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The effect of real earnings management on audit fees in listed companies in Tehran Stock Exchange

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A B S T R A C T

This paper presents an empirical investigation to study the effect of real earnings management on audit fees in selected firms from Tehran Stock Exchange. The study gathers the necessary information from selected stocks listed in Tehran Stock Exchange. The proposed study uses the information of 63 firms over a four-year period from 2009 to 2012, which leaves us to have 252 data. Using some regression study, The study has confirmed real earnings management influences positively on audit fees in general. In addition, while real earnings management through an increase in sales does not influence on audit fees, the survey has concluded that real earnings management through increase in production costs as well as decrease in discretionary expenditures influences positively on audit fees.

1. Introduction

During the past few decades, there have been tremendous efforts on learning the effects of audit fees on profitability of firms (Fama & French, 1997; Fama & MacBeth, 1973; Dechow et al., 1995; Dechow & Dichev, 2002). Simunic (1980) identified determinants of audit fees and categorized them into three distinct groups: auditee size, operation complexity, and inherent audit risk. He reported that the level of audit fees could increase in client firms' size, operation complexity, and inherent audit risk because more quantity of resources utilized by the auditor in performing the audit examination would be needed and auditors were exposed to larger possible litigation risks when auditing become more complex. After controlling these three groups of fee determinants, subsequent studies explored additional audit fee determinants including auditor size, non-audit services, auditor change, auditor change direction, auditor brand name and industry specialization, client satisfaction, client risks, client bargaining power, audit committee characteristics, internal control quality, SOX passage, cross-listing and country's legal regimes, education requirement for new accountants, and audit market competition (Sohn, 2011; Palmrose 1986a, 1986b; Francis & Simon 1987; Simon & Francis 1988; Craswell et al., 1995; Behn et al., 1999; Craswell & Francis, 1999; Johnstone & Bedard, 2001; Whisenant et al., 2003; Abbott et al., 2003; Ashbaugh et al., 2003; Chaney et al., 2004; Hay et al.,

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2006, Huang et al., 2007; Hogan & Wilkins, 2008; Huang et al., 2009; Choi et al., 2009; Allen & Woodland, 2010, Hay & Knechel 2010; Fudenberg & Tirole, 1995; Hoitash et al., 2008).

The studies on the relationship between earnings management and audit fees are relatively scarce and only concerned with accrual-based earnings management (AEM). Gul et al. (2003) reported some empirical evidence that the audit fees could increase in the level of unsigned discretionary accruals. They argued this is because, to the extent that discretionary accruals proxy for managerial opportunism, they provide managers with a means of managing reported earnings to their advantage (Healy, 1985), and because accruals are associated with high-risk accounts such as accounts receivable and inventories (Willingham & Wright, 1985; Kreutzfeldt & Wallace, 1986).

Abbott et al. (2006) reported that the effect of discretionary accruals on audit fees was positive in the magnitude of income-increasing but negative in the magnitude of income-decreasing accruals due to the asymmetric litigation risks for auditors. Antle and Gordon (2006) reported a negative relationship between audit fees and their measure of signed discretionary accruals, which is inconsistent with Abbott et al. (2006). However, no study on audit fees thus far investigated whether and how real earnings management (REM) of client firms influences their level of audit fees. Roychowdhury (2006) developed empirical models that allow researchers to separate the normal levels of real operational activities as reflected in cash flows from operations (CFO), production costs, and discretionary expenditures from their abnormal levels. His analysis shows that managers engage in real activities manipulation to meet certain earnings targets.

Since Roychowdhury's work, subsequent studies dealing with REM issues have provided evidence supporting that, while the expected, normal levels of real activities were associated with optimal operational decisions, their unexpected, abnormal levels capture managerial opportunism to intervene in the financial reporting process. One strand of previous REM research has focused on whether managers use REM as a substitute or complement for AEM when making strategic decisions on the timing and magnitude of earnings manipulation. For instance, Zang (2007) studied AEM and REM, and reported that managers could make REM decisions before making AEM decisions around the end of accounting period. Cohen et al. (2008) examined the effect of the SOX passage on managerial choice between AEM and REM. They documented that firms were heavily involved in AEM in the pre-SOX period, but their involvement in AEM declined significantly after the passage of SOX. Consistent with Zang (2007), their finding shows that the passage of SOX motivates companies to switch from AEM to REM. This happens for the following reasons: REM is harder for external auditors, regulators, and other stakeholders to detect, compared with AEM. Further, expected legal liability costs associated with AEM increase substantially in the post-SOX environment due to heightened financial reporting regulations and additional certification requirements, while the same costs associated with REM do not. Therefore, REM becomes (relatively) less costly in the post-SOX period than AEM. The above evidence is consistent with the analytical results of Ewert and Wagenhofer (2005) who demonstrated that managers switch from AEM to REM in an environment of tightened accounting standards or more stringent enforcements. Graham et al. (2005) reported that the large majority of managers were willing to delay the timing of new investment projects to meet a certain earnings target even when such a deferment had adverse implications on long-term value. A subsequent study by Cohen and Zarowin (2010) investigates the behaviors of REM and AEM around seasoned equity offerings (SEOs), i.e., during the period in which managers had relatively high incentives to artificially inflate current-period earnings. Consistent with Zang (2007) and Cohen et al. (2008), they also reported that SEO firms had substituted from AEM to REM in the post-SOX period as SOX had made AEM more costly than REM (e.g., increased litigation risk associated with AEM). The above results, taken as a whole, imply that managers take into account potential costs and benefits associated with their choice between AEM and REM. While the primary concern of the aforementioned studies is with the trade-off relationship between AEM and REM as a means to meet earnings management objectives, the other strand of REM research concentrates on economic

consequences of REM. For example, Gunny (2010) reported that REM was inversely associated with future-period earnings and cash flow performance, which is consistent with the view that managers manipulate current-period earnings at the expense of future firm value. Using a sample of SEO firms, Mizik and Jacobson (2007) reported that to temporarily inflate stock prices at the time of SEOs, managers engage in boosting reported earnings via cutting marketing expenses, but in the long run, such managerial myopia leads to a decline in stock market performance.

Kim and Sohn (2010) reported that the cost of equity capital increases with firms' REM activities and that this asset pricing consequence of REM was larger than that of AEM. However, none of the previous studies on REM has investigated whether and how REM of their client firms influences auditors' determination of the level of audit fees. Unlike AEM, the effect of REM on the level of audit fees is ex ante not clear. On one hand, REM may have limited effect on the auditing fee level. Real operation adjustments such as discounting sales prices, granting more lenient credit terms, conducting overproductions, and reducing or deferring R&D and advertising expenditures can be a result of optimal business decisions. Thus, it is difficult for auditors to distinguish opportunistic REM from the operation adjustments based on optimal business decisions. Even when auditors suspect an opportunistic REM, it is usually not their direct jurisdiction. As long as firms comply with the existing GAAP in preparing their financial statements, auditors may have a limited rationale to charge higher audit fees to restrict the detected REM. Then, the extent of the opportunistic REM will not influence on the level of audit fees. On the other hand, there is a possibility that auditors may have incentives to charge higher fees on their client firms engaging in more extensive REM activities. REM increases the complexity of reported accounting numbers by adding noise to accruals and cash flows and by distorting firms' long-term cash flow generating abilities (Kim & Sohn, 2010).

In the process of verifying their client firms' compliance with accounting standards and detecting AEM, auditors require to put more resources to the firms with more extensive REM. It is because the reported earnings are more "contaminated" by different real operation manipulation activities and because the impacts of AEM and REM get entangled in distorting reported earnings. It can be difficult and more resource-consuming to tease out the portion of manipulated earnings through violating GAAP from that through REM. Therefore, auditors need to recover their higher costs in the form of increased audit fees. Another aspect for the auditors' incentives to charge higher audit fees on firms with more intensive REM relate to the shareholder litigation risk. To the extent that investors fixate on the nominal level of current earnings, stock prices of such firms are overestimated. However, this temporarily boosted stock prices fall when investors recognize the true status of firms' cash flow generating abilities over time. If stock price is boosted by the upwardly manipulated earnings through AEM and falls subsequently when the firm's real fundamental is disclosed, shareholders may sue the firms' auditors for their losses. If managers use REM in addition to AEM, and the extent of stock price boosting is thus bigger than when they use only AEM, shareholders are more likely to sue auditors by holding them responsible for failing in AEM mitigation. Because auditors know that litigation risk increases due to adding REM to AEM, they have incentives to be ex ante compensated for this increased litigation risk through higher audit fees. Consistent with this argument, Kim and Park (2009) documented that auditors care about REM in client change. Therefore, it is an empirical question whether REM is positively related to the level of audit fees, especially after controlling for the effects of other audit fee determinants and AEM.

2. The proposed study

This paper presents an empirical investigation to study the effect of real earnings management on audit fees in selected firms from Tehran Stock Exchange. The first model of this paper is as follows,

$$LnAFEE_{it}=\alpha_0+\alpha_1 REM_{it}+\alpha_2 AEM_{it}+\alpha_3 LnA_{it}+\alpha_4 INVREC_{it}+\alpha_5 LOSS_{it}+\alpha_6 LEV_{it}+\alpha_7 ROA_{it}+\alpha_8 BMjt+\alpha_9 CGSALES_{it}+\alpha_{10} AUDIT_{it}+\varepsilon_{it} \quad (1)$$

where $LnAFEE_{it}$ denotes the natural logarithm of audit fees paid to auditors for their financial statement audits, REM_{it} states the real earnings management, AEM_{it} states accrual-based earnings management, LnA_{it} is the natural logarithm of total assets is included to control for the effect of client firms' size on audit fees, $INVREC_{it}$ is the ratio of sum of inventory and receivable accounts divided by total assets, $LOSS_{it}$ is equal to one if the firm states loss and zero, otherwise, LEV_{it} represents the leverage, which is calculated as a ratio of total liabilities divided by total assets, $ROA_{it}$is equal to return of assets, $CGSALES_{it}$ represents the changes on sales and finally $AUDIT_{it}$ is equal to one if the firm is audited by the government's official representative (audit organization) and zero, otherwise. In addition, α_i, $i=0,\ldots,10$ represent the coefficients of the regression model estimated by regression technique and ε_{it} states the residuals. we use Jones's model (Jones, 1991) to calculate accrual-based earnings management as follows,

$$TAC_{it} / A_{it} = \beta_1 [1/A_{it}\text{-}1]+\beta_2 [\Delta Sales_{it}\text{-}\Delta REC_{it} /A_{it}\text{-}1]+\beta_3 [PPE_{it} /A_{it}\text{-}1]+\varepsilon_{it} \quad (2)$$

whereTAC_{it} states total accruals, A_{it} represents total assets, $\Delta Sales_{it}$ represents the change of sales for two consecutive years, ΔREC_{it} states change in receivable accounts and PPE_{it} demonstrates total equipment values. In addition, β_i, $i=1,\ldots,3$ represent the coefficients of the regression model estimated by regression technique and ε_{it} states the residuals. Finally, to study real earnings management through increase in sales, the study uses the following model,

$$CFO_{it} /A_{it-1} = \alpha_1 1/A_{it-1} + \alpha_2 Sales_{it} /A_{it-1} + \alpha_3 \Delta Sales_{it} /A_{it-1} +\varepsilon_{it} \quad (3)$$

where CFO_{it} denotes the cash flows from operations. next, to study real earnings management through increase in production costs, the study uses the following model,

$$Prod_{it} / A_{it-1}= \alpha_1 1/ A_{it-1} + \alpha_2 Sales_{it} / A_{it-1}+ \alpha_3 \Delta Sales_{it} / A_{it-1}+ \alpha_4 \Delta Sales_{it-1} / A_{it-1}+ \varepsilon_{it} \quad (4)$$

where $Prod_{it}$ represents the production costs. Finally, to study real earnings management through reduction in discretionary expenditures such as research and development, advertisement, etc. we use the following model,

$$DiscE_{it} /A_{it-1} = \alpha_1 1/ A_{it-1} + \alpha 2\ Sales_{it-1} / A_{it-1}+ \varepsilon_{it,} \quad (5)$$

where $DiscE_{it}$ represents discretionary expenditures. The proposed study uses the information of 63 firms over a four year period from 2009 to 2012, which leaves us to have 252 data. Mean absolute value residuals of three statistical models 3, 4 and 5, as a general indicator of the real earnings management has been considered in the review of test the main hypothesis of this study. Fig.1 demonstrates the distribution of variables used in this survey. As we can observe from the results of Fig. 1, all components of the survey seem to be normally distributed. In addition, Table 1 and Table 2 demonstrate the summary of some basic statistics.

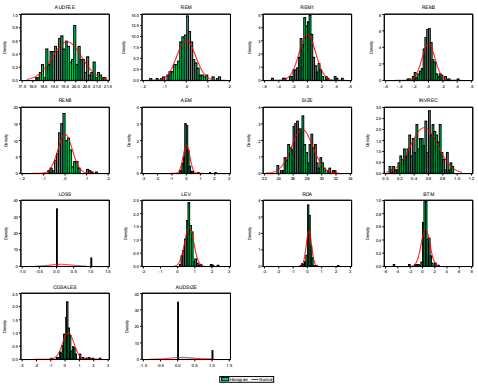

Fig. 1. Distribution of different variables

Table 1
The summary of some basic statistics

Statistics	$SIZE_{i,t}$	$AEM_{i,t}$	$REM^{DISCE}_{i,t}$	$REM^{PROD}_{i,t}$	$REM^{CFO}_{i,t}$	$REM_{i,t}$	$AUDFEE_{i,t}$
Mean	27.27159	0.015895	7.39E-17	4.82E-19	-2.42E-18	3.97E-12	19.59430
Median	27.09855	0.002408	-0.004568	-0.001225	-0.002295	0.001944	19.51930
Max	31.99750	2.077276	0.142697	0.424788	0.492581	0.159473	21.31270
Min	23.84670	-0.460860	-0.076807	-0.278332	-0.485586	-0.169220	18.19750
Std. Dev.	1.491704	0.229793	0.033469	0.089978	0.113738	0.043505	0.682549
Skewness	0.436617	4.448041	1.157312	0.417641	0.389913	0.105435	0.296129
Kurtosis	2.998258	38.36489	5.744635	5.628332	6.530563	5.316899	2.514545
Jarko-Bra	8.006663	13963.06	135.3503	79.86116	137.2666	56.83113	6.157589
P-value	0.018255	0.000000	0.000000	0.000000	0.000000	0.000000	0.046015
N	252	252	252	252	252	252	252

Table 2
The summary of some basic statistics

	$AUDSIZE_{i,t}$	$CGSALES_{i,t}$	$BTM_{i,t}$	$ROA_{i,t}$	$LEV_{i,t}$	$LOSS_{i,t}$	$INVREC_{i,t}$
Mean	27.27159	0.015895	0.510865	0.106709	0.669674	0.126984	0.540456
Median	27.09855	0.002408	0.513400	0.099600	0.656250	0.000000	0.560750
Max	31.99750	2.077276	2.505300	2.100800	2.356400	1.000000	0.947100
Min	23.84670	-0.460860	-4.690300	-0.442000	0.169400	0.000000	0.059400
Std. Dev.	1.491704	0.229793	0.705168	0.185754	0.269051	0.333618	0.191605
Skewness	0.436617	4.448041	-3.420133	4.774821	2.424559	2.240637	-0.259670
Kurtosis	2.998258	38.36489	26.13833	54.82256	14.58983	6.020455	2.397779
Jarko-Bra	8.006663	13963.06	6112.802	29156.12	1657.301	306.6521	6.640039
P-value	0.018255	0.000000	0.000000	0.000000	0.000000	0.000000	0.036152
N	252	252	252	252	252	252	252

The results of Table 1 and Table 2 also indicate that the data were normally distributed. The other observation is to study the correlation between residuals. In fact, we expect to have small correlations between each pair of independent variables and Table 3 shows details of our findings. As we can observe from the results of Table 3, there are some strong correlations between two pairs of independent variables. However, since these two variables are not entered into the final model simultaneously, we may conclude that there would not be any major problem.

Table 3
The summary of correlation ratios and P-values

	AUDFEE	REM	REM1	REM2	REM3	AEM	SIZE	INVREC	LOSS	LEV	ROA	BTM	CGSALES	AUDSIZE
AUDFEE	1.000000													

REM	-0.038494	1.000000												
	0.5430	-----												
REM1	0.046187	0.722775	1.000000											
	0.4654	0.0000	-----											
REM2	-0.030071	0.456593	-0.232750	1.000000										
	0.6347	0.0000	0.0002	-----										
REM3	-0.226228	0.215849	0.045916	-0.116917	1.000000									
	0.0003	0.0006	0.4680	0.0639	-----									
AEM	-0.062570	-0.739314	-0.476499	-0.066519	0.183808	1.000000								
	0.3225	0.0000	0.0000	0.2929	0.0034	-----								
SIZE	0.707475	-0.086895	0.007523	-0.027751	-0.289814	0.009078	1.000000							
	0.0000	0.1691	0.9054	0.6611	0.0000	0.8860	-----							
INVREC	-0.270897	-0.058993	-0.071305	-0.040376	0.120817	0.131103	-0.258532	1.000000						
	0.0000	0.3510	0.2594	0.5235	0.0554	0.0375	0.0000	-----						
LOSS	-0.121893	0.004432	0.015121	0.006516	-0.051620	-0.285638	-0.215149	-0.119802	1.000000					
	0.0533	0.9442	0.8112	0.9180	0.4145	0.0000	0.0006	0.0575	-----					
LEV	-0.138716	-0.001491	0.032796	-0.007088	-0.098208	-0.320005	-0.211384	0.066888	0.491577	1.000000				
	0.0277	0.9812	0.6043	0.9109	0.1199	0.0000	0.0007	0.2902	0.0000	-----				
ROA	0.092203	0.005381	0.037700	-0.100846	0.163982	0.044676	0.201346	-0.088384	-0.489267	-0.436112	1.000000			
	0.1444	0.9323	0.5514	0.1103	0.0091	0.0000	0.0013	0.1619	0.0000	0.0000	-----			
BTM	0.156625	0.003371	-0.035771	0.116352	-0.178094	0.056686	0.069518	-0.023457	-0.196611	-0.451895	0.076510	1.000000		
	0.0128	0.9575	0.5719	0.0652	0.0046	0.3702	0.2716	0.7110	0.0017	0.0000	0.2262	-----		
CGSALES	0.039956	0.050562	0.008087	-0.048346	0.299664	0.235535	0.071761	-0.092667	-0.114115	-0.047498	0.273375	-0.135137	1.000000	
	0.5278	0.4242	0.8984	0.4448	0.0000	0.0002	0.2564	0.1424	0.0705	0.4528	0.0000	0.0320	-----	
AUDSIZE	0.417819	0.060779	0.047085	-0.007433	0.096984	-0.042573	0.101611	-0.211538	-0.077388	-0.058437	0.021618	0.035865	0.064278	1.000000
	0.0000	0.3366	0.4568	0.9065	0.1247	0.5011	0.1076	0.0007	0.2209	0.3556	0.7327	0.5709	0.3095	-----

3. The results

In this section, we present details of our findings for the implementation of regression models represented in Eq. (1) to Eq. (5).

Table 4
The summary of regression model 1 to model 5

Model		1	2	3	4	5	6
Intercept	Coefficient	2.540926	2.822145	3.073872	2.977168	2.37692	2.249072
	Sig.	-0.0003	0	0	0	-0.0004	-0.0011
$REM_{i,t}$	Coefficient	0.379037					
	Sig.	-0.0022					
$REM^{CFO}_{i,t}$	Coefficient		0.091744			0.076191	
	Sig.		-0.0808			-0.1222	
$REM^{PROD}_{i,t}$	Coefficient			0.114798		0.198723	
	Sig.			-0.0426		-0.0145	
$REM^{DISCE}_{i,t}$	Coefficient				1.061582	1.370577	
	Sig.				-0.0188	-0.0016	
$AEM_{i,t}$	Coefficient						-0.1386
	Sig.						-0.0003
$SIZE_{i,t}$	Coefficient	0.621844	0.61279	0.60382	0.610266	0.629822	0.63211
	Sig.	0	0	0	0	0	0
$INVREC_{i,t}$	Coefficient	0.060883	0.014717	0.021577	-0.09218	0.000454	0.058588
	Sig.	-0.608	-0.8821	-0.8436	-0.3802	-0.997	-0.5363
$LOSS_{i,t}$	Coefficient	0.100756	0.099687	0.102367	0.085552	0.085141	0.099721
	Sig.	-0.0016	-0.0012	-0.0012	-0.0053	-0.0079	-0.0014
$LEV_{i,t}$	Coefficient	0.049328	0.032089	0.024922	0.010573	0.035982	0.046523
	Sig.	-0.5534	-0.6964	-0.7614	-0.8955	-0.6609	-0.5773
$BTM_{i,t}$	Coefficient	-0.03677	-0.03066	-0.0475	-0.04071	-0.04167	-0.02874
	Sig.	-0.0345	-0.0933	-0.0065	-0.021	-0.0184	-0.111
$CGSALES_{i,t}$	Coefficient	-0.00344	0.003024	-0.00159	-0.01807	-0.02636	-0.00205
	Sig.	-0.8248	-0.8227	-0.9092	-0.3311	-0.1314	-0.8732
$ROA_{i,t}$	Coefficient	0.095967	0.077973	0.100939	0.047317	0.074069	0.216773
	Sig.	-0.0869	-0.1652	-0.1073	-0.4272	-0.1871	-0.0015
$AUDSIZE_{i,t}$	Coefficient	0.192917	0.190667	0.196896	0.197346	0.192574	0.193281
	Sig.	-0.0026	-0.0031	-0.0041	-0.0014	-0.0012	-0.0024
Adj. R-Square	0.978643		0.980947	0.979809	0.981756	0.979264	0.981781
Durbin-Watson	2.025866		2.025926	2.020885	2.02414	2.082299	2.005774
F-value	162.9939		183.0072	172.5499	191.243	163.3814	191.5042
Sig.	0.000		0.000	0.000	0.000	0.000	0.000
Jarko-Bra	12.43706		13.17158	11.96095	13.04154	11.27623	13.49205
Sig.	-0.00199		-0.00138	-0.00253	-0.00147	-0.00356	-0.00118
Limer	12.52492		12.37706	12.31527	12.40043	12.4141	12.43083
Sig.	0.000		0.000	0.000	0.000	0.000	0.000
Chi-Square	43.38588		40.99713	43.41875	42.53987	51.53174	45.01928
P-value	0.000		0.000	0.000	0.000	0.000	0.000

As we can observe from the results of Table 4, all Durbin-Watson values are within acceptable limit and there is no autocorrelation among residuals. In addition, all F-values are meaningful when the level of significance is one percent. Therefore, we can conclude the relationship between independent and dependent variables are linear. Other statistics also confirm the overall model.

3.1. The main hypothesis: The effect of real earnings management on audit fees

The main hypothesis of this study states that real earnings management influences on audit fees. Based on the results of Table 4, the correlation between two variables is β= 0.379037 with t-value = 3.1075 and P-value = 0.0022. Therefore, we can conclude that real earnings management influences positively on audit fees and the main hypothesis is confirmed.

3.2. The effect of real earnings management through increase in sales on audit fees

The first sub-hypothesis of this study states that real earnings management through increase in sales influences on audit fees. Based on the results of Table 4, the correlation between two variables is β= 0.091744 with t-value = 1.756192 and P-value = 0.0808, which means we cannot confirm the first sub-hypothesis of the survey. In other words, we can conclude that real earnings management through increase in sales dos not influence on audit fees.

3.3. The effect of real earnings management through increase in production costs on audit fees

The second sub-hypothesis of this study states that real earnings management through increase in production costs influences on audit fees. Based on the results of Table 4, the correlation between two variables is β= 0.114798 with t-value = 1.995319 and P-value = 0.0426, which means we can confirm the second sub-hypothesis of the survey. In other words, real earnings management through increase in production costs influences positively on audit fees.

3.4. The effect of real earnings management through decrease in discretionary expenditures on audit fees

The third sub-hypothesis of this study states that real earnings management through decrease in discretionary expenditures influences on audit fees. Based on the results of Table 4, the correlation between two variables is β = 1.061582 with t-value = 2.370214 and P-value = 0.0188, which means we can confirm the third sub-hypothesis of the survey. In other words, real earnings management through decrease in discretionary expenditures influences positively on audit fees.

4. Conclusion

In this survey, we have presented an empirical investigation to study the effect of real earnings management on audit fees for selected firms listed in Tehran Stock Exchange. The study has confirmed that real earnings management influences positively on audit fees in general. In addition, while real earnings management through an increase in sales does not influence on audit fees, the survey has concluded that real earnings management through increase in production costs as well as decrease in discretionary expenditures influences positively on audit fees.

The results of this survey are consistent with findings of Sohn (2011), Ibrahim and Lloyd (2011), Srinidhi and Gul (2007), Kothari et al. (2005), Pauwels et al. (2004), Stein (1989). Based on the results of this survey, we believe it would be necessary to disclose details of audit fees paid to all audit Institutions. This would help provide more transparent statements and reduce any speculations.

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