Investigating the Relationship between Auditor Tenure and the Size of the Audit Firm with Earnings Management in Pharmaceutical Companies Listed in Tehran Stock Exchange

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Abstract

Earnings management and related research has been always of interest in accounting researches. Most corporate managers use different methods of earnings management to reduce risk and smooth earning in various periods, meanwhile, the auditors are expected to be able to prevent the occurrence of this phenomenon; therefore, the present study is designed and implemented to investigate the relationship between tenure and the audit firm size and earnings management. The statistical population consists of pharmaceutical companies listed in Tehran Stock Exchange and the sample was selected to be 25 pharmaceutical companies using the systematic elimination method. The time realm of this study is 2005 to 2010. The objective of the present research is applied and it is descriptive – correlational in terms of implementation and data were analyzed using multivariate regression based on panel data method. Although research findings indicate that there is no relationship between auditor tenure and earnings management, but increase in the size of the audit firm reduces management flexibility in the use of discretionary accruals for earnings management.

Keywords: Auditor Tenure, Audit Quality, Audit Organization, Audit institutions registered in certified public accountants, Discretionary Accruals, The size of the audit firm

Introduction

Increasing expansion of economic units, the development of communication technology and conflict of interests create the supervisory requirements. The issue of economic globalization and the information revolution has even led to the loss of control by government. This situation has led to the gradual increase of auditing profession's efforts to not remain behind and keep pace with technology changes in line with society's needs. (Hassas Yegane, 2010).

With regard to the issue of the separation of ownership from management, the corporate governance debate and also proposed related theories such as agency theory, stakeholder theory and other theories, examination and audit of the financial statements of companies is absolutely necessary, and an audit firm can affect the providing of accurate financial statements to the client and its reliability (Nonahal Nahr, 2010).

Some accounting practices and its accepted principles allow managers to apply their assessment and judgment in financial reporting in order to transfer data. The managers' application of judge is known as "earnings management" and for many years accounting researches have considered earnings management and its implications. However, the question is always whether earnings management improves the quality characteristics of accounting information or reduces its information content (Etemadi, 2012).

In this study, the relationship between the decisions of management reporting that is measured through the level of discretionary accruals of earnings (representing earnings management) and auditor tenure and the size of the audit firm of these institutions is examined.

In the rest of the paper, the theoretical literature and the literature are reviewed. Then the research methodology is discussed which includes: research hypotheses, population and sampling,

data collection methods and data analysis. Then the research findings including descriptive statistics and research model fitting is presented. Then also, the results of hypothesis testing are analyzed and interpreted and the final section is devoted to conclusions.

Theoretical literature

The audit tenure as an independent variable and with the aim of assessing its effect on auditor's independence on reporting, audit quality and also the level of client's financial reporting reliability (earnings management), have been considered by several studies both foreign and domestic. Researches conducted in this area have had different results. Some of the researches have determined their stance as opposed to mandatory auditor rotation by saying that mandatory rotation of auditors is an affecting factor in reduction of audit quality and the reduction of reliability of financial reporting. On the other hand, the Researches agreed with the mandatory rotation of auditors believe that creating some rules associated with this issue will lead to a more impartial judgment of the auditor and reduction of client managers' tendency in earnings management.

Several Researches have been conducted on the size of the audit firm and its impact on audit quality and level of earnings management. In these researches audit institutions registered in certified public accountants are considered as the small audit institutions and audit organization which is considered as the large audit institution because of frequent number of staffs and more auditing experiences. There are different perspectives in the researches done, some perspective emphasize on this point that the quality of audit programs does not depend on the size of the institution while some researchers claim that large institutions provide more qualitative audit than small institutions. In contrast, there is also the opposite view, claiming that the big audit firms do not always offer better services than smaller institutions.

Literature review related to earnings management represents researchers' attempt to understand this expression that why managers manipulate earnings, how they manage earnings and what are the consequences of such behavior. Much of the empirical research in the areas of accounting and financial reporting has been allocated to the answers to these questions (Karami et al, 2005).

Accrual accounting provides managers with significant choices in determining earnings in different period of time. In fact, under this type of accounting system, managers have considerable control over the diagnosis time of certain cost items, including advertising costs and research and development expenses. On the other hand, managers of the accrual accounting system are faced with different options for the time of income detection, including faster detection of income through sales on credit (Teoh, 1998). In simple terms, such action by the manager is known as "earnings management".

Ingerm et al. (1982) have studied the cases of disagreement between the auditor and the client. Their results showed that most cases of disagreement between the auditor and the client were in the non-rotating groups. In other words, these results indicate that there is a potential need for rotation of the relationship between the client and the auditor (Hassas Yeganeh & Jafari, 2010).

Gul et al. (2007) showed that the effect of non-audit fees on auditor independence is subject to tenure. They observed that there is a direct relationship between non-audit fees and the amount of discretionary accruals, in the firms that their audit institutions' tenure is less than three years.

Cameran et al. (2008) showed that in Italy increase in auditor's tenure and over time, audit quality (measured by earnings management) increases. They also concluded that in an environment with mandatory change of auditors, their optional change shall have a positive impact on audit quality, but mandatory change of the auditors, has had a negative impact on audit quality.

Houmes et al. (2013) investigated the relationship between the auditor's tenure with the rate of cost of debt, and due to the inverse relationship between the rate of cost of debt and auditor's tenure, they concluded that there is a direct relationship between auditor's tenure and earnings quality.

In the studies conducted by De Angelo (1981) and Vilenborg (1999) on the size of the audit firm, institutions are divided into the two categories of 8 large institutions (in D Angelo) and 5 large (at Vilenborg) and institutions that are not among the 8 or 5 large (Hassa Yegane & Azinfar, 2010).

In the study conducted by Henock Louis (2005), it was determined that larger auditing companies usually offer better services than smaller institutions. But in some cases it was found that smaller audit firms offer better advice to their Clients.

Kim et al (2003) have shown that the effectiveness of differences in large or small audit firms stems from the conflict between corporate managers' and auditors' incentives in reporting. When managers have enough motivation to increase profits by using accounting methods that increase profitability, maintaining auditors' impartiality leads to the appearance of conflict between managers and auditors. They found that large auditing firms are more effective than small firms in preventing earnings manipulation (with the assumption that there is a conflict between managers and auditors) (Ansari & Shafie, 2007).

Tally estimated the risk of 4 large audit firms (4 large) in 2006, that had paid the actual losses of over a billion dollars to large corporations within 5 years and showed that large audit institutions as well as small enterprises incur failure of audits (Mishael & Meyer, 2007).

Tian (2007) investigated the impact of earnings management on the relevance of earnings on valuation of the company, because earnings are one of the most important inputs in accounting models for valuation of the company. The ability of earnings to reflect the current and future performance of the companies is a key factor in determining a company's intrinsic value. The results showed that earnings management has deleterious effects on beneficial of earnings in a company valuation because it reduces the information content of earnings.

Chang and Shiva (2010) investigated the impact of earnings management on earnings predictability characteristics. The researchers suggest that in general earnings management leads to decrease in predictability power of earnings. However, when the predictability is measured in different deciles of earnings management size, the results indicate that in the deciles with the highest level of earnings management, not only profitability does not reduce, but also the results of this group can be considered as indicating the consciousness behavior of the earnings management. Finally, the authors suggest that their results do not support the opportunistic earnings management strongly.

From among the conducted domestic researches related to the present paper, we can refer to the research done by Bazrafshan (2010), entitled "the relationship between the length of auditor tenure and the amount of earnings management". He investigated 133 companies from among the listed companies in Tehran Stock Exchange during 2000 to 2006 and concluded that long-term relationship between client and auditor leads to increase in management flexibility in the use of discretionary accruals; but it is mostly used to reduce earnings (conservativeness).

Another study was done by Bozorg Asl and Shayeste mand (2011) entitled the relationship between auditor tenure and earnings management, they examined the 109 companies listed in Tehran Stock Exchange during 2003 to 2007 and concluded that the increase in auditor tenure, the probability of earnings management, whether for increase or decrease in earnings is increased and the direction of earnings management depends on specific incentives of management.

Jafari (2006) has introduced the measurement scale of real quality of audit as the total merit (discovery of significant distortions) and the auditors' independence (Reporting distortions discovered).

Due to the fact that accounting regulation authorities insist that the quality of audit work does not depend on the size of institution, many claim that large firms have more qualitative auditing than small firms. Previous research results were the combination of both hypotheses, perhaps because it was not easy to measure the quality of audit work (Hassas Yegane et al. 2010).

Kohi et al (2010) conducted a study entitled investigating the type of earnings management in companies listed in Tehran Stock Exchange using the data of 63 companies listed in Tehran Stock Exchange during 2003-2008. The findings indicate that in Tehran Stock Exchange, the earnings management tends to favor effectiveness.

Materials and methods

The present research is applied, because the results can be applied in practice. It is descriptive – correlational in terms of implementation strategy, because it explains the existing situation without manipulation and uses regression to examine the relationship between variables. The research is post-hoc in terms of the nature of the data, because it uses historical data.

The sample of the study was selected includes 25 companies (150 observations) using the systematic elimination (knockout cohesiveness) based on four criteria as follows:

1. Sample companies' fiscal year should be ending in March of every year.

2. Companies should not have fiscal year change in the study period, from the beginning of 2005 to the end of 2010.

3. The companies should have been listed in Tehran Stock Exchange up to the end of the 2010.

4. All the information of the companies that are required for this study should be available.

Research variables

Dependent variable: The dependent variable in this study is discretionary accruals as a measure of determining management's manipulation in earnings, which is estimated based on the following model:

$$\frac{TA_{it}}{A_{it-1}} = \alpha_1 \left(\frac{1}{A_{it-1}}\right) + \alpha_2 \left(\frac{\Delta REV_{it}}{A_{it-1}}\right) + \alpha_3 \left(\frac{PPE_{it}}{A_{it-1}}\right) + \varepsilon_{it} \tag{1}$$

Accruals are divided into two groups:

1. Non-discretionary accruals (NDA_{ijt}): Items that cannot be controlled effectively by managing the economic entity.

2. Discretionary accruals (DA_{ijt}): The Group of accruals is discretionary that the management of the economic entity can control them in the short term.

Dependent variable in this study includes discretionary accruals (DA_{ijt}); the present study investigates it as an indicator of earnings management, that managers can apply earnings management manipulating the discretionary accruals in the process of financial reporting of economic enterprise. Discretionary accruals have been used in many domestic and foreign researches. For example, Davis et al. (2002-2008), Ebrahimi et al. (2008) have conducted studies on this variable.

Independent variables: 1) Auditor tenure: One of the indicators for measuring the auditor's professional care and his monitoring abilities is the auditor tenure. The more the auditor tenure, his understanding of the client and his expertise in specific industry rises and will enhance the quality of auditor (Fallatah, 2006). If the auditor tenure is five years or more, the artificial variable of 1 or otherwise 0 is used to calculate auditor tenure. 2) The size of the audit firm: The most significant

measure of auditor reputation is its size that has a direct relationship with audit quality, so that the greater the size of the audit firm, the higher the audit quality will be (Nazemi Ardekani et al, 2009). In order to calculate the size of the audit firm, if the audit firm is an audit organization, the artificial variable of 1 or otherwise 0 is used.

Control variables: Control variables of this study include total assets, debt ratio and operating profit. The firm size is the total assets that have been used in the studies of researches such as Bazrafshan et al (2010), Bozorg Asl & Shayeste mand (2011), Nazemi Ardekani et al. (2009), Nonahal Nahr (2010), Shokri (2012), and Bani Mahd (2012).

Debt ratio is calculated dividing the sum of debt over the sum of assets. This ratio has also been investigated by scholars such as Bozorg Asl & Shayeste mand (2011), Nazemi Ardekani et al. (2009), Niko Maram et al. (2009), Khodadadi (2010), Shokri (2012), and Bani Mahd (2012), and Bolo (2011).

Some researchers have used the operating profit and other earnings simultaneously. This variable has been studied by researchers such as Nonahal Nahr (2010), Li Jung (2007), and Bani Mahd (2012).

Research questions and hypotheses

This research seeks to answer the question that whether auditor can tenure and audit firm size provide signs of measures taken for earnings management of firms and whether they can play an effective role in warning users of financial statements about the problems facing the company's financial reporting or internal controls or not. In other words, is there a difference between the reliability of accruals of companies audited by audit firms with larger size than companies audited by smaller audit firms? Another objective of this study was to investigate whether auditors can reduce the accruals used by managers and restrict earnings management with their specialized and qualitative audit. In the present study, discretionary accruals (pharmaceutical companies listed in Tehran Stock Exchange), which is considered a criterion for measuring earnings management, have been used to investigate and test the earnings management, with respect to the independent variables and particularly the dependent variable (earnings management). In this research, discretionary accruals (DA) are estimated using the model proposed by Dechow et al. (1995), as "modified Jones model".

Reasons for using the model are that the previous researches (Jones, Haley, and De Angelo) had investigated the relative performance of different models of discretionary accruals, and concluded that the modified Jones model is the best criteria about the discretionary component of the total accruals and has more power to detect earnings management in the business units. The main model of the research is presented as follows (Chin et al, 2010):

$$|DAC_{ijt}| = TAC - [\hat{a}(1/A_{t-1})] + \hat{b}_1(\Delta REV/A_{t-1} - \Delta REC/A_{t-1}) + \hat{b}_2(PPE/A_{t-1}) + \hat{b}_3(ROA_{t-1}) + e \qquad (2)$$

Due to the fact that different standards of performance have been investigated in this study and also due to the researches done in this area, based on the control of confounding variables, three auxiliary variables including total assets, debt ratio and operating profit have been used in sub-models of the research. Therefore, the research hypotheses and related statistical models are as follows:

Hypothesis 1: There is a relationship between auditor tenure and earnings management.

$$DA_{it} = \alpha_i + \alpha_1 Aud + \alpha_2 Asset + \alpha_3 Profit + \alpha_4 Debt + \varepsilon_{i,t} \qquad (3)$$

Hypothesis 2: There is a relationship between the size of the audit firm and earnings management.

$$DA_{it} = \alpha_i + \alpha_1 Size + \alpha_2 Asset + \alpha_3 Profit + \alpha_4 Debt + \varepsilon_{i,t} \tag{4}$$

For empirical testing of the hypotheses, modified Jones model that is described in the paper of Dechow et al. (1995) is used; however, Kothari et al (2005) argue that (DAC_{ijt}) estimated by the model of Jones and Jones modified model is likely to contain severe measuring errors so that it is not able to control the performance of the firm. Following their suggestion, we add returnable assets to the assets of the last years (ROA t-1), such as an excess returner to the modified Jones model to estimate (DAC_{ijt}), and to start the calculation, first the total income / commitment expenses (the total accrual commitment, TAC) is calculated (Chin et al, 2010).

$$TAC_{ijt} = E_{ijt} - CFO_{ijt} \tag{5}$$

Where:

TAC_{ijt}: is the sum of the discretionary accruals of the firm i, in industry j, in year t.

E_{ijt}: is the net profit before unexpected items of firm i, in industry j, in year t.

CFO_{ijt}: is the cash from operating activities of firm i, in industry j, in year t.

In particular, the research model is as follows:

$$TAC/A_{t-1} = \alpha(1/A_{t-1}) + \beta_1(\Delta REV/A_{t-1} - \Delta REC/A_{t-1}) + \beta_2(PPE/A_{t-1}) + \beta_3(ROA_{t-1}) + e \tag{6}$$

Where:

TAC_{ijt}: is the total sum of discretionary accruals of firm i, in industry j, in year t.

A_{ijt-1}: is the total assets of the firm i, in industry j, in year t.

▲REV_{ijt}: is the income in year –t and the income in year t-1 for firm i, in industry j, in year t.

▲REC_{ijt}: is the accounts receivable in year –t and the accounts receivable in year t-1 for firm i, in industry j, in year t.

PPE_{ijt}: is the gross tangible fixed assets in year –t and the gross tangible fixed assets in year t-1 for firm i, in industry j, in year t.

ROA_{ijt-1}: is the net income divided by average of total assets for firm i, in industry j, in year t-1.

DAC is defined as the difference between estimated TAC and issued TAC. Purely, DAC is calculated wrongly and as estimation of the model 1, in which, are estimations of α, β_1, β_2, β_3 which is calculated in model 1 (Chin et al. 2010).

$$|DAC_{ijt}| = TAC - [\hat{a}(1/A_{t-1}) + \hat{b}_1(\Delta REV/A_{t-1} - \Delta REC/A_{t-1}) + \hat{b}_2(PPE/A_{t-1}) + \hat{b}_3(ROA_{t-1}) \tag{7}$$

Finally, discretionary accruals are obtained using the following formula:

$$DA_{ijt} = TAC_{ijt} - NDA_{ijt} \tag{8}$$

Where:

DA_{ijt}: is the discretionary accrual.

TAC_{ijt}: is the total discretionary accrual.

NDA_{ijt}: is the non-discretionary accrual.

Results

Descriptive Statistics

Table 1 contains descriptive statistics about the data extracted from the reports and financial statements to estimate model parameters for a study period of 6 years (2005-2010). The table also includes the central mean and median indices and dispersion indices, including SD for different variables of the model and the modified Jones model.

Table 1. Descriptive statistics of the data to estimate the parameters of the modified Jones model

	MEAN	MEDIAN	MAXIMUM	MINIMUM	STANDARD DEVIATION
DISCRETIONARY ACCRUALS	0/10	0/06	2/18	0/00	0/19
AUDITOR TENURE	0/01	0/00	0/27	0/00	0/03
THE SIZE OF THE AUDIT FIRM	0/01	0/00	1/00	0/00	0/12
ASSETS	26/93	26/77	29/73	23/40	0/99
DEBTS (DEBT RATIO)	26/44	26/35	29/03	24/88	0/93
OPERATING PROFIT	25/33	25/35	27/67	22/65	0/99

Data analysis

In this section, two main hypotheses have been tested using regression equations through panel data methods. Each of the three variables examined in this study (auditor tenure and expertise in the auditing industry) has been tested in a separate regression equation including covariates, total assets, total debts, and operating profit.

Analysis of the first hypothesis

The first hypothesis: There is a relationship between auditor tenure and earnings management.

This hypothesis is proposed to investigate the existence of the relationship between auditor tenure and earnings management and is tested using the following model:

$$DA_{it} = \alpha_i + \alpha_1 AUD + \alpha_2 Asset + \alpha_3 Profit + \alpha_4 Debt + \varepsilon_{it} \qquad \text{Model (3)}$$

Table 2. Results of the panel analysis of the model of the first research hypothesis

Estimation period: 2005-2010				
$DA_{it} = \alpha_i + \alpha_1 AUD + \alpha_2 Asset + \alpha_3 Profit + \alpha_4 Debt + \varepsilon_{it}$				
	0/5603			Coefficient of determination
	0/454			Adjusted coefficient of determination
	5/2727			F
	0			Probability (Prob)
	2/0766			Durbin-Watson Statistics
confidence level	Probability	t-statistics	Coefficient	Explanatory variable
not significant	0/6971	0/3902	0/1014	Intercept
not significant	0/7502	-0/319	- 0/067	Tenure
not significant	0/6673	-0/431	- 0/006	Asset
0/95	0/0375	-2/104	-0/047	Debt
0/95	0/0004	3/6207	0/0527	Profit

The results of the regression model fitting related to the first hypothesis are presented in Table 4. As it is evident from the table, the probability (prob) corresponding to the F statistic is less than 5%, thus, the overall regression model is significant at 95% confidence level. Durbin - Watson statistic model is 2.076, indicating no autocorrelation between error terms or relative independence of data.

The model's adjusted coefficient of determination is 45%; this means that the variables presented in the model explain 45% of the variability of the dependent variable (earnings management). For determination of the relationship between auditor tenure and earnings management, it is necessary to investigate the T statistics concerning the variables of auditor tenure and the probability associated with it. The results presented in Table show that the probability of the variable is equal to 0.75 that is more than 5%, therefore, there is no significant relationship between auditor tenure and earnings management and the first hypothesis of the research is rejected.

Analysis of the second hypothesis

The second hypothesis: There is a relationship between the size of audit firm and earnings management.

This hypothesis is proposed to investigate the existence of the relationship between the size of the audit firm and earnings management and is tested using the following model:

$$DA_{it} = \alpha_i + \alpha_1 Size + \alpha_2 Asset + \alpha_3 Profit + \alpha_4 Debt + \varepsilon_{i,t} \qquad \text{Model (4)}$$

Table 3. **Results of the panel analysis of the model of the third research hypothesis**

Estimation period: 2005-2010				
$DA_{it} = \alpha_i + \alpha_1 Size + \alpha_2 Asset + \alpha_3 Profit + \alpha_4 Debt + \varepsilon_{i,t}$				
	0/5602			Coefficient of determination
	0/4584			Adjusted coefficient of determination
	5/5038			F
	0			Probability (Prob)
	2/0723			Durbin-Watson Statistics
confidence level	Probability	t-statistics	Coefficient	Explanatory variable
not significant	0/6602	0/4408	0/1149	Intercept
0/99	0/0007	-3/478	- 0/054	Firm size
not significant	0/6548	-0/448	- 0/006	Asset
0/99	0/0309	-2/183	- 0/046	Debt
0/95	0/0002	3/8662	0/052	Profit

The results of the regression model fitting related to the third hypothesis are presented in Table 7. As it is evident from the table, the probability (prob) corresponding to the F statistic is less than 1%, thus, the overall regression model is significant at 95% confidence level. Durbin - Watson statistic model is 2.076, indicating no autocorrelation between error terms or relative independence of data.

The model's adjusted coefficient of determination is 45%; this means that the variables presented in the model explain 45% of the variability of the dependent variable (earnings management). For determination of the relationship between the size of the audit firm and earnings

management it is necessary to investigate the T statistics concerning the variables of the size of the audit firm and the probability associated with it. The results presented in Table show that the probability of the variable is equal to 0.0007 that is less than 1%, therefore there is a significant relationship between the size of the audit firm and earnings management and the second hypothesis of the research is confirmed.

Discussion and Conclusion

The first hypothesis of the study was proposed and tested to investigate the relationship between auditor tenure and earnings management. The results indicated no significant relationship between these two variables; however, some research results indicate the existence of a direct relationship and others have confirmed the existence of indirect relationship between these two variables. The result of this hypothesis is consistent with the results of the study conducted by Bozorg Asl & Shayeste mand (2010), but are not consistent with the studies conducted by Bazrafshan (2010), Fallatah (2006) and Davis et al (2000 and 2008).

The second hypothesis of this study was to examine the relationship between earnings management and audit firm size. The results showed there was a significant negative correlation between these two variables, it means that the greater the size of an audit firm is the profits will decrease, and consequently the quality of earnings, as well as the quality of information is increased. The results of this hypothesis are consistent with the research results of Forman (2006), Chantao et al (2007) and Denj Lee (2004), but are not consistent with the results of the researches conducted by Kim et al (2003) and Deltas and Dogar (2004).

Table 4. The overall results of the hypotheses

Result	Description	Hypothesis
Rejected	There is a relationship between auditor tenure and earnings management.	First
Confirmed	There is a relationship between the size of audit firm and earnings management.	Second

Recommendations
Recommendations based on research results

1. According to the findings of the first hypothesis, mandatory rotation of auditors in connection with the management flexibility in the use of discretionary accruals is unrelated, and shows a new perspective in relation to auditor tenure and earnings management that is opposed to both views (pros and cons) of the mandatory rotation of auditors, hence, according to the findings of the research, about the need for mandatory rotation of auditors should be argued with more caution in Iran. Given that the issue of mandatory rotation of auditors is an issue that is concerned with concepts such as conservatism, accruals quality, profit predictability and so on, it is recommended to conduct further research on the relationship between auditor tenure and the above mentioned matters in order to certainly refute or support claims of mandatory rotation of auditors and shortening auditor tenure.

2. Also, due to the negative relationship between audit firm size and earnings management, we can draw stakeholders and users of accounting information attentions to this fact and recommend them to pay attention to audit reports issued by large audit institutions (the Audit organization) with greater assurance. Managers can also give their firm's auditing to large institutions to gain greater

trust between shareholders and creditors. In addition, other audit firms are also recommended to emphasize more on their considerations and try to reach high professional standards to maintain competitiveness with auditing organization.

Suggestions for further research

1. Investigating the relationship between auditor expertise in the industry with other dependent variables, such as reporting errors, restatement of financial statements and earnings response coefficients.

2. Investigating the relationship between auditor tenure, auditor expertise in the industry and size of the audit firms with audit quality or auditor independence.

3. Investigating the relationship between expertise in the industry and audit firm size with dependent variables such as tenure and management attention to it.

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