

IMPACT OF CORPORATE REPORT READABILITY AND INSTITUTIONAL SHAREHOLDER OVERSIGHT ON EARNINGS MANAGEMENT

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Abstract

This paper examines the impact of 10-K report readability on the relationship between institutional shareholder oversight and earnings management. Leveraging the U.S. Plain Writing Act (PWA) of October 2010 as an exogenous source of 10-K readability, we investigate whether financial information disclosure leads to better performance in earnings management for institutional blockholders. These findings suggest that the improvement in the readability of 10-K reports has a significant impact on institutional investor oversight of earnings management practices. Our results indicate that the relationship between the monitoring activities of institutional investors and earnings management is significantly strengthened when submitting a comprehensible report with the 10-K standard. Furthermore, the enhancement in readability's influence on the efficacy of institutional monitoring became increasingly evident following the implementations. This outcome supports the hypothesis that enhanced readability provides firms with superior information, thereby facilitating more effective oversight by institutional investors. This study contributes to the literature on improving the efficiency of institutional monitoring and confirms the importance of financial reporting readability in reducing asymmetric information and agency costs. Finally, the results enhance the corporate discourse of financial information, making it more readable, which can improve corporate governance by effectively empowering institutional investors. These have some practical implications for firms, regulators, and other stakeholders, aiming to enhance corporate accountability by improving the communication of financial information.

Keywords: institutional oversight; earnings management; 10-K report readability

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1. Introduction

Enhancing the readability of 10-K financial statements is increasingly viewed as a crucial element in enhancing institutional investors' monitoring of earnings management practices by public companies. Since these annual reports contain key financial and operating information, the clarity and transparency of the report content directly impact investors' ability to assess a company's performance and risk profile accurately. In response to the increasingly complex financial language and increased use of specialized terminology, the Plain Writing Act has been reformed to enhance transparency in information disclosure. The use of simpler language, logical organization of content for easy reference, and visual aids are recommended solutions to improve investors' accessibility and understanding of 10-K reports.

In a competitive environment, transparent information disclosure not only enhances the decision-making ability of stakeholders but is also an important tool to increase the

competitiveness of enterprises. Vychytilova et al. (2020) confirm that corporate transparency is linked to a firm's competitiveness by providing precise and complete risk information, which helps investors, including investment institutions, assess risks more effectively. Additionally, Wang et al. (2024) demonstrate that when financial and governance transparency is enhanced, firms tend to improve their accounting information, reduce information asymmetry, and enhance the monitoring efficiency of institutional investors. Improving the readability of financial statements helps institutional investors detect early signs of earnings management, thereby intervening promptly and limiting non-transparent earnings management behaviors.

This paper concerns some related theories. Firstly, according to agency theory, as proposed by Jensen and Meckling (1976), managers may take their interests into account, which can impact the firm's earnings management. However, this paper examines how institutional investors can mitigate agency problems within the firm by analyzing financial statement reports (Lo et al., 2017). Secondly, the information asymmetry theory (Akerlof, 1970) suggests that the better readability of financial statement reports leads to a reduction in information asymmetry between stakeholders, increases transparency and boosts earnings management for better performance. Furthermore, based on stakeholder theory (Freeman, 1984), the corporate report's readability enables all stakeholders, including institutional investors, to more easily understand and trust the firm's development. It enhances the firm's performance (Raimo et al., 2022).

First, institutional investors often have a profound influence on corporate earnings management, a topic that has been extensively studied in the academic literature. Wang et al. (2025) reveal that institutional investors increase a company's operational risks and reduce the comparability of its accounting information. Chung et al. (2002) assert that an increase in institutional ownership diminishes the ability of managers to manipulate reported earnings to meet specific targets. This finding indicates that the vigilance of institutional investors effectively deters managers from engaging in self-serving reporting practices. Moreover, Lemma et al. (2018) also imply that accrual (real) earnings management increases (is associated) with the percentage of institutional ownership. Recent studies aim to enhance the assessment of this monitoring effect by identifying the minimum rate of shares that institutional investors must hold to have a significant impact on a corporation. Research indicates that institutional blockholders who own at least 5% of a company's shares have a positive impact on financial stability and corporate investment decisions (Chen et al., 2007; Chung et al., 2015). Institutional blockholders, who hold substantial stakes in a firm, encounter significant liquidation costs and can reap considerable benefits from effective monitoring. Consequently, these blockholders possess strong incentives to engage in monitoring activities. Chung et al. (2019) and Liu et al. (2018) demonstrate that institutional blockholders engage in vigilant oversight of the earnings management practices employed by the firms in which they invest. Their findings indicate that such oversight mitigates agency conflicts between managers and shareholders, particularly in situations where chief executive officers determine the information to be disclosed. Another study confirms that the negative relationships between institutional blockholdings and various crash risk variables suggest that institutional blockholder monitoring of nontransparent managerial behaviours can decrease crash risk (Chung et al., 2024). In general, empirical evidence suggests that institutional investors and substantial shareholders act as an effective monitoring mechanism in limiting earnings management and improving the quality of financial reporting. This role not only contributes to protecting the interests of small

shareholders but also promotes transparency, fairness, and economic stability of the entire corporate system.

This study demonstrates that improved readability significantly amplifies the inverse connection between institutional blockholder monitoring and earnings management. Readability is assessed using the Gunning Fog and Flesch-Kincaid Grade Level (FKGL) indices. The Plain Writing Act (PWA) of October 2010 serves as an external factor that influences the readability of 10-K filings. The study result indicates that readability plays a crucial role in the interplay between earnings management and monitoring after the enactment of the PWA. This is consistent with Chen et al. (2023), who noted that low annual report readability impedes the efficient and accurate assimilation of information into stock prices, and that less readable annual reports are associated with greater equity mispricing, which is one of the inefficiency management signs. Another study (Arora & Chauhan, 2021) also highlights the same issue: that more financial manipulation practices by the firm make the financial reports more complex to comprehend. These results remain robust when we apply alternative measures for earnings management, institutional ownership, readability, and when utilizing matched samples based on propensity scores.

This study makes several significant contributions to the existing literature. Firstly, it provides novel insights into the mechanisms of institutional monitoring by demonstrating how more accessible 10-K filings can facilitate the oversight responsibilities of institutional investors. Likewise, the effective monitoring encompasses the processes of information gathering, analysis, and intervention in management decision-making (Chen et al., 2007). This is also consistent with agency theory, which suggests that monitoring involves gathering information, analyzing behavior and outcomes, and intervening if necessary, to ensure that management decisions align with shareholder interests. It is noted that the particular qualities of institutional investors augment the efficiency of monitoring, as well as the duration of their investments, which allows for a more profound and long-term understanding of the firm and its management. Jia and Li (2022) confirm this statement, finding that the presence and effectiveness of risk management committees are associated with higher readability of risk management disclosures. Expanding the issue further, Anand et al. (2025) find that not only institutional shareholders, but also firms with poor 10-K readability prior to the Act, experienced a decline in the likelihood of corporate governance proposals, which included individual shareholders and debt holders.

Our study is enhanced by underscoring the essential role that data from publicly available sources plays in the effectiveness of institutional monitoring. Secondly, we contribute to the understanding of the influence of public information on corporate governance. While previous research (Ang et al., 2021; Dyck et al., 2010) has highlighted the governance implications of media coverage and social media, our focus is specifically on 10-K filings produced by corporate insiders. Lastly, our findings carry significant policy implications, suggesting that initiatives aimed at improving the readability of earnings reports could improve the performance of institutional management. The rest of the paper includes data and research design, results, discussion and conclusions.

2. Data and research design

2.1. Data

Our study focuses on publicly traded corporations in the United States, excluding financial and utility industries, covering the period between 2001 and 2016. The readability metrics utilized in this study were obtained from the Wharton Research Data Services SEC Analytics Suite.

Additionally, quarterly data on institutional holdings were sourced from the CDA/Spectrum institutional ownership (13F) database. In accordance with Section 13F of the Securities Exchange Act of 1934, institutional investors managing assets of USD 100 million or more are mandated to report their equity investments that exceed either 10,000 shares or USD 200,000 to the Securities and Exchange Commission (SEC) at the end of each quarter. Furthermore, we gathered information on firm characteristics and stock returns from Compustat and the Center for Research in Security Prices. Our analysis is based on a dataset comprising 11,680 firm-year observations.

2.2. Research design

The connection between institutional shareholders' oversight and earnings management is also explored through investigations into the effects of improved 10-K reports on this interaction, as mentioned in numerous studies. Using 10-K reports is informed by prior research indicating that when shareholders lack access to relevant firm information, shareholder management is less effective (Lipton & Lorsch, 1992). The preparation of 10-K reports adheres to generally accepted accounting principles, rendering them reliable information. However, due to the discretionary power management holds over the formatting and organization of these reports, variations in their readability can occur. On the other hand, Lo et al. (2016) suggest that earnings management, although not always fraudulent, often involves deliberate efforts by management to misrepresent financial statements, thereby creating a discrepancy between actual performance and reported performance. This discrepancy creates cognitive dissonance, making it challenging to accurately interpret performance when management knows the reality is different. Research by Lambert et al. (2007) and Lehavvy et al. (2011) has established a connection between incorrect information or profit estimation and less readable 10-K reports, increased stock return volatility, and instances of both under- and over-commitment. Conversely, Doyle et al. (2007) confirm that information asymmetry can be mitigated by increasing the readability of 10-K reports, thereby minimizing agency costs and problems. In addition, Choi and Chung (2023) demonstrate that greater readability disseminates firm information more effectively, aiding institutional investors in monitoring firms and thereby reducing information asymmetry. Therefore, we propose that high-quality financial reporting enhances the informational environment of the firm and strengthens investors' oversight capabilities, ultimately deterring managers from engaging in earnings management practices. The hypothesis is given as follows:

The readability of the 10-K report enhances the effectiveness of institutional investors' oversight in the management of earnings.

This study measures earnings management using the performance with a discretionary accrual method proposed by Kothari et al. (2005). In addition, the regression model examines the

connection between earnings management and institutional investors, as well as the readability of the financial statement in the 10-K report. To address potential endogeneity and identify causal effects, we employ the U.S. Plain Writing Act of 2010 as a regulatory shock, using a difference-in-differences approach to test whether improved report readability enhances the monitoring effectiveness of institutional investors.

Accruals denote earnings that have not yet been received in cash, rendering them particularly vulnerable to manipulation by managers seeking to influence reported earnings. Kothari et al. (2005) propose a discretionary accrual measure that incorporates industry factors and return on assets, and is further adjusted based on the accruals of a comparable firm to mitigate the impact of performance on accruals. They argue that this measure exhibits reduced susceptibility to bias in comparison to estimates derived from the modified Jones model, particularly in contexts where managerial compensation is linked to discretionary accruals. Consequently, we utilize this performance-adjusted abnormal accrual measure as a proxy for earnings management. Annually, we conduct a cross-sectional estimation:

$$TAC_{i,t} = \alpha_0 \left(\frac{1}{A_{i,t-1}} \right) + \alpha_1 \left(\frac{\Delta REV_{i,t} - \Delta AR_{i,t}}{A_{i,t-1}} \right) + \alpha_2 \left(\frac{PPE_{i,t}}{A_{i,t-1}} \right) + \varepsilon_{i,t}. \quad (1)$$

Here, $TAC_{i,t}$ is determined by taking the difference between the change in current assets excluding cash and the change in current liabilities, excluding the portion of long-term debt due, and then subtracting depreciation and amortization from fixed assets. $\Delta REV_{i,t} - \Delta AR_{i,t}$ is the difference between the change in sales and accounts receivable. $PPE_{i,t}$ is net property, plant, and equipment, and $A_{i,t-1}$ is lagged total assets. Next, using a firm's return on assets' quartiles as a basis, we compute four average estimated values, excluding firms that repurchase stock. Finally, we calculate the difference between $TAC_{i,t}$ and the average residual by estimating Equation (1) for each quartile, as follows:

$$ABACC_{i,t} = \{TAC_{i,t} - [\hat{\alpha}_0 \left(\frac{1}{A_{i,t-1}} \right) + \hat{\alpha}_1 \left(\frac{\Delta REV_{i,t} - \Delta AR_{i,t}}{A_{i,t-1}} \right) + \hat{\alpha}_2 \left(\frac{PPE_{i,t}}{A_{i,t-1}} \right)]\}, \quad (2)$$

where $ABACC_{i,t}$ represents the company i anomalous discretionary accrual for year t . To measure the amount of earnings management, independent of direction, we compute the degree of anomalous discretionary accruals (*abs_curr_dacc*) using the absolute value of $ABACC_{i,t}$. We anticipate institutional monitoring to have a negative impact on *abs_curr_dacc* as a high (low) value of *abs_curr_dacc* indicates that a company engages in earnings management to a high (low) level.

Utilizing data derived from the 13F filings of institutional investors, we obtain quarterly information from CDA-Spectrum/Thomson Financial regarding holdings of all common equities throughout the duration of the study. At the end of each quarter, the proportion of shares held by institutional investors relative to the total outstanding shares is referred to as total institutional investor ownership (*io_total*). We calculate institutional blockholder ownership (*io_block*) employing the methodology established by Chen et al. (2007), which represents the ratio of shares held by institutions owning at least 5% of the firm's outstanding shares to the total number of shares at the conclusion of each quarter. Given the substantial stakes that blockholders possess in a firm, we anticipate that these institutions will function as more effective monitors. Our primary measures of readability are the Gunning Fog and FKGL

indices, with higher values indicating reduced readability. For the purpose of facilitating interpretation, we present readability values in a negative format within our analysis. We develop the following model to investigate the impact of 10-K readability on the relationship between earnings management and institutional blockholder monitoring:

$$\text{abs_curr_dacc}_{i,t} = \beta_0 + \beta_1 \cdot \text{IO}_{i,t-1} + \beta_2 \cdot \text{Read}_{i,t-1} + \beta_3 \cdot \text{IO}_{i,t-1} \times \text{Read}_{i,t-1} + \Gamma' \cdot Z_{i,t-1} + \varepsilon_{i,t}, (3)$$

where $\text{IO}_{i,t-1}$ is institutional ownership at least one year prior to the fiscal year-end at which $\text{abs_curr_dacc}_{i,t}$ is calculated, $\text{Read}_{i,t-1}$ is the most recent readability index for the quarter-end at which $\text{IO}_{i,t-1}$ is calculated, Z is a vector of the control variables, and Γ is a vector of coefficients. This lead-lag setup provides institutions with adequate time to realize the outcomes of their monitoring activities. The coefficient of interest, β_3 , quantifies the additional effect that earnings readability has on institutional monitoring. We employ the PWA Regulatory Act as a policy shock to 10-K readability in order to address the endogeneity argument that institutional investors favour more transparent corporations (i.e., more legible 10-K filings). Hwang and Kim (2017) contend that while the PWA's primary goal was to make government papers easier to read, it also unintentionally affected the legibility of documents submitted to the SEC. We use the following regression to examine the impact of PWA on the relationship between institutional monitoring and earnings management:

$$\text{abs_curr_dacc}_{i,t} = \beta_0 + \beta_1 \cdot \text{Trm}_{i,t-1} \times \text{Post}_{t-1} + \beta_2 \cdot \text{Post}_{t-1} + \beta_3 \cdot \text{Trm}_{i,t-1} + \Gamma' \cdot Z_{i,t-1} + \varepsilon_{i,t}, (4)$$

The dummy variable $\text{Trm}_{i,t-1}$ takes on a value of one when the institutional ownership and readability index of a company's 10-K report are both in the top quartile, indicating the highest amount of institutional monitoring, and zero otherwise. If 10-K reports are released following the PWA's implementation, the dummy variable Post is equal to one; if not, it is equal to zero. A negative value for this coefficient suggests that readability enhances the impact of institutional monitoring on profit management. In this case, the coefficient β_1 functions as the difference-in-differences estimator. For the variables included in the empirical investigation, Table 1 provides summary data.

Table 1: Summary statistics

Variables	N	Mean	Std. Dev.	5%	25%	Median	75%	95%
A. Earnings management								
<i>abs_curr_dacc</i>	11,680	0.421	1.341	0.005	0.028	0.079	0.259	2.177
<i>abs_curr_dacc_alt</i>	11,680	0.299	0.932	0.005	0.029	0.077	0.225	1.057
B. Institutional ownership								
<i>io_total</i>	11,680	0.735	0.202	0.334	0.646	0.783	0.880	0.965
<i>io_block</i>	11,680	0.208	0.135	0.000	0.110	0.198	0.296	0.443
<i>io_top5</i>	11,680	0.290	0.098	0.139	0.231	0.289	0.348	0.443
C. Readability								
<i>GFog_Index</i>	11,680	20.034	1.225	18.432	19.307	19.883	20.568	22.070
<i>FKG_Level</i>	11,680	15.915	1.170	14.420	15.223	15.776	16.418	17.823

<i>Bog_Index</i>	11,680	24.895	3.664	19.097	22.644	24.937	27.205	30.751
D. Controls								
<i>ceo</i>	11,680	2.017	5.679	0.000	0.000	0.217	1.065	11.775
<i>Indp</i>	11,680	0.690	0.131	0.444	0.615	0.714	0.778	0.875
<i>Logasset</i>	11,680	7.554	1.630	5.105	6.394	7.449	8.613	10.422
<i>mb</i>	11,680	1.639	1.315	0.549	0.873	1.277	1.966	3.911
<i>ROA</i>	11,680	0.043	0.128	-0.120	0.020	0.055	0.092	0.165
<i>debt</i>	11,680	0.185	0.184	0.000	0.026	0.166	0.277	0.477
<i>SalesGrowth</i>	11,680	0.013	0.228	-0.271	-0.073	0.002	0.077	0.298
<i>Stdcf</i>	11,680	0.085	0.160	0.015	0.029	0.049	0.089	0.243
<i>Stdsale</i>	11,680	0.223	1.068	0.055	0.101	0.158	0.250	0.502
<i>logcycle</i>	11,680	11.221	1.830	8.244	10.064	11.202	12.380	14.287
<i>neg</i>	11,680	0.172	0.218	0.000	0.000	0.100	0.300	0.600

3. Results

Firstly, we investigate how readability affects the association between institutional oversight and earnings management (see Table 2). We concentrate on the link between institutional ownership and readability (β_3 in Equation (3)). The analysis presented in (1) and (3) indicates that institutional ownership exerts a negative influence on earnings management, a finding that aligns with existing literature. Additionally, the interaction terms exhibit coefficients with statistical significance and negative values, suggesting that institutional investors are able to obtain clearer information from the more accessible 10-K filings. Columns (2) and (4) yield comparable results concerning institutional blockholder ownership. Notably, the parameters of the interaction variables in this context are both larger and more statistically significant than those in columns (1) and (3). This observation implies that the monitoring activities of institutional investors enhance the importance of document readability, likely attributable to their heightened incentives for oversight.

The results show that variables such as $io_total * GFog_Index$ and $io_block * GFog_Index$ have a negative relationship, expressed as -0.0134 , $p < 0.10$ and -0.0320 , $p < 0.05$, respectively, indicating that when the readability of the report is improved (by using the readability index lower, easier to read), monitoring of the performance of management leads to increase revenue. In addition, the variables $io_total * FKG_Level$ and $io_block * FKG_Level$ also had a similar relationship with -0.0229 , $p < 0.05$ and -0.1024 , $p < 0.05$. This means better monitoring by consultants as financial information is more accessible and understandable (Choi and Chung, 2023).

Another finding of our study is that the $GFog_Index$ and FKG_Level are not statistically significant ($p > 0.10$). This suggests that text readability does not directly alter earnings management behavior, unless considered in relation to institutional ownership. However, both io_total coefficients of -0.0861 and -0.0848 ($p < 0.10$) and io_block coefficients of -0.0453 and -0.0246 ($p < 0.05$) indicate that both institutional investors in general and large investors (blockholders) decrease their earnings management level over time, but blockholders have a stronger effect as readability increases.

Table 2. Reading comprehension's impact on the connection between institutional ownership and earnings management

	(1)	(2)	(3)	(4)
Dependent variable	<i>abs_curr_dacc</i>	<i>abs_curr_dacc</i>	<i>abs_curr_dacc</i>	<i>abs_curr_dacc</i>
Intercept	-0.3929* (-1.93)	-0.4472* (-1.98)	-0.3982* (-1.94)	-0.4554* (-2.00)
<i>io_total</i>	-0.0861* (-1.92)		-0.0848* (-1.83)	
<i>GFog_Index</i>	-0.0097 (-0.19)	-0.0023 (-0.08)		
<i>(io_total*GFog_Index)</i>	-0.0134* (-1.89)			
<i>io_block</i>		-0.0453** (-2.71)		-0.0246** (-2.41)
<i>io_block*GFog_Index</i>		-0.0320** (-2.20)		
<i>FKG_Level</i>			-0.0169* (-1.79)	-0.0352* (-1.81)
<i>io_total*FKG_Level</i>			-0.0229** (-2.38)	
<i>io_block*FKG_Level</i>				-0.1024** (-2.48)
<i>ceo</i>	0.0095 (1.21)	0.0119 (1.19)	0.0095 (1.22)	0.0119 (1.19)
<i>Indp</i>	0.4101** (2.80)	0.4212** (2.70)	0.4063** (2.78)	0.4207** (2.67)
<i>Logasset</i>	-0.0416** (-2.54)	-0.0429** (-2.37)	-0.0419** (-2.50)	-0.0434** (-2.36)
<i>mb</i>	0.0301* (1.93)	0.0305* (1.98)	0.0303* (1.94)	0.0308* (2.00)

	(1.98)	(2.01)	(2.01)	(2.03)
<i>ROA</i>	-0.0692**	-0.1173**	-0.0713**	-0.1244**
	(-2.42)	(-2.21)	(-2.45)	(-2.36)
<i>debt</i>	0.0206	0.0244	0.0224	0.0228
	(0.35)	(0.41)	(0.37)	(0.38)
<i>SalesGrowth</i>	-0.0949	-0.0878	-0.0948	-0.0904
	(-1.63)	(-1.64)	(-1.61)	(-1.61)
<i>Stdcf</i>	0.1903	0.1806	0.1812	0.1739
	(1.41)	(1.35)	(1.33)	(1.28)
<i>Stdsale</i>	-0.0207	-0.0160	-0.0211	-0.0168
	(-0.68)	(-0.51)	(-0.65)	(-0.51)
<i>logcycle</i>	0.0563***	0.0559***	0.0569***	0.0563***
	(4.75)	(4.56)	(4.58)	(4.48)
<i>neg</i>	0.1840***	0.1856***	0.1886***	0.1902***
	(3.76)	(3.85)	(3.84)	(3.94)
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	11,680	11,680	11,680	11,680
Adj. R ²	0.0501	0.0447	0.0504	0.0456

Note: Using panel regressions, this table presents the findings of evaluating the impact of readability on the connection between institutional ownership and earnings management. Regression specification is represented by equation (3). In line with Petersen (2009), standard errors are grouped at the company and year levels. The coefficient estimations' t-statistics are provided in parentheses. At the 1%, 5%, and 10% levels, respectively, statistical significance is indicated by the symbols ***, **, and *.

A regression analysis may reveal endogenous selection resulting from specific actions and characteristics of firms that influence the readability of 10-K reports. The implementation of the Plain Writing Act (PWA) in October 2010 introduces exogenous variation in the readability of these reports, which we utilize to address this issue, following the methodology established by Hwang and Kim (2017). The estimation results for Equation (4) are presented in Table 3. The difference-in-differences estimator, represented by the coefficient β_1 , consistently demonstrates a negative value across all models analyzed. Furthermore, the findings that take into account institutional blockholdings indicate a more pronounced relationship compared to

those based solely on total institutional ownership. These results lend support to the hypothesis that enhanced readability of 10-K reports amplifies the impact of monitoring on earnings management, with the significance of readability's influence becoming more pronounced after the enactment of the PWA.

Table 3. Tests of differences-in-differences conducted with the PWA in October 2010

	(1)	(2)	(3)	(4)
	<i>abs_curr_dacc</i>	<i>abs_curr_dacc</i>	<i>abs_curr_dacc</i>	<i>abs_curr_dacc</i>
			<i>c</i>	<i>c</i>
Intercept	-0.3903*	-0.4482*	-0.3990*	-0.4524*
	(-1.93)	(-1.97)	(-1.97)	(-1.98)
<i>Trm1(io_total and GFog_Index)</i>	-0.0866*			
	(-1.86)			
<i>Trm1*Post</i>	-0.0370*			
	(-1.89)			
<i>Trm2(block_total and GFog_Index)</i>		-0.0430**		
		(-2.75)		
<i>Trm2*Post</i>		-0.0480**		
		(-2.47)		
<i>Trm3(io_total and FKG_Level)</i>			-0.0823*	
			(-1.81)	
<i>Trmt3*Post</i>			-0.0373*	
			(-1.92)	
<i>Trm4(block_total and FKG_Level)</i>				-0.0415**
				(-2.69)
<i>Trm4*Post</i>				-0.0518**
				(-2.14)
<i>PWA</i>	-0.0145	-0.1245**	-0.0260	-0.1211**
	(-0.49)	(-2.70)	(-0.94)	(-2.59)
<i>ceo</i>	0.0095	0.0119	0.0095	0.0119
	(1.21)	(1.19)	(1.21)	(1.19)

<i>Indp</i>	0.4110** (2.81)	0.4224** (2.69)	0.4077** (2.79)	0.4203** (2.66)
<i>Logasset</i>	-0.0418** (-2.54)	-0.0428** (-2.36)	-0.0424** (-2.53)	-0.0434** (-2.36)
<i>mb</i>	0.0300* (1.97)	0.0305* (2.00)	0.0302* (2.00)	0.0308* (2.03)
<i>ROA</i>	-0.0656** (-2.38)	-0.1216** (-2.29)	-0.0707** (-2.55)	-0.1274** (-2.41)
<i>debt</i>	0.0193 (0.33)	0.0242 (0.41)	0.0204 (0.34)	0.0236 (0.40)
<i>SalesGrowth</i>	-0.0956 (-1.65)	-0.0897 (-1.61)	-0.0943 (-1.62)	-0.0893 (-1.59)
<i>Stdcf</i>	0.1883 (1.40)	0.1750 (1.30)	0.1794 (1.32)	0.1664 (1.22)
<i>Stdsale</i>	-0.0218 (-0.72)	-0.0170 (-0.55)	-0.0210 (-0.65)	-0.0165 (-0.50)
<i>logcycle</i>	0.0564*** (4.73)	0.0556*** (4.54)	0.0573*** (4.61)	0.0563*** (4.47)
<i>neg</i>	0.1807*** (3.73)	0.1905*** (3.97)	0.1856*** (3.83)	0.1953*** (4.07)
Firm fixed effects	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y
N	11,680	11,680	11,680	11,680
Adj. R ²	0.0503	0.0456	0.0502	0.0461

Note: Using panel regressions, this table presents the findings of evaluating the impact of readability on the connection between institutional ownership and earnings management. Regression specification is represented by equation (4). In line with Petersen (2009), standard errors are grouped at the company and year levels. The coefficient estimations' t-statistics are provided in parentheses. At the 1%, 5%, and 10% levels, respectively, statistical significance is indicated by the symbols ***, **, and *.

4. Robustness Tests

We performed extensive robustness checks to validate the finding that the clarity of a 10-K report strengthens the association between institutional blockholder oversight and earnings management.

Matched Sample for Propensity Score

Certain organizational characteristics may influence readability. To address potential endogeneity in the measured variables, we employed propensity score matching as outlined by Dehejia and Wahba (2002). The sample is divided into the intervention and comparison groups according to the upper and lower quartiles of the readability metric. We calculated the propensity score for each observation using the control variables from our baseline model. Subsequently, each treatment observation was matched with a control observation from the same fiscal year, ensuring that the control was paired with the nearest two-digit Standard Industrial Classification based on propensity score. Our re-estimation of Equation (3) utilizing this matched sample produced the results presented in Panel A of Table 4. The likelihood of omitted factors influencing our conclusions is minimal, as indicated by the adverse coefficients of the interaction variable, which are consistent with our principal results.

Alternative Earnings Management Variable

As a substitute for earnings management, we employed an accrual quality metric derived from accounting. We followed McNichols (2002) and Francis et al. (2005) to construct the measure, and denoted it as `abs_curr_dacc_alt`. Panel B of Table 4 presents the findings of our replication of Table 3, which we conducted using this substitute measure. According to our primary findings, the earnings management measure has no bearing on our key conclusions, as indicated by the interaction terms' negative coefficients.

Alternative Institutional Blockholder Measure

Chen et al. (2007) assert that firms benefit from oversight by independent, long-term monitoring entities. In this study, we introduce a novel metric for institutional blockholding, specifically the institutional ownership held by the top five managers (`io_top5`). In this context, an institution is defined as one of the top five institutional shareholders of a company's stock at the end of a given quarter. These institutions are likely to engage in close monitoring by collecting relevant data and exerting influence over management decisions. Utilizing this alternative measure of institutional ownership, we replicate the analysis presented in Table 3, with the results detailed in Panel C of Table 4. Our primary findings align with the negative coefficients of the interaction term, suggesting that our conclusions remain robust when applying this institutional ownership metric.

Alternative Readability Measure

The Bog Index, which serves as a thorough metric for evaluating the readability of plain English (Bonsall et al., 2017), represents the final approach employed to examine the robustness of our primary findings. We enhanced this metric by incorporating a hostile measure to facilitate comprehension, similar to our previous application of readability assessments. A comparison

of the results with those presented in Table 3 indicates that they are qualitatively consistent with the findings displayed in Panel D of Table 4.

Table 4.1 Robustness test 1

Panel A: Propensity score-matched sample	(1)	(2)	(3)	(4)
	<i>abs_curr_dacc</i>	<i>abs_curr_dacc</i>	<i>abs_curr_dacc</i>	<i>abs_curr_dacc</i>
<i>io_total</i>	-0.0236* (-1.81)		-0.0315* (-1.97)	
<i>GFog_Index</i>	-0.0131 (-0.98)	-0.0175 (-0.71)		
<i>io_total*GFog_Index</i>	-0.0178* (-1.93)			
<i>io_block</i>		-0.0152* (-1.89)		-0.383** (-2.23)
<i>io_block*GFog_Index</i>		-0.0289** (-2.31)		
<i>FKG_Level</i>			-0.0127 (-1.03)	-0.0179* (-1.92)
<i>io_total*FKG_Level</i>			-0.0135* (-1.89)	
<i>io_block*FKG_Level</i>				-0.0188** (-2.23)
Control Var	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Number of observation	6,533	6,533	6,533	6,533
Adj. R ²	0.0472	0.0425	0.0496	0.0449

Table Robustness test 2

Panel B: Alternative accruals	(1)	(2)	(3)	(4)
	<i>abs_curr_dacc_alt</i>	<i>abs_curr_dacc_alt</i>	<i>abs_curr_dacc_alt</i>	<i>abs_curr_dacc_alt</i>
<i>Trm1</i>	-0.0341* (-1.83)			
<i>Trm1*Post</i>	-0.0214** (-2.18)			
<i>Trm2</i>		-0.0331* (-1.91)		
<i>Trm2*Post</i>		-0.0125* (-1.82)		
<i>Trm3</i>			-0.0521* (-1.81)	
<i>Trm3*Post</i>			-0.0223* (-1.97)	
<i>Trm4</i>				-0.0242** (-2.21)

<i>Trm4*Post</i>				-0.0339* (-1.91)
Control Var	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	11,680	11,680	11,680	11,680
Adj. R ²	0.0392	0.0438	0.0358	0.0446

Table 4.3 Robustness test 3

Panel C: Alternative Institutional Ownership	(1)	(2)	(3)	(4)
	<i>abs_curr_dacc</i>	<i>abs_curr_dacc</i>	<i>abs_curr_dacc</i>	<i>abs_curr_dacc</i>
<i>Trm1</i>	-0.0242 (-1.12)			
<i>Trm1*Post</i>	-0.0155* (-1.93)			
<i>Trm2</i>		-0.0152* (-1.89)		
<i>Trm2*Post</i>		-0.0214** (-2.23)		
<i>Trm3</i>			-0.0331* (-1.88)	
<i>Trm3*Post</i>			-0.0249* (-1.89)	
<i>Trm4</i>				-0.0115* (-1.87)
<i>Trm4*Post</i>				-0.0421** (-2.24)
Control Var	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	11,680	11,680	11,680	11,680
Adj. R ²	0.0390	0.0471	0.0405	0.0479

Table 4.4 Robustness test 4

Panel D: Alternative readability	(1)	(2)	(3)	(4)
	<i>abs_curr_dacc</i>	<i>abs_curr_dacc</i>	<i>abs_curr_dacc</i>	<i>abs_curr_dacc</i>
<i>Trm1</i>	-0.0351* (-1.86)			
<i>Trm1*Post</i>	-0.0298* (-1.87)			
<i>Trm2</i>		-0.0142 (-1.20)		

<i>Trm2*Post</i>		-0.0215*		
		(-1.99)		
<i>Trm3</i>			-0.0094	
			(-1.14)	
<i>Trm3*Post</i>			-0.0142*	
			(-2.12)	
<i>Trm4</i>				-0.0323*
				(-1.98)
<i>Trm4*Post</i>				-0.0135**
				(-2.18)
Control Var	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	11,680	11,680	11,680	11,680
Adj. R ²	0.0373	0.0457	0.0376	0.0456

Note: Significance at the 1%, 5%, and 10% levels is indicated by the symbols *, **, and ***.

These are the robustness test results shown in this table. The sample is matched by propensity scores, Table 4.1, 4.2, 4.3, and 4.4 with Panel A, B, C and D. While Panel A presents the calculated coefficients. Panels B, C, and D present the findings from a re-estimation of the difference-in-differences model using substitute accruals, institutional ownership, and readability metrics, among others. Presented in parenthesis are the t-statistics corresponding to the coefficient estimations.

4. Discussion

The results of the study indicate that the readability of financial statements, particularly 10-K reports, plays a crucial role in enhancing the effectiveness of institutional investors' monitoring of earnings management. Specifically, the negative relationship between institutional ownership and the level of earnings management becomes more evident when financial statements are presented in a more transparent and more understandable language. The interaction variables between institutional ownership and measures of readability, such as the Gunning Fog Index and Flesch-Kincaid Grade Level, are both statistically significant, suggesting that readability contributes to institutional investors' ability to detect and respond to earnings management. This result emphasizes that, in addition to the nature of financial information, the form of presentation is important. Notably, the level of language accessibility also has a significant impact on the quality of market monitoring (Lemma et al., 2018). Therefore, reading comprehension is not only a technical factor in language but also a tool to support transparency and more effective corporate governance.

Improving the readability of the 10-K is crucial for helping institutional investors effectively monitor earnings management. This can be achieved through simplifying language, restructuring content, and using readability tools. Using clear language, avoiding jargon, and complex sentence structures will make information more accessible. Companies should work with legal counsel to identify and eliminate complex or unnecessary text while maintaining accuracy. Building a culture of clarity-focused communications, along with regular training for

writers and communications teams, will help improve investor communication across all channels, especially in financial reports such as the 10-K (Ang et al., 2021).

5. Conclusion

Our research reveals a significant correlation between the monitoring activities of institutional blockholders and earnings management in firms that present their 10-K filings. These findings remain consistent even after conducting various robustness checks and addressing potential endogeneity issues, including the application of a quasi-experimental design related to the PWA policy. These results confirm the hypothesis that more readable 10-K reports provide enhanced information for institutional investors, thereby mitigating earnings management practices. As the investigation into the interplay among earnings management, institutional blockholder oversight, and the readability of 10-K reports as an indicator of corporate information quality, this study makes a valuable contribution to the literature on corporate finance. Our findings demonstrate how improved readability enhances governance outcomes for institutional blockholders, underscoring the importance and policy implications of enhancing the clarity of corporate disclosures.

This study provides empirical evidence for the moderating role of readability in the relationship between institutional shareholder monitoring and earnings management. Specifically, we find that the monitoring effect of institutional ownership on limiting earnings management becomes more pronounced in contexts where firms publish 10-K reports with clear, coherent, and accessible language. This relationship remains robust even after controlling for confounding factors and addressing potential endogeneity issues, including the application of a quasi-experimental design based on the Plain Writing Act (PWA). This result supports our research hypothesis that higher readability in financial statements contributes to improving institutional investors' ability to perceive information, thereby reducing the motivation and level of earnings management.

As one of the first studies to examine the interactions between three factors – earnings management, institutional ownership, and financial statement readability – this study significantly expands the existing knowledge in the field of corporate finance. Rather than focusing solely on the nature of financial information, we emphasize the crucial role of the format in presenting information. This often-overlooked aspect has a significant impact on the effectiveness of financial monitoring and transparency. This finding emphasizes that readability is not simply a linguistic trait, but an indicator of the quality of corporate information and an important mediator for institutional shareholders to exercise their monitoring role more effectively.

From a policy perspective, the study suggests that regulators such as the SEC should continue to promote initiatives to standardize and simplify the language of financial reports, especially periodic disclosure documents such as 10-K reports. Establishing specific guidelines for clarity and readability of text can be an effective tool to improve the quality of disclosure, thereby indirectly reducing earnings manipulation and increasing transparency in capital markets. At the same time, companies should consider readability as part of their financial communications strategy, rather than as a compliance requirement.

Future research could be extended in several directions. One potential direction is to analyze the role of different types of institutional investors (such as pension funds, mutual funds, or short-term versus long-term investors) to determine whether their responses to readability differ. Additionally, incorporating more advanced measures of readability, including natural language processing (NLP) or machine learning metrics of coherence and semantic complexity, could also provide greater insight into the impact of communication on market behavior.

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Appendix A. Variable descriptions

Variables	Definition
<i>GFog_Index</i>	The Gunning Fog index is determined by adding the proportion of complicated words ($\times 0.4$) to the words per sentence in the 10-K report submitted for the specific fiscal year. A report is more difficult to read if its index value is larger. In order to increase readability, we multiply the index by minus one (-1).

<i>FKG_Level</i>	The Flesch-Kincaid grade level score for the fiscal year t 10-K report is computed as follows: $0.39 \times (\text{total words} / \text{total sentences}) + 11.8 \times (\text{total syllables} / \text{total words}) - 15.59$. Reports with higher scores are harder to read. To increase readability, we multiply the score by minus one (-1).
<i>Bog_Index</i>	According to Bonsall and Miller (2017), the Bog Index, which is provided by Editor Software's Stylewriter 4, offers a thorough assessment of a document's issues with plain English, such as the use of the passive voice, repeated verbs, jargon, and convoluted phrases. Lower readability is indicated by a higher Bog Index. We make use of Bonsall et al. (2017) Bog Index data.
<i>ceo</i>	CEO ownership (% of outstanding shares) as of year-end t , as reported by Execucomp.
<i>Indp</i>	The percentage of independent directors according to RiskMetrics as of year t 's end. The governance index, or Gov, is defined as $(24 \text{ Gindex})/24$, where Gindex is the governance index at the end of the year, according to Gompers et al. (2003), as per RiskMetrics.
<i>Logasset</i>	Logarithm of total assets at the end of year t .
<i>mb</i>	Market-to-book ratio at the beginning of year t .
<i>ROA</i>	Return on assets in year t .
<i>debt</i>	Ratio of long-term debt to total assets at the beginning of year t .
<i>SalesGrowth</i>	Sales in year t minus sales in year $t - 1$, scaled by sales in year $t - 1$.
<i>Std cfo</i>	Standard deviation of cash flows (scaled by assets) in years $t - 10$ to $t - 1$.
<i>Std sale</i>	Standard deviation of sales (scaled by assets) in years $t - 10$ to $t - 1$.
<i>logcycle</i>	Logarithm of the operating cycle of year t , estimated as $360/(\text{sales}/\text{average account receivables}) + 360/(\text{cost of goods sold}/\text{average inventory})$, where the average values are calculated over years $t - 1$ to t .
<i>neg</i>	Proportion of years $t - 10$ to $t - 1$ with reported losses.

Endnotes

ⁱ For instance, if a firm has a fiscal year end in May 2000, the corresponding institutional ownership in Equation (3) is obtained at the end of March 1999.

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