation

	AEM	MBZE	BIG4	SPEC	TENURE	NOA t-1	INST t-1	HHI t-1	SIZE	LEV
AEM		0.110**	0.053	-0.117**	-0.158***	-0.106**	-0.021	-0.131**	-0.088	-0.061
REM		-0.020	0.016*	-0.072	-0.014	0.076	0.023	-0.090	0.066	0.071
MBZE			0.037	0.011	0.009	-0.123**	-0.094*	-0.219***	0.064	-0.243***
BIG4				0.403***	-0.008	0.012	0.291***	-0.192***	0.441***	-0.113**
SPEC					0.014	0.034	0.395***	-0.036	0.666***	0.065
TENURE						0.056	0.090	.137***	-0.022	0.007
NOA t-1							-0.066	0.428***	0.107**	-0.138***
INST t-1								-0.107**	0.396***	0.120**
HHI t-1									-0.084*	0.003
SIZE										-0.011
LEV										

***. Correlation is significant at the 0.01 level (2-tailed).
**. Correlation is significant at the 0.05 level (2-tailed).
*. Correlation is significant at the 0.1 level (2-tailed).

Table 3 shows that there is a significant and positive correlation between AEM and meeting or beating zero earnings (MBZE), while there are a significant and negative between AEM and industry specialist auditors (SPEC), audit tenure (TENURE), net operating assets (NOA), and (HHI). On the other hand, there is a significant and positive correlation between REM and Big 4 auditors (BIG4). Table 3 shows also, there is a significant and negative correlation between meeting or beating zero earnings (MBZE) and both net operating assets (NOA) and (HHI), there is a significant and positive (negative) correlation between Big 4 auditors and industry specialist auditors (HHI), and there are a significant and positive correlation between HHI-index and audit tenure and net operating assets. The relations among explanatory variables above 20% might cause a heteroscedasticity problem, so the research takes into account when testing the hypotheses.

Table 4 shows the results of a multivariate regression analyses as the following:

Table 4: Results of regression

	Panel A: AEM				Panel B: REM			
	Pred. Sign	Coefficients			Pred. Sign	Coefficients		
		M1	M2	M3		M1	M2	M3
Intercept	?	-0.157***	0.10***	0.106***	?	-0.217	-0.010	0.037
MBZE	+	0.014*	0.014*		-	0.000		
BIG4	-	0.013*			+	0.038**		
SPEC	-	-0.014*	-0.014**	-0.013**	+	-0.067**	-0.025	-0.025
TENURE	-	-0.005***	-0.005**	-0.005**	+	0.000		
NOA t-1	-	-0.001		-0.002*	+	0.006**	0.004	
INST t-1	+	0.008			-	-0.003		
HHI t-1	-	-0.043	-0.077*		+	-0.237*		-0.188*
SIZE		-0.003				0.012		
LEV		-0.007				0.076**	0.054	0.050
R2		7.04	5.09	4.07		6.9	1.9	2.1
Adj. R^2		5.01	4.09	3.09		4.3	1.0	1.2
F-Test		***	***	***		**	*	*

*, **, *** Represent significance at the level of 10 percent, 5 percent, and 1 percent levels, respectively.

Table 4, panel A, model (1) shows the results of the AEM equation (5). The coefficient of (MBZE) is positive and significant at the 0.1, indicating that firms, which meet or beat zero earnings, engage in higher levels of AEM as predicted by H1. The coefficients of (SPEC) and (TENURE) are negative and significant at the 0.1 and 0.01 respectively. Hence, the firms with industry specialist auditors, and long audit tenure, are constrained to engage in AEM as predicted by H2. Model (1) also shows that there is no relation between AEM and (NOA), (INST), and (HHI). Model (1) also shows that the coefficient of (BIG4) is positive and significant at the 0.1, but this result is not reasonable for two reasons, first there is no relation between AEM and big 4 auditors according to the Pearson's correlation. Second, it is predicted that firms with a big 4 auditor are more likely to constrain firms' attempts to manage earnings with AEM, or there is no relation according to the previous studies.

In the model (2) and (3), the researcher excludes all variables that are not related with AEM according to the results of model (1) (i.e., INST, SIZE, and LEV), but include the explanatory variables which are related with AEM based on Pearson's correlation (Table 3) (i.e., MBZE, SPEC, TENURE, NOA, and HHI). This procedure is done to ensure the results of model (1) taking the relation between the explanatory variables above 20% into account (i.e., the relation between NOA and HHI), by not including it in the same regression model. Table 4, panel A., model (2) shows that the coefficient of (HHI) is negative and significant at the 0.1, indicating that firms in low level of industry concentration (high level of industry competition) engage in AEM as predicted by H5. In model (3), the coefficient of (NOA) is negative and significant at the 0.1, indicating that AEM is constrained by prior periods' accrual manipulation as predicted by H3.

Table 4, panel B, model (1), shows the results of the REM equation (6). The coefficient of (BIG4) is positive and significant at the 0.05, indicating that firms with a big auditor engage in higher levels of REM as predicted by H1. However, there is a negative coefficient of (SPEC), that the researcher interprets the relation between (BIG4) and (SPEC) according to Pearson's correlation, which might be caused by this bias, especially that there is no significant relation between REM and (SPEC). Consistent with the prior studies, the coefficient of (NOA) is negative and significant at the 0.05, which indicated that the firms with prior periods' accrual manipulation are more likely to engage in REM as predicted by H3. On the contrary with the prior Literatures, the coefficients of (HHI) are negative and significant at the 0.1. , indicating that firms in low level of industry concentration (high level of industry competition) engage in REM. Furthermore, there is no relation between REM and (MBZE), (TEBURE), (INST), and (SIZE).

In table 4 panel B, the researcher excludes (BIG4) from regression model because the relation between (BIG4) and (SPEC) is above 20%, and include all variables are related with REM according to the results of the first model (i.e., SPEC, NOA, HHI, and LEV) in models (2), and (3). Table 4, panel B, model (2) shows that there is no relation between REM and (SPEC), (NOA) and (LEV), indicating that firms with industry specialist auditors, and prior periods'

accrual manipulation are not constrained to engage in REM, as predicated by H2 and H3. In model (3), the coefficient of (HHI) is only negative and significant at the 0.1.

5. Conclusion

The purpose of this study is to examine the factors impacting the choice between AEM and REM, using a sample of firms containing 58 firms listed in Egyptian Stock Exchange over the period 2005 – 2014. This study contributes to the earnings management literature by showing how managers choose between AEM and REM based on proposed incentives – constraints approach, and presenting a better understanding of how earnings management practices are applied at listed Egyptian firms.

This paper provides evidence that the firms with meeting or beating zero earnings are more likely to engage in AEM than REM, consistent with Chen (2009) that mangers use AEM more than REM in manage earnings to achieve short-term objectives. This study also reveals that firms with an industry specialist auditor, and long audit tenure, are less likely to engage in AEM, furthermore firms with a big4 auditor are more likely to engage in REM, as documented in prior studies (Yu 2008; Chi et al. 2011; Inaam 2012' Zang 2012). The results show that the prior periods' accrual manipulation constrains mangers from engaging in AEM, which motivates engaging in REM (Barton and Simko 2002; Zang 2012). On the contrary with the previous studies, this study reports that the firms use AEM and REM in high level industry competition (Zang 2012; Laksmana and Yang 2014). Finally, this study presents empirical evidence that the institutional ownership has not any role in reducing AEM or REM.

The previous findings could be helpful for external auditors, regulators and legislators in their attempts to constrain earnings management.

Opportunities for further research could investigate the impact of the previous factors on each activity of REM, and investigate the impact of the long-term incentive on the choice between AEM and REM.

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