

Big Four Auditors' Audit Quality and Earnings Management: Evidence from Turkish Stock Market

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Abstract

Audit quality is considered as one of the factors affecting the reliability of financial information. Theoretical arguments and research findings suggest that audit quality constrains earnings management. Given that auditor's incentives to provide high quality audit is rather limited in emerging economies, the argument suggesting audit quality constrains the earnings management is likely to be questioned. The aim of this study is, therefore, to assess the effect of audit quality on earnings management by focusing on Turkish case, where auditor's incentives to provide high quality audit is limited. Using a sample of manufacturing industry firms listed on Istanbul Stock Exchange (ISE) for the years 2003-2007, we find that audit firm size as proxy for audit quality, does not have an impact on discretionary accruals. These results indicate that there is no difference in audit quality between Big Four and non-Big Four audit firms for restriction of earnings management in Turkey.

Key Words: earnings management, audit quality, big four auditor, discretionary accruals

JEL Codes: M41, M42, M48.

1. Introduction

Accuracy and reliability of financial information has an important role in ensuring the quality of auditing. In particular, earnings management to be effective on the basis of accounting scandals in USA and several European countries, has increased the importance of audit quality. In this context, numerous studies has used various audit quality measures such as audit firm size, audit fees and audit hours to research the effect of audit quality on earnings management. Following DeAngelo's (1981), who demonstrates analytically that large audit firms (with international brand names i.e. Big four auditors) are likely to provide higher quality audits than small audit firms (i.e. non-Big four auditors), many studies use audit firm size (Big four versus non-Big four) as proxy for audit quality (Dopuch and Simunic, 1982; Davidson and Neu, 1993; Becker et al., 1998; Francis and Krishnan, 1999; Bauwhede et al., 2003; Cai et al., 2005). These studies generally suggest that Big four auditors' higher levels of audit quality should be associated with lower levels of earnings management.

Previous literature, suggesting audit quality constrains the earnings management, were performed mostly in the USA; where effective audit and oversight mechanism for auditors were exist (Becker et al., 1998; Francis ve Krishnan, 1999). However, when there is little risk of litigation, deterrent function of sanctions against auditors is low and no other effective disciplinary mechanism to control opportunistic behavior of auditors, auditors may choose not to provide high quality audits. In other words, if the institutional setting does not induce auditors for high quality audits, auditors may not constrain the earnings management practices of client firms (Nichols and Smith, 1983; Kim et al., 2003; Jeong and Rho, 2004; Tspouridou and Spathis, 2012). In this context, audit environment in Turkey where there has been a little risk of litigation for auditors, the current penalty mechanism against auditors has not been fully impemented in practice and not sufficiently deterrent, contrary to the DeAngelo's (1981) theory, Big four auditors may not constrain earnings management of client firms. Therefore, there may be no difference in audit quality between Big four and non-Big four auditors.

The purpose of this study is to examine the effect of audit quality, generally measured by audit firm size, on earnings management through discretionary accruals in Turkey, where the institutional setting does not motivate auditors to provide high-quality audits.

In this study, the hypothesis that “there is no effect of audit firm size on earnings management”, is tested based on a sample of 290 firm-year observations over the period from 2003 to 2007. Discretionary accruals are estimated using a cross-sectional version of the Modified Jones Model. The results show that there is no statistically significant difference between the discretionary accruals of firms audited by Big Four and non-Big Four auditors. These results suggest that there may be no difference in audit quality between Big Four and non-Big Four audit firms for restriction of earnings management in Turkey. These findings are so much in line with the results of research on Korean case (e.g. Jeong, 1999; Park et al., 1999) and Greece case (e.g. Tsipouridou and Spathis, 2012), but are different from the findings of researches of many previous studies in the USA and other developed countries (e.g. DeAngelo, 1981; Teoh and Wong, 1993; Palmrose, 1988; Becker et al., 1998). Thus, this study examine whether the argument suggesting audit firm size constrains the earnings management can be valid in developing countries and, if so, under what circumstances.

The remainder of the paper is organized as follows. In the next section, audit environment in Turkey and development of hypothesis is explained. In section three, sample selection is discussed. Variable measurement and research methodology is discussed in section 4. Results are presented in section five and, summary and conclusion are presented in the final section of the paper.

2. Development of hypothesis

Following DeAngelo’s (1981), who demonstrates analytically that audit firm size has a positive relationship with audit quality, many studies indicate that Big Four auditors provide higher quality audits than non-Big Four auditors. Because, Big Four auditors have a greater ability to constrain their clients’ use of earnings management practices. For example, Teoh and Wong (1993) document that earnings response coefficients (ERCs) of clients audited by Big Four auditors is higher than that of clients audited by non-Big Four auditors. Beatty (1989) show that Big Four auditors is related to less underpricing of an initial public offerings of equity securities (e.g., Firth and Smith, 1992). Palmrose (1986) indicate a positive relationship between audit fees and audit firm size (e.g., Craswell et al., 1995). In addition, Palmrose (1988) find a lower rate of litigation against Big Four auditors compared with non-Big Four auditors (e.g., DeFond and Jiambalvo, 1991). Becker et al. (1998) find that companies with non-Big Four auditors have significantly higher earnings management by discretionary accruals compared to companies with Big Four auditors (e.g., Francis et al., 1999; Cai et al., 2005).

However, the researches indicating audit quality constrains the earnings management, were usually performed in such countries (e.g. USA) where there exists effective audit and oversight mechanism for auditors. If the institutional setting does not encourage high-quality audits, auditors may not constrain the earnings management practices of clients but rather may behave opportunistically (Jeong and Rho, 2004). Therefore, Big Four auditors may not provide higher audit quality than non-Big Four auditors (Nichols and Smith, 1983; Lam and Chang, 1994; Petroni and Beasley, 1996; Kim et al., 2003; Jeong and Rho, 2004; Rajhi and Azibi, 2008). For example, Jeong and Rho (2004) examine whether Big Six auditors provide higher quality audits than non-Big Six auditors in Korea where the institutional setting does not motivate auditors to provide high-quality audits. The results, consistent with other studies in Korean case, suggest that there is no difference in audit quality between Big Six and non-Big Six auditors in Korea (Kim and Hwang, 1998; Jeong and Rho, 1999; Park et al., 1999).

Additionally, studies in countries such as France, Belgium and Greece find that there is no statistically significant difference between the discretionary accruals of firms audited by Big Four and non-Big Four auditors (Vander Bauwhede and Willekens, 2004; Othman and Zeghal, 2006; Tsipouridou and Spathis, 2012). In particular, the effect of The Private Securities Litigation Reform Act of 1995 (PSLRA) on the collapse of Enron and other companies, due to more tolerant and less skeptical approach to audits, showed how changes in the legal environment to audits affect auditors’ incentives to reduce earnings management (Francis, 2004). In this context, some studies examined how changes in the legal environment due to PSLRA affect the audit quality of Big Four auditors and find that discretionary accruals for clients of Big Four auditors increased after PSLRA (e.g., Krishnan and Gul, 2002; Lee and Mande, 2003; Lee et al., 2007). Therefore, if the institutional setting does not induce high-quality audits, auditors may not constrain the earnings management practices of client firms and so there may be no difference between Big Four auditors and non-Big Four auditors.

In Turkey, earnings management practices of publicly listed companies detected by review of Capital Markets Board (CMB) or audit firms. Therefore, CMB must be perform the monitoring and oversight process on audit firms. However, the numerical distribution of professional staff in the audit process of CMB examined between 2002-2008, it is observed that the numbers of chief expert and expert are 125, 146, 156, 167, 164, 156, 168, respectively. This professional staff number reveal that monitoring and review process of CMB is not sufficient. In addition, review on audit firms by CMB is very low in CMB's total audit work compared to PCAOB. For example, report and proposal writing for audit firms issued by CMB during the period 2002 to 2008 are 0,65% ; 2% ; 1,4% ; 2% ; 4,6% ; 0,0% ; 0,0%, respectively. On the other hand, penalties on auditors or audit firms by CMB is not deterrent to provide high quality audits for this period. Because, the penalties imposed by CMB for auditors are generally reprimands and small fine and this penalties are applied rarely. The penalties, canceling authorization certificate and suspension of audit works for a certain period of time, are implemented as a limited. Furthermore, there is no litigation against auditors for the period 2002-2008. Therefore, in Turkey, where there exists no effective audit and oversight mechanism for auditors to provide high quality audits, auditors may not constrain earnings management of client firms.

In summary, contrary to the DeAngelo's (1981) theory, Big Four auditors in Turkey may not constrain earnings management of client firms compared to auditors in developed countries such as USA. Because, In Turkey, there is no effective audit and oversight mechanism and so auditor's incentives to provide high quality audit is limited. Therefore, there may be no difference in audit quality between Big Four and non-Big Four auditors in Turkey.

Based on above arguments and results, the main hypothesis of this study is that "there is no effect of audit quality on earnings management". However, it is difficult to measure audit quality and earnings management because of unobservable directly. For this reason, as in previous studies, using "audit firm size" as proxy for "audit quality" and "discretionary accruals" as proxy for "earnings management", the hypothesis of this study is as follows:

H0: Given the institutional environment in Turkey, firms with Big Four auditors are likely to report the same level of discretionary accruals as firms with non-Big Four auditors.

3. Sample Selection

The sample, which is used to examine the hypothesis, is selected by random sampling and consists of 290 firm-years non-consolidated financial statements data comprising manufacturing industry firms listed on the Istanbul Stock Exchange (ISE) for the years 2003-2007. We also collected the data for 2002 due to some variables in our models include beginning of year values. We selected listed companies from manufacturing industry to reduce the effect of industry differences. In addition, we needed only non-consolidated financial statements. Because, the results obtained from the financial analysis of consolidated financial statements have an average value, a weak firm assessed as in good condition by the effect of other strong firms within the group. Furthermore, firms within the group, have different accounting systems and valuation methods, may lead the results of the consolidated financial statements to deviate.

In this context, we excluded financial institutions from our sample because computing discretionary accruals of these firms are different and problematic from firms in other industries. Holdings are excluded because of differences in the balance sheet structure and relation to holding companies. To compute discretionary accruals, we also excluded that firms with insufficient data and firms that change fiscal year-ends during the period of analysis. This sample selection procedure yields a sample of 290 firm-year observations of which 130 firm-year observations are audited by Big Four auditors and 160 are audited by non-Big Four auditors. The sources of data are annual financial statements and reports of listed companies and collected from the website of Istanbul Stock Exchange.

4. Methodology

In this study, both univariate and multivariate analysis are carried out to test the above hypothesis to assess the effect of audit firm size on earnings management of Turkish companies. Therefore, firstly, we calculated discretionary accruals using the estimated coefficients of the modified Jones model. Afterwards, we regress estimated discretionary accruals on a dummy variable indicating audit firm size and several control variables.

4.1. Estimating of discretionary accruals

Previous studies have used various procedures to measure the earnings management practices of firms.

Healy (1985) examined total accruals and following the Healy's study, in many studies, total accruals separated into discretionary and nondiscretionary components (e.g. DeAngelo, 1986; Jones, 1991; Becker et al., 1998). In addition, some studies used specific accruals to measure the earnings management (Moyer, 1990; Petroni 1992, McNichols and Wilson, 1988; Nelson, 2000). For example, McNichols and Wilson (1988) examined the estimation of bad debt reserves. However, the most common method to measure earnings management is to separate total accruals into discretionary and nondiscretionary components. Because, the model of Healy (1985) does not distinguish nondiscretionary accruals from discretionary accruals and McNichols and Wilson's method does not examine the behaviour of total discretionary accruals.

Therefore, in order to capture the net effect of all accounting choices that have an effect on reported earnings, Jones (1991) regressed total accruals on the change in revenue and property, plant and equipment by using an OLS model (Jeong and Rho, 2004). However, Jones (1991) model considered all revenue as nondiscretionary accruals. In other words, this model implicitly assume that all revenue records have revenue recognition requirements, whereas one of the technique of earnings management is violation of revenue recognition requirements. In this case, receivables will increase and, accordingly, accruals will increase. Thus, Dechow, Sloan and Sweeney (1995) modify the Jones (1991) Model by adjusting change in revenues for the change in receivables. In this context, Dechow et al. (1995) and Young (1999) evaluates alternative accrual-based models (Healy Model, 1985; DeAngelo Model, 1986; Jones Model, 1991; Industry Model, 1991) for detecting earnings management. The results of both studies show that modified version of the Jones (1991) Model exhibits most power in detecting earnings management through discretionary accruals.

Discretionary accruals are generally estimated by using time series data or cross-sectional data. If a time series model is used in estimating the Modified Jones Model, it would require that sample firms not change their auditors during the estimation period (usually 8-10 years). If firms change their auditors during the estimation period, there might be a change in the parameter of the estimation model due to the auditor change (Jeong and Rho, 2004). In addition, Subramanyam (1996) finds that the cross-sectional Jones models are generally better specified than their time-series counterparts. Therefore, we measure discretionary accruals by using pooled cross-sectional variation of the Modified Jones model. In the Modified Cross-sectional Jones Model, nondiscretionary accruals (NDA) are estimated as follows:

$$NDA_{it} = \alpha_i [1/A_{it-1}] + \beta_{1i} [(\Delta REV - \Delta REC) / A_{it-1}] + \beta_{2i} [PPE / A_{it-1}] \quad (1)$$

Using the estimated coefficients of the modified Jones model, we calculated discretionary accruals (DA) as follows:

$$DA_{it} = TA_{it} - NDA_{it}$$

$$e_{it} = TA_{it} / A_{it-1} - (a_{it} [1/A_{it-1}] + b_{1t} [(\Delta REV - \Delta REC) / A_{it-1}] + b_{2t} [PPE / A_{it-1}]) \quad (2)$$

where:

a_{it} , b_{1t} , b_{2t} are the estimated coefficients of the modified Jones model;

e_{it} = discretionary accruals (error term) for sample firm i in year t ;

TA_{it} = total accruals for sample firm i in year t ;

A_{it-1} = total assets for sample firm i in year $t-1$;

ΔREV_{it} = change in net revenues for sample firm i in year t ;

ΔREC_{it} = change in accounts receivable for sample firm i in year t ;

PPE_{it} = gross property plant and equipment for sample firm i in year t .

Total accruals can be measured in two ways: balance sheet approach and cash flow statement approach. In the balance sheet approach, total accruals are calculated as the change in noncash working capital before income taxes payable less total depreciation expense (Healy, 1985; Jones, 1991; Dechow et al., 1995).

In the cash flow statement approach, total accruals are defined as income before extraordinary items minus operating cash flows follows (Becker et al., 1998).

Hribar and Collins (2002) examined the impact of measuring accruals as balance sheet accounts, as opposed to measuring accruals directly from the cash flow statement and find that balance sheet approach are potentially contaminated by measurement error in accrual estimates. Therefore, We use the cash flow statement approach to measure total accruals:

$$TA_t = IBEI_t - OCF_t \quad (3)$$

where:

TA_t = total accruals of year t;

$IBEI_t$ = income before extraordinary items of year t;

OCF_t = net operating cash flows of year t.

4.2. Multivariate test model and control variables

The main purpose of our test is to compare the discretionary accruals between firms with Big Four auditors and non-Big Four auditors. For this reason, we conduct univariate tests and multivariate tests. While we conduct a number of univariate tests, our primary analysis is a multivariate test that controls for potential differences across the firms that may affect the results of simple univariate tests. In our multivariate test, we regress discretionary accruals estimated in Eq. (2) on a dummy variable indicating audit firm size and several control variables. Specifically, to test our hypothesis, we estimate the coefficients of the following regression model:

$$DA_{it} = \beta_0 + \beta_1 Big_{it} + \beta_2 OCF_{it} + \beta_3 Size_{it} + \beta_4 HiLev_{it} + \beta_5 Abs_acc_{it} + \beta_6 MKBK_{it} + e_{it} \quad (4)$$

Where:

DA_{it} = estimated discretionary accruals;

Big_{it} = audit firm size dummy variable equal to one if the auditor is Big Four;

OCF_{it} = operating cash flows;

$Size_{it}$ = natural logarithm of total assets;

$HiLev_{it}$ = dummy variable indicating whether firm is among the highest decile of leverage, by year and industry;

Abs_acc_{it} = the absolute value of total accruals;

$MKBK_{it}$ = the ratio of market value to book value of equity

In this study, we use audit firm size proxy for audit quality to test the hypothesis. We expect no significant coefficient on audit firm size dummy variable (Big), because we expect that there is no difference in audit quality between Big Four and non-Big Four auditors in Turkey where auditor's incentives to provide high quality audit is considered to be limited. This study also includes several control variables (operating cash flows, total assets, leverage, the absolute value of total accruals, the ratio of market to book value) that are frequently used in previous researches (Becker et al., 1998; Jeong and Rho, 2004; Li and Lin, 2005) to control for other relevant variables influencing discretionary accruals.

Operating cash flows (OCF) are included in the regression. Dechow et al. (1995), consistent with Dechow (1994), find that there are negative relationship between operating cash flows (OCF) and level of accruals. Therefore, we expect a negative coefficient on operating cash flows. We also include a measure of firm size (the natural logarithm of total assets) as a control variable for the potential effects of size on the choice of discretionary accruals, as in previous researches (Teoh and Wong, 1993; Becker et al., 1998, Francis et al. 1999; Jeong and Rho, 2004). We expect a positive sign for the size variable.

Leverage is included in our regression as another control variable because of relationship with discretionary accruals. Press and Weintrop (1990) find that high leverage with closeness to the violation of debt covenants. DeFond and Jiambalvo (1994) suggest that debt covenant violation is associated with discretionary accrual choice. High leveraged firms have incentives to make income increasing discretionary accruals to avoid debt covenant violation (Becker et al., 1998).

However, high leveraged firms are more likely to be in financial distress (Beneish and Press, 1995). DeAngelo, DeAngelo and Skinner find that troubled companies have large negative accruals related to contractual renegotiations that provide incentives to reduce earnings.

Therefore, to control for the possible effects (either positive or negative) of high leverage on our results, we include a dummy variable (HiLev) which takes one when firms have the highest decile of leverage in the same industry during the year of interest as in Becker et al. (1998). We do not have prior expectation on this variable.

Another control variable of our multivariate regression is absolute value of total accruals. Francis et. al. (1999) argue that firms with greater endogenous accruals-generating potential have more earnings uncertainty about reported earnings because of the difficulty that outsiders have in distinguishing discretionary and nondiscretionary accruals. If there is no an accurate mechanism for differentiating discretionary accruals from nondiscretionary accruals, it is possible that firms with larger absolute values of total accruals will show higher discretionary accruals (Jeong and Rho, 2004). Therefore, to control for the possibility that firms with larger absolute values of total accruals also have larger discretionary accruals, we include the absolute value of total accruals as a control variable in our multivariate test as in Becker et. al. (1998). We expect a positive coefficient for this variable. We also used market to book value as a proxy for growth opportunities as in previous studies (Zhou and Elder, 2001; Dang, 2004; Li and Lin, 2005).

5. Results

5.1. Descriptive statistics and univariate results

Table 1 presents descriptive statistics of our sample firms. The mean of the total accruals (- 0,0036) are higher than that of USA firms used in Becker et al. (1998). However, absolute value of total accruals are about % 7, which is smaller than that of USA.

Columns (A) and (B) of Table 1 (Panel B) present variables for the firm with non-Big Four and Big Four auditors, respectively and Column (C) presents the results of parametric and non-parametric tests comparing the two groups. Operating cash flows (OCF), size and leverage (HiLev) are significantly different between firms with Big Four and non-Big Four auditors both on the parametric and non-parametric tests. The mean and median values of total accruals scaled by assets are not statistically different between firms with Big Four and non-Big Four auditors both on the parametric (t-tests) and non-parametric tests (wilcoxon tests between the two groups on the non-parametric test, parametric test indicate that absolute values of total accruals are not statistically different between the two groups.

Table 2 presents the univariate analysis results of discretionary accruals of pooled data across years. In Table 2, mean and median discretionary accruals and absolute value of discretionary accruals are presented for the Big Four and non-Big Four samples in columns A and B, respectively. Column C presents the differences from subtracting the means and medians reported in column A from those in column B, along with the results of t-tests and wilcoxon two-sample tests. Column A indicates that clients of non-Big Four auditors mean (median) discretionary accruals of -0.014 (-0.019) of total assets. In column B of Table 2, clients of Big Four auditors have mean (median) discretionary accruals of -0.004 (-0.004) of total assets. Column C indicates that there is no statistical difference in discretionary accruals while the mean and median values of discretionary accruals of clients with Big Four auditors are slightly larger than that of clients with non-Big Four auditors.

The absolute value of discretionary accruals is a supplementary indicator of the degree to which management is allowed to exercise earnings management through discretionary accruals (Becker et al., 1998). Previous researches suggests that managers are more likely to overstate than understate earnings (DeFond and Jiambalvo, 1991, 1993; Kinney and Martin, 1994). In addition, auditors are more likely to object to client firms' earnings overstatements because auditors are generally sued for allowing earnings management that overstate earnings not earnings understatements (St. Pierre and Anderson, 1984). However, high quality auditing should also, *ceteris paribus*, be a greater deterrent to earnings understatements (Becker et al., 1998). Warfield et al. (1995) show that the absolute value of discretionary accruals is a good proxy for the combined effect of earnings management that overstate earnings and understate earnings. Therefore, in Table 2, absolute value of discretionary accruals are also compared (as in Becker et al., 1998 and Jeong and Rho, 2004) because the larger they are the more likely managers may exercise earnings management through discretionary accruals.

Table 2 indicates that the mean and median values of the absolute value of discretionary accruals are almost the same for the firms with non-Big Four and Big Four auditors and not statistically different. In this context, the univariate test results show that there is no difference between big four auditors and non-Big Four auditors for restriction of earnings management, which is consistent with our hypothesis.

5.2. Multivariate results

The univariate analysis ignores a number of variables that affect discretionary accruals. Therefore, in Table 3, in addition to a univariate test of our hypothesis, we also present the result of multivariate test that includes control variables discussed in Section 4.

The first coefficient in the regression in Table 3 relates to a dummy variable (Big), representing whether firms are audited by Big Four auditors, shows that audit firm size is not significantly associated with discretionary accruals at the 0.05 level. This result is consistent with our expectation and the above univariate comparison. We can conclude from this result that there is no difference in audit quality between Big Four and non-Big Four audit firms in Turkey.

Most of the control variables in the multivariate regression in Table 3 are significantly associated with discretionary accruals. The regression statistics of the independent variable operating cash flows (OCF) shows that there is a negative significant association between OCF and discretionary accruals. The coefficient of OCF is negative as in previous studies (Dechow et al., 1995; Becker et al., 1998). The main reason of the negative sign value on OCF is that discretionary accruals are not related to cash flows. When the more discretionary accruals in earnings, which means that the sign of OCF is more likely to be negative. The other reason of the negative coefficient value on OCF may be caused by the number of nondiscretionary accruals treated as discretionary accruals due to a classification error in the Modified Jones Model (Jeong and Rho, 2004).

An examination of regression statistics of the independent size variable shows that size is significantly related to discretionary accruals at the 0.05 level. As the size variable has positive regression coefficients, which means that discretionary accruals increases with increasing assets size.

The negative coefficient on the leverage dummy indicate that there is an negative relationship between high leverage and financial distress. Because, financial distress lead to contractual renegotiations that provide incentives to reduce earnings (DeAngelo et al., 1994).

The absolute value of total accruals have negative coefficient (-20.5%) as in Becker et al. (1998). According to Becker et al. (1998), nondiscretionary accruals tend to be negative because of depreciation. Therefore, while negative discretionary accruals increase the absolute value of total accruals (the sum of nondiscretionary and discretionary accruals), positive discretionary accruals decrease the absolute value of total accruals. This means that, the negative coefficient on this variable indicates that firms with greater absolute value of total accruals intend to reduce earnings. Furthermore, an examination of t statistics and its observed significance level of the independent variable market to book value show that, market to book value ratio is significantly related with expected signs.

Thus, as shown in Table 3, there is no significant association between the discretionary accruals of firms with Big Four and non-Big Four auditors. This imply that audit firm size, as proxy for audit quality, does not have an impact on discretionary accruals.

6. Summary and Conclusion

In this study, we examine the effect of audit quality on earnings management through discretionary accruals in Turkey where auditor's incentives to provide high quality audit is limited.

Audit environment in Turkey, on the contrary to USA and other developed countries, does not motivate auditors to provide high quality audits, because there is no effective audit and oversight mechanism for auditors. In such an institutional environment, auditors may not constrain the earnings management practices of client firms and so there may be no difference in audit quality between Big four and non-Big four auditors. Therefore, we hypothesis that "there is no effect of audit quality on earnings management", based on the sample of manufacturing industry firms listed on the Istanbul Stock Exchange (ISE) for the years 2003-2007.

However, we used "audit firm size" as proxy for "audit quality" and "discretionary accruals" as proxy for "earnings management", because of the difficulty of measuring audit quality and earnings management directly.

To test the hypothesis, we measured earnings management in terms of discretionary accruals estimated using pooled cross-sectional variation of the Modified Jones Model and regressed estimated discretionary accruals on a dummy variable indicating audit firm size and several control variables (operating cash flows, total assets, leverage, absolute value of total accruals, market to book value ratio).

The findings of this study show that audit firm size, as proxy for audit quality, does not have an impact on discretionary accruals. This means that there is no difference in audit quality between Big Four and non-Big Four auditors for restriction of earnings management in Turkey during the sample period. This result is so much in line with the results of research on Korean case (e.g., Jeong and Rho, 2004; Jeong, 1999; Park et al., 1999) and Greece case (Tsipouridou and Spathis, 2012), while different from the results of researches run in the USA and other developed countries (Becker et al., 1998; Teoh and Wong, 1993; Palmrose, 1988, DeAngelo, 1981). This is may be caused by having different audit and oversight mechanism of Turkey (where there has been a little risk of litigation for auditors, the current penalty mechanism against auditors has not been fully implemented in practice and not sufficiently deterrent) compared to the USA and other developed countries. Thus, the results of this study indicate that the theory of audit quality constrains the earnings management is not always valid in developing countries.

This study adds to the literature on audit quality by showing that Big four auditors (proxy for audit quality) may not constrain earnings management of client firms in certain institutional environments (auditor's incentives to provide high quality audit is limited).

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Table 1. Descriptive statistics for sample firms (N=290)

Panel A

	Mean	Median	S.D.	Skewness	Kurtosis	Minimum	Maksimum
OCF	0.0442	0.0424	0.0967	-0.052	0.354	-0.2266	0.3177
Size	18.2132	18.3645	1.0672	-0.089	-0.626	15.7420	20.9364
HiLev	0.4285	0.4088	0.2083	0.667	0.702	0.0649	1.2988
Tot_acc	-0.0036	-0.0036	0.0914	-0.002	-0.030	-0.2243	0.2373
Abs_acc	0.0698	0.0616	0.0590	0.346	2.098	-0.2070	0.2373
MKBK	1.3851	1.3000	0.6683	0.796	0.314	0.0000	3.3100

Panel B

	(A) NB4 (N=160)		(B) B4 (N=130)		(C) Differences † (A=B)	
	Mean	Median	Mean	Median	t-statistic (p-value)	Z-statistic (p-value)
OCF	0.0226	0.0156	0.0708	0.0701	-4.344 (0.000)***	-4,761 (0.000)***
Size	17.7703	17.8290	18.7583	18.8641	-8.820 (0.000)***	-7,744 (0.000)***
HiLev	0.4540	0.4525	0.3972	0.3695	2,324 (0.021)**	-2,791 (0.005)***
Tot_acc	-0.0011	-0.0036	-0.0067	-0.0060	0.516 (0.606)	-0.516 (0.606)
Abs_acc	0.0797	0.0649	0.0808	0.0579	1.060 (0.290)	-2,164 (0.030)**
MKBK	1.3622	1.2700	1.4133	1.3600	-0.647 (0.518)	-0.576 (0.565)

Notes: OCF= operating cash flows/total assets; Size= natural log of total assets; HiLev= total liabilities/total assets;

Tot_acc= total accruals/total assets; Abs_acc= absolute value of total accruals/total assets; market value to book value ratio.

** = Significant at 5 % level

*** = Significant at 1 % level

† T-statistics are from t-tests of the differences in the means and Z- statistics are from Wilcoxon two sample tests.

Table 2. Comparison of discretionary accruals and absolute value of discretionary accruals for a sample of non-Big Four and Big Four auditors during 2003-2007*

	(A) NB4 (N=160)		(B) B4 (N=130)		(C) Differences (A=B)	
	Mean	Median	Mean	Median	Mean (p-value)†	Median (p-value)†
Discretionary accruals (DA)	-0.014	-0.019	-0.004	-0.004	-0.010 (0.483)	-0.015 (0.156)
Absolute value of discretionary accruals	0.088	0.069	0.092	0.064	-0.004 (0.699)	0.005 (0.538)

Notes: *Discretionary accruals are estimated by the pooled cross-sectional version of the Modified Jones Model in equation (2).

† p-values for means are from t-tests and p-values for medians are from Wilcoxon two-sample tests.

Table 3. OLS regression of discretionary accruals on audit firm size and control variables

Independent variable	Pooled estimate (t-statistic) (p-value)
Constant	-0,239 (-2,231) (0,026)**
Big	0,018 (1,427) (0,155)
OCF	-0,548 (-9,152) (0,000)***
Size	0,013 (2,193) (0,029)**
HiLev	-0,047 (-2,038) (0,042)**
Abs_acc	-0,205 (-2,315) (0,021)**
MKBK	0,021 (2,843) (0,005)***
R	0,495
R ²	0,245
Adjusted R ²	0,229
F-statistic	15,338
Signif. F	0,000

Notes:

Big= an audit firm size dummy variable equal to 1 if auditor is Big Four; OCF= operating cash flows/total assets; Size= natural log of total assets; HiLev= dummy variable indicating whether firms are among the highest decile leverage, by year and industry; Abs_acc= absolute value of total accruals/total assets; market value to book value ratio.

* = Significant at % 10 level

** = Significant at % 5 level

*** = Significant at % 1 level