Director Tenure and Financial Reporting Quality: Evidence from Korea

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ABSTRACT

This study investigates the relationship between director tenure and financial reporting quality. Liu and Sun (2010) argue that there is negative relationship between the proportion of long-tenured directors on the independent audit committee and earnings quality. This study extends the Liu and Sun (2010) to examine whether the tenure of directors on the board affects on the financial reporting quality. We measure financial reporting quality using performance matched modified Jones model, earnings persistent model and ERC model. Our results show that the absolute value of discretionary accruals decreases when the tenure of directors increases. Also, persistence and ERC of earnings have positive relation with the length of tenure of directors. Our study makes the following contributions. First, this paper is the first study examining the association between the tenure of board of directors and financial reporting quality. Previous studies have shown the relation between the tenure of directors on the independent audit committee and financial quality. There is no study to date that explains the director tenure's effects on the financial reporting quality. Second, this paper extends the research on the earnings quality while Dechow et al. (2010) do not consider the demographic characteristics of decision makers as factors affecting on the earnings quality.

Key words: Board of directors, Tenure, Financial reporting quality.

1. Introduction

This study investigates the relationship between director tenure and financial reporting quality. Previous research shows that demographic characteristics of top management affect on decision making such as disclosure, accruals and tax avoidance (e.g., Bamber et al 2010; Dejong and Ling 2010; Dyreng et al. 2010). Wiersema and Bantel (1992) argue that firms changing their corporate strategy have top management team characterized by higher team tenure. Especially, Liu and Sun (2010) suggests that there is the negative relationship between the proportion of long-tenured directors on the independent audit committee and earnings management which is measured by performance matched modified Jones model. This study extends the Liu and Sun (2010) to examine whether tenure of directors on the board affects on the financial reporting

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quality. We focus on the tenure which is one of the important demographic characteristics because it is very closely related to the cognitive process of decision makers.

Most research on the financial reporting quality has focused on the firm characteristics and other environmental factors (Dechow el al. 2010; Dechow and Dichev 2002). Agency theory suggests that decision makers are affected by the firm's monitoring mechanisms and contractual incentives (Jensen and Meckling 1976). On the contrary, upper echelons theory suggests that a manager's demographic characteristics are associated with the manager's unique cognitive style and values which affect on the managerial decision making (e.g., Hambrick and Mason 1984). Bertrand and Schoar (2003) show that a manager's personal characteristics change his/her decision about R&D investments and advertising expenditures. Also, Bamber et al. (2010), Dyreng et al. (2010) suggest manager-specific fixed effects reflect systematic differences in managers' disclosure style and tax avoidance.

Tenure is one of the important personal characteristics which give rise to distinct patterns of decision makers' cognitive process, attention and final decision (e.g. Allen and Cohen 1969; Wiersema and Bantel 1992). Hambrick and Fukutomi (1991) argue that long- tenured executives generally increase the commitment to a paradigm, decrease open mindedness, information diversity and task interest while they increase their task knowledge and CEO power over time. Allen and Cohen (1969) suggest that the long tenure of top management team increase reluctance to change their organizational strategy because they understand the organizational policies and procedures. Katz (1982) finds that long average group tenure decreases the level of communication because the members are likely to anticipate other members' viewpoints. Also, the long tenure group can be isolated from outside source of information (Wiersema and Bantel 1992).

Accounting literatures provide evidence on the relation between tenure of top managers and variation of accounting decision. Ali and Zhang (2012) show that CEOs have greater incentives to overstate earnings in the early years than in the later years of their service. They argue that market's assessment of their ability is more significant in the early years of service as CEO (Hermalin and Weisbach 2012). CEOs in early years of service are trying to report good performance to influence positively the market's perception of their ability. Bedard et al. (2004) and Liu and Sun (2010) investigate the relation between earnings management and the tenure of audit committee. They report long tenure of the members of the committee is negatively related to earnings management because directors with long board tenure have much experience and task knowledge resulting in effective monitoring role.

Previous studies have shown that the tenure of decision makers such as CEOs and the members of audit committees affects on the financial reporting quality. However, no study to date has shed light on the association between financial reporting quality and the tenure of board of directors which is a final approval authority of financial reports. This study fill the void by investigating how the tenure of board of directors affect on the financial reporting quality, using large sample of 5,502 firm-year observation over the period 2002 to 2011 in Korea.

In this study, we employ three measures of proxies to estimate financial reporting quality. First measure is the absolute value of discretionary accruals using performance matched modified Jones model (Kothari et al. 2005). Second, we investigate how the tenure affects on financial reporting quality measured by earnings

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persistence. Dechow et al. (2010) argue that more persistent earnings can result in better input to higher equity market valuations. Finally, we consider earnings response coefficient (ERC). Hanlon et al. (2008) and other researchers interpret returns to earnings coefficient as a measure of the informativeness of earnings.

Our results show that the tenure of directors on the board has positive relation with financial reporting quality. Specifically, the long tenure of board of directors is negatively related to the absolute value of discretionary accruals. Second, we find evidence on improved financial reporting quality for the long tenure of board of directors based on earnings persistence. Finally, the long tenure of board of directors is associated with increased earnings response coefficient (ERC). These results are robust to additional analysis using propensity-score matched samples. Our findings are consistent with Liu and Sun (2010) which suggest that long- tenured directors are effectively monitor to provide financial reports because of their task knowledge and experience.

Our study makes the following contributions. First, this paper is the first study examining the association between the tenure of directors on the board and financial reporting quality. Previous studies have shown the relation between the tenure of directors on the independent audit committee. There is no study to date that explains the director tenure's effects on the financial reporting quality. Second, this paper extends the research on the earnings quality. Dechow et al. (2010) do not consider the demographic characteristics of decision makers as a factor affecting on the earnings quality. Liu and Sun (2010) shows that long tenure makes directors effectively monitor financial reporting process using discretionary accrual model. This study provides additional evidence on the financial reporting quality of firms having long-tenured directors using discretionary accruals, earnings persistence and ERC.

The rest of the paper is organized as follows. Section 2 reviews the related literature and presents the hypotheses. Section 3 discusses the research design and section 4 presents the empirical results of the study. Finally, section 5 concludes the study.

2. Literature and Hypotheses

2.1 Demographic Characteristics and Decision Making

Hambrick and Mason (1984) argue that demographic characteristics such as experience, age, gender and tenure affect on the values and cognitive bases of top management and make them choose different choices, especially in complex situations, eventually producing different organizational outcomes. Bertrand and Schoar (2003) develop an innovative design to provide evidence on the notion that managers' personal characteristics influence on investment decision or financial decision after controlling for firms and time fixed effects. This methodology is applied by other studies including Bamber, et al. (2010), which shows that manager's disclosure styles are related with their personal background. They argue that the old managers are associated with certain conservative disclosure style; and managers from finance and accounting display more precise disclosure style. Also, Dyreng et al. (2010) suggest that managers' personal fixed effects are related to the tax avoidance.

Tenure is one of the important topics of top management characteristics because it is related with distinct patterns of decision makers' cognitive process,

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attention and final decision (e.g. Allen and Cohen 1969; Wiersema and Bantel 1992). Hambrick and Fukutomi (1991) suggest that managers are generally engaged in complicated, ambiguous and information overloaded situation. That is, the managers operate with finite model, or paradigm in spite of applying all of the information. The long-tenured managers are fixated on the paradigm, which make it difficult for them to try to pay a great deal of attention to outside source of information. Barker and Mueller (2002) show conservative style of long-tenured managers. They argue that long-tenured CEOs may have little interest in changing innovative strategy through higher R&D investment, while they prefer stability and efficiency instead (Grimm and Smith 1991).

Wiersema and Bantel (1992) study the association between average tenure of a top management team and change in corporate strategy. They suggest that the groups in which the members have been together long time tend to decrease the possibility of communication because the group members anticipate to understand the view point of each other (Katz 1982). In addition, long tenure increases understanding of organizational policies and procedures and make the members of organization reluctant to change the status quo. Also, long-tenured members are likely to decrease communication with outside of organization which may be a threat to change their behavior patterns. (Allen and Cohen 1969).

In summary, the previous studies show that the tenure of managers or top management team members affect on the managerial decision because the tenure is closely related to the task knowledge and it affects differently on the cognitive process of the individual persons over time.

2.2 Tenure and Earnings Management

According to previous studies, there are several view points on the association between tenure and earnings management. First, some researchers argue that earnings management is related to executive changes (e.g., Pourciau 1993; Kalyta 2009; Dechow et al. 2010). Earnings can be managed downward by CEOs in the first year of their service because the new CEOs are likely to attribute the lower performance to the previous CEOs and then claim credit for the higher income in the subsequent years (Pourciau 1993). Also, CEOs use accounting choice to overstate earnings in their final year of service to increase the value of pension (Kalyta 2009). These studies show that top managers tend to manipulate earnings in the first and last year of their service regardless of their tenure.

Ali and Zhang (2012) suggest another viewpoint of earnings management in the early years of their service as CEO. They argue that newly appointed CEOs' current performance would affect significantly the market's assessment of their ability because the market is uncertain about their ability in the early years of service (Gibbons and Murphy 1992). Axelson and Bond (2009) note that there is sufficient adverse selection at the beginning of their service as CEOs which means that the new CEOs get labeled as "low ability" managers if their performance is poor at that time. On the contrary, CEOs are less likely to manage earnings upward after they have worked with their firms for a longer period. Hermalin and Weisbach (2012) suggest that the market would be less favorable to current earnings under the CEOs with longer tenure than the CEOs with shorter tenure. In addition, if their earning management is detected, the CEOs' reputation which has established for a long time would be damaged.

Accounting literature provides evidence on the relationship between decision makers' tenure and earnings management. Vafeas (2003) and other researchers propose

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management friendliness hypothesis which means long-tenured directors may be less effective because the seasoned directors are more likely to befriend managers, and are less likely to adequately monitor managers. Bedard et al. (2004) show that the average board tenure of audit committee is positively related to earnings management. On the other hand, directors with longer tenure have greater task knowledge and experience and enhance monitoring effects. Buchanan (1974) finds that longer tenure increase organizational commitment and willingness to expand effort to achieve a firm's goals. Liu and Sun (2010) suggest that the proportion of long-tenured directors on the independent audit committee is negatively associated with earnings management using discretionary accruals.

As we review previous studies, several accounting studies investigate the personal trait of audit committee members affecting on earnings management, while a lot of management literatures provide the empirical evidence of upper echelons perspectives. Especially, the studies show the relation between tenure of directors of audit committee and earnings management. The board of directors is a main authority within companies which plays an important role of approving financial statements. In this study, we examine the relationship between the tenure of directors of board and financial reporting quality using various measurement models including discretionary accrual model, earnings persistence model and ERC model.

Based on the above arguments, we propose the following null hypothesis:

H_0: Other things equal, the tenure of board directors is not related to financial reporting quality.

3. Research Design

3.1 Measurement of Financial Reporting Quality

Dechow et al. (2010) define high quality earnings is to "provide more information about the future of a firm's financial performance that are relevant to a specific decision made by a specific decision maker." They identify nine of the most common earnings quality proxies through reviewing over 300 studies. We employ three of these proxies as a financial reporting quality because earnings quality can't be captured by a single measure. We use measures related to absolute value of discretionary accruals using performance matched modified Jones model, earnings persistence model and ERC model.

3.2 Multivariate Regression Model

First, we use absolute value of discretionary accruals which are commonly used to examine earnings management in the literature (e.g., Klein, 2002; Ashbaugh-Skaife et al. 2008). We estimate a cross-sectional variant of the performance matched Jones (1991) model which is modified by Dechow et al (1995). The discretionary accruals are estimated by following regression model using two-digit Korean Standard Industry Codes.

$$TA_{i,t} = \beta_0 + \beta_1(1/A_{i,t-1}) + \beta_2(\Delta Rev_{i,t} - \Delta AR_{i,t}) + \beta_3 PPE_{i,t} + \varepsilon_{i,t} \quad (1)$$

TA means total accruals calculated as net income minus cash flow from

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operations, deflated by lagged total assets. *ΔAR* is change in accounting receivables and *ΔRev* shows change in revenues. *PPE* represents net property, plant, and equipment. *ΔAR*, *ΔRev,* and *PPE* are scaled by prior-year total assets. The residuals from equation (1) mean discretionary accruals. Finally, we compute *ADA* as the absolute value of the discretionary accruals.

We test our hypothesis using following regression model:

$$ADA = \beta_0 + \beta_1 MTN(ITN) + \beta_2 BDSIZE + \beta_3 IABD + \beta_4 VSALES + \beta_5 VCFO + \beta_6 FR + \beta_7 BH + \beta_8 BIG + \beta_9 CFO + \beta_{10} MB + \beta_{11} SIZE + \beta_{12} ROA + \beta_{13} LEV + \beta_{14} LOSS + Industry\ dummies + Year\ dummies \quad (2)$$

Where

ADA = the absolute value of discretionary accruals based on the modified Jones model,
MTN = average tenure of directors
ITN = indicator variable equal to one if the average tenure of directors is longer than the average tenure of total sample, and zero otherwise,
BDSIZE = the natural logarithm of number of board of directors,
IABD = indicator variable equal to one if the company has audit committee,
VSALES = standard deviation of sales, measured over years *t* -4 through *t* scaled by total assets.
VCFO = standard deviation of operating cash flow, measured over years *t* -4 through *t* scaled by total assets,
FR = percentage of equity owned by foreign investors,
BH = percentage of equity owned by the biggest block holder,
BIG = indicator variable equal to one if the firm's auditor belongs to the big audit firm, and 0 otherwise,
CFO = cash flow from operation scaled by total assets,
MB = market value scaled by previous year's total assets,
SIZE = the natural logarithm of total assets at the start of the year,
ROA = net income scaled by total assets,
LEV = financial leverage, firm's total liability divided by total assets,
LOSS = indicator variable equal to one 1 if the net income is negative, and 0 otherwise.

In equation (1), we construct two alternative measure of director tenure: (1) *MTN*, the average tenure of board of directors, (2) *ITN*, an indicator variable equal to one if a firm's average tenure of board of directors is longer than the average tenure of the total companies in the sample. The coefficient β_1 would be negative if the relationship between tenure of the board of directors and financial reporting quality is positive.

We control for several variables which could influence financial reporting quality. The first is the size of board of directors measured by the natural logarithm of the number of board of directors. Also, we add the dummy variable representing an audit committee assuming that if a company has the audit committee, the financial reporting quality would be increased (Krishnan et al. 2011). One of the important

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factors affecting to the financial reporting quality is innate factors relating to the operating environment (Francis et al. 2005). Accordingly, we include variability in sales (*VSALES*) and variability in cash flow from operating (*VCFO*), measured by standard deviation over prior five years including current year.

The governance structure mitigates information asymmetry increasing the quality of accounting information (Chung et al. 2004). It is assumed that the proportion of stocks held by foreigners (*FR*) and majority stock holders (*BH*) affect the financial reporting quality. Accordingly, we include those variables in the model. Also, the brand of auditors is considered as a proxy for audit quality related to earnings quality (Balsam et al. 2003). We control for the big 8 auditors (*BIG*) as a dummy variable.

Other variables include the characteristics of companies. *SIZE* means the firm size, measured by the logarithm of previous total assets. Also we include *CFO* which is cash flow from operation deflated by total assets, *MB* which is market value of the firm deflated by previous total assets, *ROA* which is net income deflated by total assets and financial leverage(*LEV*) which is ratio of liability to total assets. According to Burgstahler and Dichev (1997) arguing that the firms that realize negative income are likely to mange income using discretionary accruals, we include a dummy variable indicating negative income of the firms. Finally, we consider the industry dummies and year dummies.

Second, we use earnings persistence model to test the financial reporting quality related to director tenure. Previous research shows that earnings persistence is important property of earnings because more persistent earnings will result in better inputs to higher equity market valuation models. The studies assume that more persistent earnings is related to higher quality than a less persistent earning numbers(e.g., Dechow et al. 2010; Sun et al. 2011; Francis et al. 2004). We regress current period ROA (*ROA*) which is net income deflated by lagged total assets on prior year's ROA (*lagROA*) to estimate persistence. The regression model is as follows:

$$\begin{aligned} ROA \;=\; & \beta_0 + \beta_1 MTN(ITN) + \beta_2 lagROA + \beta_3 MTN(ITN) \times lagROA + \\ & \beta_4 BDSIZE + \beta_5 IABD + \beta_6 VSALES + \beta_7 VCFO + \beta_8 FR + \beta_9 MH + \\ & \beta_{10} BIG + \beta_{11} CFO + \beta_{12} MB + \beta_{13} SIZE + \beta_{14} LEV + \beta_{15} LOSS + \\ & Industry\ dummies + Year\ dummies \end{aligned} \quad (3)$$

Where

ROA_t = net income for year *t*, deflated by lagged total assets,
$lagROA$ = net income for year *t-1*, deflated by lagged total assets.

We are interested in β_3 , which is incremental effects on persistence for longer tenure of directors. If longer tenure leads to more persistent or higher quality of financial reports, we expect β_3 to be positive. On the contrary, when β_3 is negative, we can assume that longer director tenure makes earning less persistent than shorter director tenure.

Finally, we consider ERC model using market return. The investor responsiveness to accounting income is a direct proxy for earnings informativeness or earnings quality (e.g., Dechow et al. 2010). We regress stock return on annual change in net income. We estimate a regression model as follows:

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$$Ret = \beta_0 + \beta_1 MTN(ITN) + \beta_2 \Delta ROA + \beta_3 MTN(ITN) \times \Delta ROA + \beta_4 BDSIZE + \beta_5 IABD + \beta_6 VSALES + \beta_7 VCFO + \beta_8 FR + \beta_9 MH + \beta_{10} BETA + \beta_{11} BIG + \beta_{12} CFO + \beta_{13} MB + \beta_{14} SIZE + \beta_{15} LEV + \beta_{16} LOSS + Industry\ dummies + Year\ dummies \quad (4)$$

Where

Ret = holding period stock return, including dividends, over the fiscal
ΔROA = annual change in net income deflated lagged assets.

Table 1: Descriptive Statistics

Variable	n	Mean	Std. dev.	Q1	Median	Q3	Minimum	Maximum
ADA	5,502	0.062	0.061	0.022	0.047	0.084	0.000	0.960
RET	5,502	0.193	0.833	-0.247	-0.003	0.389	-0.947	12.273
MTN	5,502	4.024	2.067	2.500	3.667	5.250	1.000	13.000
ITN	5,502	0.577	0.494	0.000	1.000	1.000	0.000	1.000
BDSIZE	5,502	1.506	0.365	1.386	1.386	1.792	0.693	2.398
IABD	5,502	0.104	0.305	0.000	0.000	0.000	0.000	1.000
VSALES	5,502	0.179	0.132	0.089	0.141	0.228	0.021	0.989
VCFO	5,502	0.068	0.039	0.040	0.059	0.086	0.012	0.292
FR	5,502	0.056	0.100	0.000	0.007	0.064	0.000	0.541
BH	5,502	0.409	0.159	0.297	0.409	0.516	0.071	0.797
BETAY	5,502	0.817	0.394	0.543	0.805	1.094	-0.006	1.901
BIG	5,502	0.548	0.498	0.000	1.000	1.000	0.000	1.000
CFO	5,502	0.044	0.084	-0.004	0.046	0.095	-0.277	0.309
MB	5,502	0.640	0.723	0.230	0.431	0.777	0.000	8.227
SIZE	5,502	25.613	1.253	24.723	25.368	26.287	23.143	30.116
ROA	5,502	0.019	0.097	0.005	0.032	0.067	-0.712	0.238
LEV	5,502	0.437	0.191	0.289	0.440	0.579	0.048	0.975
LOSS	5,502	0.221	0.415	0.000	0.000	0.000	0.000	1.000

1) The sample(5,502 firm-year observations) includes the listed firms on the Korea Composite Stock Price Index (KOSPI) and the Korea Securities Dealer Automated Quotation(KOSDAQ) market over the period 2002 to 2011..
2) See Appendix for variable definitions.

The coefficient for interaction, β_3 represents the incremental ERC for firms which have longer director tenure. If longer tenure is related to higher ERC meaning increasing quality of financial reports, the sign of β_3 wound be positive.

3.3. Sample Selection

Listed companies' financial data are collected from the KIS VALUE database over the 2002 to 2011 period. Our sample is restricted to nonfinancial firms with available data requiring at least 15 observations in each two-digit Korean Industry

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Classification Code grouping per year. We also obtain directors' tenure data from TS2000 database offered by Korea Listed Companies Association. TS2000 provides tenure data of board of directors from year 1998. We exclude the tenure data in 1998 since 1998 is the first year for which the TS2000 provides data of board of directors, we can't identify how long the directors have served in 1998. Also, we exclude the observations with missing data because of M&A or delisting. After truncating extreme observations at the top and bottom 1 percent of the all variables in the model except indicator variables, the sample size is reduced to 5,502 firm-year observations over the period 2002-2011.

4. Empirical Results

4.1 Univariate Test

Table 1 provides descriptive statistics for the variables in equation (2), (3) and (4). Our sample contains 5,502 firm-year observations over the period 2002-2011. Maximum value of average tenure (*MTN*) is 13 years and minimum tenure is 1 year. Another measure of tenure is *ITN* which represents indicator variable equal to one if the average tenure of directors is more than the average tenure of total sample, and zero otherwise. The mean and median of the absolute value of performance-matched discretionary accruals (*ADA)* is 0.62 and 0.047, respectively. The average portion of foreign investors is 0.056 and the average proportion of block shareholders is 0.418. The mean of *SIZE* and *LEV* are 25.613, 0.437 and the medians of *SIZE* and *LEV* are 25.368 and 0.440, respectively.

Table 2 presents the correlations between the measures of tenure (*MTN, ITN*) and financial reporting quality measure (*ADA*) and the control variables. The accrual-based measure of financial reporting quality (*ADA*) is negatively correlated with governance measures (*BDSIZE, IBD, FR, BR*) and several firm characteristic measures (*CFO,SIZE, ROA*). The correlation of *ADA* and volatility factors (*VSALES, VSALES*) represents that accruals are related with firms' innate factors (Francis et al. 2005). The measures of tenure (*MTN, ITN*) are negatively correlated with some governance measures (*BDSIZE, IBD, FR*) and positively correlated with *CFO, MB* and *ROA* at the five percent level of significant using Pearson correlations.

4.2 Multivariate Results

Table 3 provides the results of regression model using absolute discretionary accruals as a dependent variable. In columns (2) and (3), we represent the effect of tenure of directors on the board which is measured by average tenure. When the measure of tenure is average tenure of directors of the companies (*MTN*), the coefficient of β_1 is -0.001, significant at the five percent level, meaning that the relationship between tenure and financial reporting quality is positive. When the measure of tenure is an indicator variable (*ITN*, in columns (4), (5)), the value of coefficient is -0.004, significant at the five percent level, representing the same result as average tenure of directors. The results in Table 3 suggest that the company in which the tenure of directors is longer shows better quality of financial reporting. This finding is roughly in line with Liu and Sun (2010) representing strong evidence that the proportion of long tenure directors on the independent audit committee is negatively associated with earnings management. Results for the control variables are generally consistent with previous studies. Innate variables, volatility of sales (*VSALES*) and cash from operations

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(*VCFO*) show positive relation with the dependent variable (*ADA*), significant at the five and one percent level, respectively (Francis et al. 2005). Firm size (*SIZE*) and net income (*ROA*) are negatively associated with, and leverage (*LEV*), market to book value (*MB*) are positively associated with *ADA* (Krishnan et. 2011).

Table 4 provides the results for earnings persistence. In columns (2)-(5), we present the relation between average tenure of directors (*MTN*) and profitability (*ROA*). The coefficient of *MTN* in model 1 is 0.003 which is significant at the one percent level, representing that the relationship between tenure and profitability is positive. The coefficient of previous year's net income (*lagROA*) is 0.016 representing that the current earnings are persistent with previous earnings. In model 2, we document interaction effect of tenure and previous earnings (*MTN*lagROA*). *MTN*lagROA* is an interesting variable in this model, which is incremental effect on persistence for firms which have longer tenure directors on the board. The value of coefficient is 0.023, significant at the one percent level, representing that longer tenure lead to more persistent or higher quality of financial reporting. In columns (6)-(9), we present the association between indicator measure of (*ITN*) and profitability (*ROA*). In model 1, the results are almost same as the case of *MTN*. The value of interaction variables (*ITN*lagROA*) in model 2 is 0.037, significant at the one percent level. The result represents increased earnings persistence when average tenure of directors is longer than average tenure of full sample. In summary, we find significant and positive coefficient of interaction variables in both models. This result indicates that the increase in persistence is greater for the firms which have longer tenured board of directors meaning an improvement in financial reporting quality.

Table 5 reports the findings for earnings response coefficient (ERC). In columns (2)-(5), we document the association between average tenure of directors (*MTN*) and stock return (*Ret*). The coefficient of *MTN* in model 1 is 0.014, significant at the one percent level, representing that the tenure has positive relation with stock return. The coefficient of change in earnings (*ΔROA*) is 0.054 indicating the changes in earnings and stock returns have positive relations. In model 2, we provide interaction effect of tenure and earnings change (*MTN*ΔROA*). In this model, the interaction coefficient represents the incremental effect on ERC for longer tenure. The value of coefficient is 0.261, significant at the one percent level which presents that longer tenure is related with more responsive to earnings. The columns (6)-(9), which contains the results for the association between indicator measure of tenure (*ITN*) and stock return (*Ret*), show the almost similar results as the variable of *MTN*. The value of interaction variables (*ITN* ΔROA*) in model 2 which is variable of interest is 0.616 which is significant at the one percent level. The result represents increased ERC in the case of longer tenure group. Similarly, we report significant and positive coefficient of interaction variables in both models indicating that the increase in ERC is greater for the firms which have longer tenured board of directors which means an improvement in financial reporting quality.

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Table 2: Pearson Correlation Matrix

	ADA	*RET*	*MTN*	*ITN*	*BDSIZE*	*IABD*	*VSALES*	*VCFO*	*FR*	*BH*	*BETAY*	*BIG*	*CFO*	*MB*	*SIZE*	*ROA*	*LEV*	*LOSS*
ADA		-0.008	**-0.029**	-0.017	**-0.029**	**-0.028**	**0.173**	**0.277**	-0.009	**-0.065**	**0.090**	-0.020	**-0.054**	**0.078**	**-0.088**	**-0.043**	**0.099**	**0.101**
RET	0.010		**0.070**	**0.065**	-0.015	0.010	-0.007	**-0.044**	0.022	**0.075**	0.025	0.002	**0.157**	**0.184**	0.001	**0.307**	-0.017	**-0.257**
MTN	**-0.047**	0.017		**0.856**	**-0.250**	**-0.051**	**-0.056**	**-0.085**	**-0.087**	**0.074**	**0.043**	**-0.115**	**0.034**	**0.138**	**-0.101**	**0.109**	**-0.140**	**-0.098**
ITN	**-0.034**	0.014	**0.754**		**-0.200**	**-0.045**	**-0.054**	**-0.062**	**-0.055**	**0.057**	0.025	**-0.104**	**0.034**	**0.128**	**-0.088**	**0.107**	**-0.113**	**-0.087**
BDSIZE	**-0.029**	-0.009	**-0.253**	**-0.196**		**-0.058**	**-0.082**	-0.019	**0.221**	**-0.050**	**-0.043**	**0.101**	0.026	**-0.096**	**0.240**	-0.006	**0.044**	-0.006
IABD	**-0.046**	-0.016	**-0.048**	**-0.045**	**-0.076**		**-0.056**	**-0.128**	**0.189**	**-0.027**	**0.107**	**0.206**	**0.053**	-0.016	**0.384**	0.025	**0.108**	-0.024
VSALES	**0.180**	**0.041**	**-0.073**	**-0.060**	**-0.081**	**-0.053**		**0.398**	**-0.067**	**-0.050**	**0.136**	**-0.047**	**-0.077**	**0.067**	**-0.154**	**-0.086**	**0.145**	**0.106**
VCFO	**0.313**	-0.011	**-0.087**	**-0.062**	-0.017	**-0.113**	**0.365**		**-0.076**	**-0.070**	**0.103**	**-0.044**	**-0.068**	**0.056**	**-0.189**	**-0.080**	**0.121**	**0.126**
FR	**-0.042**	-0.007	**-0.094**	**-0.050**	**0.219**	**0.234**	**-0.078**	**-0.105**		**-0.107**	**0.119**	**0.177**	**0.112**	**0.131**	**0.415**	**0.207**	**-0.077**	**-0.122**
BH	**-0.096**	**0.036**	**0.079**	**0.058**	**-0.040**	-0.026	**-0.056**	**-0.095**	**-0.071**		**-0.258**	**0.035**	**0.073**	**-0.117**	**0.056**	**0.175**	**-0.088**	**-0.169**
BETAY	**0.098**	**0.039**	**0.048**	0.026	**-0.040**	**0.104**	**0.107**	**0.098**	0.021	**-0.254**		**0.036**	**-0.057**	**0.234**	**0.068**	**-0.083**	**0.079**	**0.097**
BIG	**-0.039**	-0.016	**-0.117**	**-0.104**	**0.099**	**0.206**	**-0.044**	**-0.038**	**0.189**	**0.037**	**0.036**		**0.073**	**-0.040**	**0.329**	**0.067**	**0.077**	**-0.061**
CFO	**-0.124**	**0.081**	**0.043**	**0.053**	0.018	**0.054**	**-0.052**	**-0.092**	**0.133**	**0.086**	**-0.049**	**0.071**		**0.089**	**0.103**	**0.459**	**-0.173**	**-0.332**
MB	**0.132**	**0.219**	**0.043**	**0.054**	**-0.048**	0.011	**0.114**	**0.091**	**0.103**	**-0.144**	**0.212**	**-0.032**	**0.050**		**-0.264**	**0.313**	**-0.377**	**-0.109**
SIZE	**-0.116**	**-0.054**	**-0.112**	**-0.097**	**0.229**	**0.504**	**-0.154**	**-0.183**	**0.391**	0.019	**0.118**	**0.339**	**0.099**	**-0.174**		**0.091**	**0.214**	**-0.136**
ROA	**-0.192**	**0.156**	**0.136**	**0.144**	-0.009	**0.046**	**-0.090**	**-0.143**	**0.177**	**0.217**	**-0.074**	**0.083**	**0.426**	**0.099**	**0.125**		**-0.352**	**-0.719**
LEV	**0.100**	**0.031**	**-0.140**	**-0.118**	**0.043**	**0.109**	**0.100**	**0.110**	**-0.091**	**-0.086**	**0.073**	**0.080**	**-0.172**	**-0.248**	**0.230**	**-0.294**		**0.205**
LOSS	**0.126**	**-0.131**	**-0.093**	**-0.087**	-0.010	-0.024	**0.087**	**0.127**	**-0.134**	**-0.171**	**0.094**	**-0.061**	**-0.329**	**-0.042**	**-0.117**	**-0.702**	**0.220**	

1) Pearson (Spearman) correlations below (above) the diagonal.
2) Coefficients shown in bold are significant at $p < 0.05$ (two-tailed test).
3) See Appendix for variable definitions.

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Table 3: Results for Performance Matched Modified Jones Model

Variable	MTN		ITN	
	Coeff.	**t-stat**	**Coeff.**	**t-stat**
Intercept	0.078	3.33***	0.073	3.14***
MTN *ITN*	-0.001	-2.57**	-0.004	-2.23**
BDSize	-0.001	-0.57	-0.001	-0.40
Iabd	-0.001	-0.28	-0.001	-0.27
VSALES	0.012	1.86*	0.012	1.93*
VCFO	0.360	16.33***	0.362	16.43***
FR	0.000	1.78*	0.000	1.78*
BH	0.000	-0.48	0.000	-0.51
BIG	-0.001	-0.32	0.000	-0.27
CFO	-0.015	-1.46	-0.015	-1.47
MB	0.011	8.95***	0.011	9.01***
SIZE	-0.003	-2.99***	-0.003	-2.92***
ROA	-0.096	-8.07***	-0.096	-8.05***
LEV	0.022	4.77***	0.023	4.87***
LOSS	-0.008	-3.13***	-0.008	-3.08***
Fixed Effect	Year and Industry		Year and Industry	
Observations	5,502		5,502	
adj R sqr	0.164		0.164	
F-stat	27.40***		27.35***	

1) *** significant at 1% level, ** significant at 5% level, * significant at 10% level using a two-tailed test.
2) The coefficients in the table are derived from following regression using Performance Matched Modified Jones Modedl.

$$ADA = \beta_0 + \beta_1 MTN(ITN) + \beta_2 BDSIZE + \beta_3 IABD + \beta_4 VSALES + \beta_5 VCFO + \beta_6 FR + \beta_7 MH + \beta_8 BIG + \beta_9 CFO + \beta_{10} MB + \beta_{11} SIZE + \beta_{12} ROA + \beta_{13} LEV + \beta_{14} LOSS + Industry\ dummies + Year\ dummies$$

3) See Appendix for variable definitions.

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Table 4: Results for Earnings Persistence Model

Variable	MTN				ITN			
	model 1		model 2		model 1		model 2	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept	-0.085	-2.85***	-0.065	-2.18**	-0.073	-2.48**	-0.066	-2.22**
MTN *ITN*	0.003	6.15***	0.002	4.06***	0.017	7.39***	0.015	6.68***
lagROA	0.016	5.70***	-0.027	-4.16***	0.015	5.61***	0.013	4.56***
*MTN*lagROA*			0.023	7.22***			0.037	3.52***
BDSize	-0.010	-3.48***	-0.010	-3.34***	-0.011	-3.69***	-0.011	-3.66***
IABD	-0.002	-0.63	-0.002	-0.66	-0.002	-0.58	-0.002	-0.64
VSALES	-0.001	-0.17	-0.002	-0.20	-0.001	-0.17	-0.001	-0.16
VCFO	0.017	0.60	0.008	0.27	0.012	0.42	0.008	0.27
FR	0.000	4.03***	0.000	3.95***	0.000	4.03***	0.000	4.00***
BH	0.001	7.99***	0.001	7.60***	0.001	8.06***	0.001	7.90***
BETAY	0.003	1.04	0.002	0.82	0.004	1.21	0.003	1.09
BIG	0.006	2.73***	0.005	2.58**	0.006	2.69***	0.005	2.62***
CFO	0.216	17.06***	0.209	16.56***	0.214	16.91***	0.211	16.73
MB	0.012	7.50***	0.011	6.88***	0.011	7.46***	0.011	7.11***
SIZE	0.005	3.99***	0.004	3.38***	0.005	3.87***	0.004	3.62***
LEV	-0.055	-9.44***	-0.049	-8.33***	-0.057	-9.69***	-0.054	-9.22***
LOSS	-0.138	-52.66***	-0.136	-51.93***	-0.137	-52.73***	-0.137	-52.37***
Fixed Effect	Year and Industry		Year and Industry		Year and Industry		Year and Industry	
Observations	5,502		5,502		5,502		5,502	
adj R sqr	0.539		0.543		0.540		0.541	
F-stat	154.10***		153.04***		154.88***		151.88***	

1) *** significant at 1% level, ** significant at 5% level, * significant at 10% level using a two-tailed test.

2) The coefficients in the table are derived from following regression using earnings persistence model.

$$ROA = \beta_0 + \beta_1 MTN(ITN) + \beta_2 lagROA + \beta_3 MTN(ITN) \times lagROA + \beta_4 BDSIZE + \beta_5 IABD + \beta_6 VSALES + \beta_7 VCFO + \beta_8 FR + \beta_9 MH + \beta_{10} BIG + \beta_{11} CFO + \beta_{12} MB + \beta_{13} SIZE + \beta_{14} LEV + \beta_{15} LOSS + Industry\ dummies + Year\ dummies$$

3) See Appendix for variable definitions.

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Table 5: Results for Earnings Response Coefficient Model

Variable	MTN				ITN			
	model 1		model 2		model 1		model 2	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept	0.221	0.82	0.065	0.24	0.295	1.10	0.195	0.73
MTN *ITN*	0.014	2.75***	0.018	3.48***	0.036	1.75*	0.041	2.01**
ΔROA	0.054	2.17**	-0.431	-7.32***	0.054	2.17**	0.009	0.34
*MTN*ΔROA*			0.261	9.05***			0.616	6.62***
BDSize	0.008	0.31	0.005	0.18	0.002	0.06	-0.001	-0.03
IABD	-0.009	-0.26	-0.011	-0.31	-0.010	-0.28	-0.009	-0.26
VSALES	-0.026	-0.35	-0.026	-0.36	-0.035	-0.48	-0.039	-0.53
VCFO	-0.488	-1.92*	-0.411	-1.63	-0.516	-2.03**	-0.477	-1.89*
FR	-0.002	-1.73*	-0.002	-1.66	-0.002	-1.73*	-0.002	-1.75*
BH	0.002	4.03***	0.003	4.32***	0.002	4.09***	0.003	4.28***
BETAY	-0.031	-1.16	-0.022	-0.83	-0.029	-1.11	-0.024	-0.91
BIG	-0.029	-1.53	-0.028	-1.50	-0.031	-1.62	-0.029	-1.54
CFO	0.519	4.54***	0.513	4.52***	0.525	4.59***	0.513	4.50***
MB	0.240	17.23***	0.239	17.30***	0.239	17.14***	0.240	17.30***
SIZE	-0.018	-1.66*	-0.012	-1.13	-0.019	-1.77*	-0.015	-1.42
LEV	0.422	7.97***	0.391	7.43***	0.416	7.87***	0.399	7.55***
LOSS	-0.185	-7.79***	-0.147	-6.17***	-0.187	-7.90***	-0.166	-6.96***
Fixed Effect	Year and Industry		Year and Industry		Year and Industry		Year and Industry	
Observations	5,502		5,502		5,502		5,502	
adj R sqr	0.098		0.111		0.097		0.104	
F-stat	15.25***		17.03***		15.13***		15.92***	

1) *** significant at 1% level, ** significant at 5% level, * significant at 10% level using a two-tailed test.
2) The coefficients in the table are derived from following regression using earnings response coefficient model.

$$Ret = \beta_0 + \beta_1 MTN(ITM) + \beta_2 \Delta ROA + \beta_3 \beta_0 + \beta_1 MTN(ITN) \times \Delta ROA + \beta_4 BDSIZE + \beta_5 IABD + \beta_6 VSALES + \beta_7 VCFO + \beta_8 FR + \beta_9 MH + \beta_{10} BETA + \beta_{11} BIG + \beta_{12} CFO + \beta_{13} MB + \beta_{14} SIZE + \beta_{15} LEV + \beta_{16} LOSS + Industry\ dummies + Year\ dummies$$

3) See Appendix for variable definitions.

To summarize, we document strong evidence that the long tenure of directors on the board of directors is negatively associated with absolute value of discretionary accruals, positively related with earnings persistence and ERC. These results suggest that board of director members with longer tenure have greater expertise and task knowledge to monitor financial reporting process which is consistent with prior results (e.g., Liu and Sun 2010).

4.3. Endogeneity of director tenure

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Although our results suggest that longer director tenure is positively related with firms' financial reporting quality, other explanation can be possible. Our findings are also consistent with the possibility that directors would serve for a long period of time in the firms with better financial reporting quality. To mitigate this concern, we

Table 6: Results using Propensity-Score Matched Samples

Panel A: Results for Performance Matched Modified Jones Model

Variable	MTN		ITN	
	Coeff.	t-stat	Coeff.	t-stat
MTN	-0.002	-2.72***	-0.004	-2.12**
Control variables	included		included	
Fixed Effect	Year and Industry		Year and Industry	
Observations	3,048		3,048	
adj R sqr	0.168		0.168	
F-stat	16.04***		15.95***	

Panel B: Results for Earnings Persistence Model

Variable	MTN		ITN	
	Coeff.	t-stat	Coeff.	t-stat
MTN ITN	-0.001	-1.73*	-0.004	-1.63
lagROA	0.032	1.96**	0.084	10.63***
*MTN(ITN)*lagROA*	0.026	4.15***	0.070	2.95***
Control variables	included		included	
Fixed Effect	Year and Industry		Year and Industry	
Observations	3,048		3,048	
adj R sqr	0.590		0.590	
F-stat	100.45***		99.99***	

Panel C: Results for Earnings Response Coefficient Model

Variable	MTN		ITN	
	Coeff.	t-stat	Coeff.	t-stat
MTN ITN	0.016	2.16**	0.038	1.49
ΔROA	-0.481	-2.85***	0.025	0.28
*MTN*ΔROA*	0.291	4.50***	1.401	5.85***
Control variables	included		included	

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Fixed Effect	Year and Industry	Year and Industry
Observations	3,048	3,048
adj R sqr	0.146	0.150
F-stat	12.85	13.19

** significant at 1% level, ** significant at 5% level, * significant at 10% level using a one-tailed test.
1)Propensity-score matched samples are collected from following logit model.

$$ITN = \beta_0 + \beta_1 CFO + \beta_2 MB + \beta_3 SIZE + \beta_4 ROA + \beta_5 LEV + \beta_6 LOSS + Industry\ dummies + Year\ dummies$$

3) The coefficients in Panel A are derived from following regression model.

$$ADA = \beta_0 + \beta_1 MTN(ITN) + \beta_2 BDSIZE + \beta_3 IABD + \beta_4 VSALES + \beta_5 VCFO + \beta_6 FR + \beta_7 MH + \beta_8 BIG + \beta_9 CFO + \beta_{10} MB + \beta_{11} SIZE + \beta_{12} ROA + \beta_{13} LEV + \beta_{14} LOSS + Industry\ dummies + Year\ dummies$$

4) The coefficients in Panel B are derived from following regression model.

$$ROA = \beta_0 + \beta_1 MTN(ITN) + \beta_2 lagROA + \beta_3 MTN(ITN) \times lagROA + \beta_4 BDSIZE + \beta_5 IABD + \beta_6 VSALES + \beta_7 VCFO + \beta_8 FR + \beta_9 MH + \beta_{10} BIG + \beta_{11} CFO + \beta_{12} MB + \beta_{13} SIZE + \beta_{14} ROA + \beta_{15} LEV + \beta_{16} LOSS + Industry\ dummies + Year\ dummies$$

5) The coefficients in Panel C are derived from following regression model.

$$Ret = \beta_0 + \beta_1 MTN(ITN) + \beta_2 \Delta ROA + \beta_3 \beta_0 + \beta_1 MTN(ITN) \times \Delta ROA + \beta_4 BDSIZE + \beta_5 IABD + \beta_6 VSALES + \beta_7 VCFO + \beta_8 FR + \beta_9 MH + \beta_{10} BETA + \beta_{11} BIG + \beta_{12} CFO + \beta_{13} MB + \beta_{14} SIZE + \beta_{15} ROA + \beta_{16} LEV + \beta_{17} LOSS + Industry\ dummies + Year\ dummies$$

6) See Appendix for variable definitions.

employ propensity-score matching model in attempt to control for differences in firms' characteristics between the longer tenure group and the shorter tenure group (e.g., Lawrence et al. 2011). We estimate the propensity score including variables representing firm characteristics which is in the equation (1), as follows:

$$ITN = \beta_0 + \beta_1 CFO + \beta_2 MB + \beta_3 SIZE + \beta_4 ROA + \beta_5 LEV + \beta_6 LOSS + Industry\ dummies + Year\ dummies \quad (5)$$

In equation (5), we use a logit model to estimate the probability of selecting long tenure group for estimating propensity scores (Lawrence et al. 2011). We then match, without replacement, firms in long tenure group and firms in short tenure group that has the closest predicted value from equation (5) within a maximum distance of 10 percent. After applying this process, we obtain a propensity-score matched sample of 3,048 firm-years, of which 1,524 are in long tenure group and 1,524 are in short tenure group. Using this sample, we measure again financial reporting quality using performance matched modified Jones model, persistent model and ERC model.

Table 6 provides the results of regression model using propensity-score matched sample. Table 6, Panel A presents the association between the tenure of directors on the board and absolute discretionary accruals as a dependent variable. In columns (2) and (3), we represent the effect of average tenure of directors. The value of coefficient of the variable (*MTN*) is -0.002, significant at the one percent level, representing that the relationship between tenure and financial reporting quality is positive. Columns (4) and (5) report when the measure of tenure is an indicator variable

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(*ITN*). The value of coefficient is -0.004, significant at the five percent level which is the same result with full sample in Table 3. The results in Table 6, Panel A suggest that the company in which the tenure of directors on the board is longer shows decreased absolute value of discretionary accruals and better quality of financial reporting.

Panel B of Table 6 presents the results for earnings persistence. In columns (2)-(3), we represent the relation between average tenure of directors (*MTN*) and profitability (*ROA*). The coefficient of our interesting variable (*MTN*lagROA*) which is interaction effect of tenure and previous earnings is 0.026, significant at the one percent level. This result represents there is incremental effect on persistence for firms which have longer tenure directors. In columns (4)-(5), we present the association between indicator measure of (*ITN*) and profitability (*ROA*). The value of interaction variables (*ITN*lagROA*) is 0.070, significantly positive at the one percent level. The result indicates that the increase in persistence is greater for the firms which have longer tenured board of directors meaning an improvement in financial reporting quality.

In Table 6, Panel C, we report the findings for earnings response coefficient (ERC). Columns (2)-(3) show the association between average tenure of directors (*MTN*) and stock return (*Ret*). The value of coefficient of interaction variables (*MTN*ΔROA*) is 0.291, significant at the one percent level which indicates that longer tenure is likely to increase ERC. The columns (4)-(5) contains the results for the interaction measure between indicator variable (*ITN*) and stock return (*Ret*) representing the almost similar results as variable *MTN* of which the value (*ITN* ΔROA*) is 1.401 which is significantly positive at the one percent level.

In summary, we analyze the relation between tenure and financial reporting quality using propensity-score matched sample to control for endogeneity of tenure. The firms in the new sample consist of both long tenure firms and short tenure firms with similar firm characteristics. We apply the absolute value of discretionary accruals model, earnings persistence model and ERC model again. Using this matching sample, we confirm that board of director members with longer tenure lead to better financial reporting quality.

5. Conclusion

This study investigates the relationship between director tenure and financial reporting quality. We use three measures of financial reporting quality: discretionary accruals, earnings persistence and the ERC. Tenure data are collected from TS2000 database offered by Korea Listed Companies Association.

Our results provide evidence that board of directors with longer tenure contribute positively to financial reporting quality, using three different proxies for reporting quality. Specifically, we find that the long tenure of board of directors is negatively related to the absolute value of discretionary accruals. In addition, we document increase in persistence for the firms which have long tenure of board of directors. Finally, we report that the long tenure of board of directors is associated with increased earnings response coefficient (ERC). These results are robust to additional test using propensity-score matching sample to control for endogeneity. Our findings are consistent with the notion that long tenure directors are effectively monitor financial reporting process because of their expertise and experience (Liu and Sun 2010).

This paper contributes to the literature on the financial reporting quality and demographic characteristics of top management team. First, we investigate the

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relationship between the tenure of board of directors and financial reporting quality for the first time. . Previous studies document the relation between the tenure of directors on the independent audit committee. There is no study to date that explains the director tenure's effects on the financial reporting quality. Second, this paper extends the research on the earnings quality. Dechow et al. (2010) do not consider the demographic characteristics of decision makers as a factor affecting on the earnings quality. Liu and Sun (2010) shows that long tenure makes directors effectively monitor financial reporting process using discretionary accrual model. This study provides additonal evidence on the financial reporting quality of firms with long-tenured directors using discretionary accruals, persistence model and ERC model.

Dechow et al. (2010) propose several type of proxies for measuring financial reporting quality while this study use three measures of earnings quality. In extending this line of research, further research can consider other proxies to extend the results of this study.

Appendix: Variable Definitions

A	:	total assets,
ADA	:	the absolute value of performance-matched discretionary accruals based on the Modified Jones model,
AR	:	receivables,
ΔAR	:	change in receivables,
BETA	:	beta,
BDSIZE	:	the natural logarithm of number of directors on the board,
MH	:	percentage of equity owned by the biggest block holder,
BIG	:	indicator variable equal to one if the firm's auditor belongs to the big audit firm, and 0 otherwise,
CFO	:	cash flow from operation divided by total assets,
FR	:	percentage of equity owned by foreign investors,
IABD	:	indicator variable equal to one if the company has audit committee,
ITN	:	indicator variable equal to one if the average tenure of directors is more than the average tenure of total sample, and zero otherwise,
NI	:	net income,
LEV	:	leverage, liability divided by total assets,
LOSS	:	indicator variable equal to one 1 if the net income is negative, and 0 otherwise,
MB	:	market value scaled by current year's total assets,
MTN	:	average tenure of directors,
PPE	:	plant, property, and equipment,
Rev	:	revenue,
ΔRev	:	change in revenue,
Ret	:	Holding period monthly stock return, including dividends, over the fiscal accounting year,
ROA	:	net income for year *t*, divided by total assets,
ΔROA	:	change in net income deflated lagged assets,
lagROA	:	net income for year *t-1*, deflated by lagged total assets,
Sales	:	sales,
ΔSales	:	change in sales,

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SIZE		the log of total assets at the start of the year,
TA	:	total accruals,
VCFO	:	standard deviation of operating cash flow, measured over years *t* -4 through *t*,
VSALES	:	standard deviation of sales, measured over years *t* -4 through *t*.

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