The effect of readability stability on investor reactions to corporate cash holdings

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Abstract

This study investigates the impact of readability stability in annual financial reports on the marginal value of corporate cash holdings. Using the coefficient of variation as a measure, we find that firms with higher readability stability exhibit greater marginal cash values, particularly under financial constraints and weaker external monitoring. The Plain Writing Act of 2010 further enhanced cash valuations for firms with volatile readability, highlighting the importance of consistent disclosure. Robustness checks, including alternative readability measures, propensity score matching, and fixed effects, confirm the validity of these results.

Keywords: readability stability; marginal value of cash holding; information asymmetry; Plain Writing Act

JEL classification: G30; G38; M40

1. Introduction

Corporate cash holdings play a critical role in firms' financial strategies, providing liquidity to fund investments, meet obligations, and hedge against uncertainties. However, the separation of ownership and control (Jensen and Meckling, 1976) raises concerns about managerial discretion and potential misallocation of cash resources. Managers may misuse excess cash for personal benefits or invest in projects with negative net present value (NPV), reducing shareholder value. Consequently, investors discount the value of corporate cash reserves as a precaution against inefficient resource management (Durnev and Kim, 2005; La Porta et al., 2002).

To address agency concerns, firms rely on high-quality financial disclosures to reduce information asymmetry and enhance transparency. Recent research highlights the importance of readability in annual reports as a key determinant of disclosure quality, emphasizing its role in improving investor understanding, reducing uncertainty, and strengthening monitoring mechanisms (Bushman and Smith, 2001; Lambert et al., 2007; Lehavy et al., 2011). For example, Li (2008) finds that readable 10-K reports correlate with higher earnings persistence, while Lehavy et al. (2011) demonstrate that readability reduces analyst forecast dispersion and return volatility. Similarly, Biddle et al. (2009) emphasize that readability enhances investment efficiency, reinforcing its governance implications.

Evidence links readability to risk reduction and valuation enhancement. Loughran and McDonald (2014) use file size as a proxy for readability and show that larger filings—reflecting lower readability—are associated with higher informational risk and post-filing volatility. In the context of cash valuation, Choi et al. (2021) find that firms with readable reports experience higher valuations of cash holdings. Similarly, Rjiba et al. (2021) report that higher readability lowers the cost of equity capital by reducing perceived risk. These studies collectively highlight the role of clear disclosures in enhancing investor confidence and

corporate valuation.

Despite these advances, prior studies primarily focus on absolute readability levels at a single point in time, overlooking the importance of consistency in readability across reporting periods. This omission is significant, as stable readability signals reliability and transparency, fostering long-term investor trust and reinforcing governance mechanisms (Dittmar and Mahrt-Smith, 2007; Faulkender and Wang, 2006). Firms that maintain consistent readability are perceived as better governed, as predictable financial communication reduces uncertainty and limits managerial opportunism. This perspective aligns with findings from Kuang et al. (2020), who demonstrate that lower readability in government reports leads to more negative market reactions, highlighting the critical role of clear and consistent disclosures in investor decision-making.

This study measures readability stability using the coefficient of variation (CV)—a metric widely applied to cash flow volatility (Minton and Schrand, 1999; Sun and Ding, 2020). Unlike static approaches, this method captures dynamic variations in readability, providing richer insights into the temporal stability of disclosures and its impact on cash valuation. This study introduces the concept of readability stability—the consistency of readability over time—as a novel determinant of cash valuation. Extending the framework of Faulkender and Wang (2006), we hypothesize that firms with stable readability cultivate investor confidence, leading to higher marginal values of cash holdings. We empirically confirm this hypothesis, showing that firms with stable readability experience higher marginal values of cash holdings. The Plain Writing Act of 2010 (PWA) further enhances cash valuations, particularly for firms with initially volatile readability. Firms with consistent readability achieve higher cash values, specifically under financial constraints, where internal liquidity is more valuable owing to limited access to external financing. Moreover, for firms with weaker external monitoring, higher readability stability is associated with an increased marginal value of cash holdings, as

consistent communication mitigates weak oversight effects. Robustness checks, including alternative readability measures, propensity score matching, and firm fixed effects, confirm the validity of these results.

This study makes several contributions to the literature on financial disclosure quality and cash valuation. First, it shifts the focus from absolute readability levels to readability stability, providing new insights into disclosure consistency as a signal of governance quality and investor trust. Second, it integrates readability stability into cash valuation models, emphasizing its role in reducing information asymmetry and enhancing monitoring effectiveness. Finally, this study highlights the practical implications of consistent readability, providing actionable recommendations for firms to improve disclosure practices and lower financing costs. These findings also inform regulatory initiatives, such as the PWA, which promotes clear and accessible communication to enhance market transparency.

The remainder of this paper is organized as follows. Section 2 discusses the data and research design. Section 3 presents the main empirical results. Section 4 provides further analyses, and Section 5 concludes with a discussion of implications.

2. Data and research design

2.1. Sample selection

The dataset for the empirical analysis comprises publicly listed U.S. companies. Financial data is obtained from the Compustat North America database, while monthly stock returns are sourced from the Center for Research in Security Prices (CRSP). Readability data is extracted from Brian P. Miller's website and the Securities and Exchange Commission (SEC) Analytics Suite. Consistent with Faulkender and Wang (2006), firms in the financial services and utilities sectors are excluded from the sample. To account for inflation, all nominal values are adjusted to real 2016 dollars using the Consumer Price Index (CPI) data provided by the Federal Reserve

Economic Data (FRED). The final dataset comprises 27,795 firm-year observations spanning the period from 1999 to 2016.

2.2. Stability of readability

This study examines the stability of readability in 10-K filings using two key metrics: the Bog Index and document length (Bai et al., 2022; Bonsall and Miller, 2017; Hwang and Kim, 2017; Kim et al., 2019; Kuang et al., 2020; Li, 2008; Miller, 2010; Panta and Panta, 2023; You and Zhang, 2009). The Bog Index, developed to address the limitations of traditional measures like the Fog Index (Loughran and McDonald, 2014), evaluates readability through three components: Sentence Bog (sentence structure), Word Bog (sentence length and word difficulty), and Pep (engaging elements like conversational expression). A higher Bog Index score indicates lower readability. Unlike the Fog Index, which often misclassifies common financial terms as complex due to syllable count, the Bog Index uses a curated list of over 200,000 complex words for more accurate assessment (Bonsall and Miller, 2017; Loughran and McDonald, 2014). Document length, measured as the natural logarithm of the total word count, acts as a proxy for information disclosed, following methodologies established by Li (2008), You and Zhang (2009), and Kim et al. (2019).

To assess the stability of these metrics over time, the CV is used, measuring relative standard deviation over five years.[1] The formula for stability of readability is as follows:

$$CV - Readability_{i,t} = \frac{\sigma(Readability_{i,t-k:t})}{\mu(Readability_{i,t-k:t})}$$

[1] We used the CV with a moving average, which calculates the relative standard deviation over a five-year period. This approach smooths out short-term fluctuations and highlights long-term stability patterns. The main results remain unchanged irrespective of using a three-year or ten-year period, or applying a moving average.

where $CV - Readability_{i,t}$ represents the CV for firm i over the period $t - k$ to t, $\sigma($ $Readability_{i,t-k:t})$ is the standard deviation of the readability metric for firm i, and $\mu($ $Readability_{i,t-k:t})$ is the mean readability metric over the same period. A higher CV indicates lower readability stability, reflecting greater variability over time. Conversely, a lower CV signals higher stability, indicating more consistent readability in financial reporting. This approach, drawn from studies on cash flow volatility (Minton and Schrand, 1999; Sun and Ding, 2020), prioritizes consistency of readability over average readability levels. By examining this variability, this study uncovers how consistent communication in financial reporting influences corporate valuation.

2.3. Research design

To examine the relationship between readability stability and the marginal value of cash holdings, we employ the following regression model based on Faulkender and Wang (2006):

$$(r_{i,t} - R_{i,t}^{B}) = \beta_0 + \beta_1 \frac{\Delta C_{i,t}}{M_{i,t-1}} + \beta_2 CV - Readability_{i,t} + \beta_3 CV - Readability_{i,t} \times \frac{\Delta C_{i,t}}{M_{i,t-1}} + \beta_4 \frac{\Delta Earning_{i,t}}{M_{i,t-1}} + \beta_5 \frac{\Delta Non - Cash_{i,t}}{M_{i,t-1}} + \beta_6 \frac{\Delta R\&D_{i,t}}{M_{i,t-1}} + \beta_7 \frac{\Delta Interest_{i,t}}{M_{i,t-1}} + \beta_8 \frac{\Delta Dividend_{i,t}}{M_{i,t-1}} + \beta_9 \frac{Cash_{i,t-1}}{M_{i,t-1}} + \beta_{10} Leverage_{i,t} + \beta_{11} \frac{Net\ Financing_{i,t}}{M_{i,t-1}} + \beta_{12} \frac{Cash_{i,t-1}}{M_{i,t-1}} \times \frac{\Delta C_{i,t}}{M_{i,t-1}} + \beta_{13} Leverage_{i,t} \times \frac{\Delta C_{i,t}}{M_{i,t-1}} + \varepsilon_{i,t}$$

where, $(r_{i,t} - R_{i,t}^{B})$ represents the excess stock return. The main independent variables are the change in cash holdings $(\frac{\Delta C_{i,t}}{M_{i,t-1}})$, the CV of readability measures $(CV - Readability_{i,t})$, and their interaction term. Control variables include changes in earnings, non-cash assets, R&D, interest, and dividends, as well as initial cash holdings, leverage, and net financing. Interaction terms analyze the effects of initial cash holdings and leverage. For detailed definitions of variables, see the appendix.

3. Results

3.1. Descriptive analysis

Table 1 presents the descriptive statistics for the firm-level variables used in the empirical models. Among the two measures, *CV-Bog* shows a higher mean and standard deviation compared to *CV-Length* of words, indicating varied outcomes by the two readability stability measures. Therefore, incorporating both measures in the empirical analysis is likely to strengthen the robustness of the results.

[PLEASE INSERT TABLE 1 AROUND HERE]

3.2. Baseline regression analysis

In this study, we advance the findings of Faulkender and Wang (2006) by examining the impact of 10-K readability stability over time on the marginal value of cash holdings. In Table 2, this analysis reveals that firms with greater variability in readability—reflected by higher CV—tend to exhibit lower marginal values of corporate cash. This establishes that market participants may view inconsistent readability as a risk factor, leading to a devaluation of cash holdings. This inverse relationship, consistent across measures like the Bog Index and 10-K length, underscores the importance of maintaining high readability and consistency over time. The findings suggest that predictable and clear financial communication is crucial for maximizing the value attributed to corporate cash reserves, thus highlighting the significance of stable readability in enhancing overall corporate valuation.

[PLEASE INSERT TABLE 2 AROUND HERE]

The subsequent analysis evaluates alternative measures of readability stability. To validate the findings, we transformed the continuous *CV-readability* variables into dummy variables based on their median values. This approach facilitates a clearer interpretation by classifying firms of higher or lower readability stability. As demonstrated in Columns (1) and (2) of Table 3, the results reinforce our primary conclusions. Firms with higher readability stability (below-median) consistently exhibit a significantly higher marginal value of corporate cash, while those with lower readability stability (above median) show a reduced marginal value of cash. This substantiates that readability stability remains a critical factor in enhancing the value of cash holdings, even when simplified dummy variables are used. Fig. 1, derived from the results in Columns (1) and (2) of Table 3, reflects the results. The figure illustrates that firms in the high readability stability group experience an increase in the value of an additional dollar of cash holdings by $0.267 when using *CV-Bog*, compared to $0.231 when using *CV-Length*, relative to firms in the low readability stability group.

[PLEASE INSERT TABLE 3 AROUND HERE]

[PLEASE INSERT FIGURE 1 AROUND HERE]

3.3. Plain Writing Act of 2010

This section analyzes how the exogenous shock of the PWA influences the relationship between variability in financial report readability and the marginal value of corporate cash holdings. Using the methodology of Hwang and Kim (2017) and Yin et al. (2022), a difference-in-differences (DID) approach is applied to evaluate how improvements in the readability environment affect the baseline results. Firms are classified based on their initial readability variability, with those exhibiting higher variability considered the treated group *(I_CV-Readability* = 1) and those with lower variability as the control group (*I_CV-Readability* = 0).

The analysis contrasts the periods before (*PWA* = 0) and after (*PWA* = 1) the enactment of the PWA to determine the legislation's causal effect.

The results, presented in Columns (3) and (4) of Table 3, support the hypothesis that firms with higher readability instability experience significantly and positively influences the marginal value of their cash holdings following the PWA. This finding aligns with Hwang and Kim (2017) and Yin et al. (2022), who highlight that the PWA disproportionately benefits firms with initially poor readability. The results suggest that improving the stability of financial report readability, particularly for firms experiencing substantial variability, enhances market confidence in the firm's cash reserves. Consequently, this reinforces the notion that transparency and clarity in financial reporting play a crucial role in mitigating shareholder value erosion, especially in firms with previously inconsistent readability levels. The statistically significant positive coefficient on the interaction term *(*Δ*Cash * I_CV-Readability * PWA*) provides robust evidence for this relationship.

4. Further analysis

4.1. Impact of financial constraints

Financial constraints increase firms' reliance on internal liquidity, making cash reserves more valuable due to higher external financing costs (Almeida et al., 2004; Faulkender and Wang, 2006). However, constrained firms face heightened investor scrutiny, amplifying concerns about managerial discretion and resource misallocation (Jensen and Meckling, 1976). Under these conditions, stable readability signals transparency and predictability, reducing information asymmetry and bolstering investor confidence (Bushman and Smith, 2001; Lambert et al., 2007).

Table 4 shows that firms with high leverage, low profitability, and low free cash flow—proxies for financial constraints—exhibit a stronger negative relationship between

readability instability and cash valuation. In contrast, the effect is weaker in firms with easier access to external funding. These findings highlight the governance role of readability stability in preserving cash value, particularly for financially constrained firms.

[PLEASE INSERT TABLE 4 AROUND HERE]

4.2. Impact of monitoring mechanism

Monitoring mechanisms like institutional ownership and analyst coverage mitigate agency conflicts and reduce information asymmetry (Chung and Zhang, 2011; Shleifer and Vishny, 1997). Strong monitoring reduces firms' dependence on readability stability to sustain cash value, while weak monitoring makes consistent readability crucial for investor confidence.

Table 5 demonstrates that in weak monitoring environments—low institutional ownership, limited analyst coverage, or narrow investor breadth—readability instability significantly erodes the marginal value of cash holdings. Negative interaction terms ($\Delta Cash$ * *CV-Readability*) consistently appear in low-monitoring groups, indicating greater sensitivity to inconsistent readability. By contrast, firms with strong monitoring show weaker or insignificant effects. These results emphasize the complementary relationship between external oversight and internal governance, with consistent disclosures substituting for weak monitoring.

[PLEASE INSERT TABLE 5 AROUND HERE]

4.3. Robustness analysis

Robustness tests validate the findings on readability stability. Controlling for traditional readability measures (Panel A, Table 6) confirms that consistency in readability matters more than absolute levels for sustaining cash value. Firm fixed effects (Panel B, Table 6) show the

persistence of readability stability's impact after accounting for unobserved heterogeneity. Propensity score matching (Panel C, Table 6) eliminates selection bias, confirming the observed relationship. Collectively, these results reinforce the role of readability stability in reducing information asymmetry and supporting governance.

[PLEASE INSERT TABLE 6 AROUND HERE]

5. Conclusion

This study highlights readability stability in financial reports as a key determinant of the marginal value of corporate cash holdings. Firms with stable readability achieve higher cash valuations by enhancing investor confidence and mitigating information asymmetry, especially under financial constraints or weak external monitoring. The 2010 Plain Writing Act further underscores the value of consistent disclosures in improving market transparency. Further analysis shows that readability stability has a stronger impact on financially constrained firms, where internal liquidity is more valuable due to limited external financing. By reducing information asymmetry, consistent readability enhances governance and investor trust. The study also examines external monitoring mechanisms, such as institutional ownership and analyst coverage, finding that firms with weaker oversight rely more on readability stability to maintain cash value, while those with stronger monitoring experience a diminished effect, suggesting a complementary relationship. These findings highlight the strategic role of consistent readability in governance, financing costs, and market transparency, offering practical insights for improving corporate disclosure practices and informing regulatory policies. Future research could further explore industry-specific factors, non-financial disclosures, and emerging technologies to enhance disclosure practices and deepen understanding of the role of consistent communication in corporate finance.

References

Almeida, H., Campello, M., & Weisbach, M. S. (2004). The cash flow sensitivity of cash. Journal of Finance, 59(4), 1777–1804. https://doi.org/10.1111/j.1540-6261.2004.00679.x

Bai, M., Li, S., Xu, L., Yu, C. F. J. (2022). How do overconfident CEOs respond to regulation fair disclosure? Evidence from financial report readability. Finance Research Letters, 50, 103349. https://doi.org/10.1016/j.frl.2022.103349

Biddle, G. C., Hilary, G., & Verdi, R. S. (2009). How does financial reporting quality relate to investment efficiency? Journal of Accounting and Economics, 48(2-3), 112–131. https://doi.org/10.1016/j.jacceco.2009.09.001

Bonsall, S. B., & Miller, B. P. (2017). The impact of narrative disclosure readability on bond ratings and the cost of debt. Review of Accounting Studies, 22(2), 608–643. https://doi.org/10.1007/s11142-017-9388-0

Bushman, R. M., & Smith, A. J. (2001). Financial accounting information and corporate governance. Journal of Accounting and Economics, 32(1-3), 237–333. https://doi.org/10.1016/S0165-4101(01)00027-1

Choi, S., Chung, C. Y., Kim, D., & Lee, J. (2021). Market value of 10-K readability and corporate cash holdings. Economics Letters, 201, 109796. https://doi.org/10.1016/j.econlet.2021.109796

Chung, K. H., & Zhang, H. (2011). Corporate governance and institutional ownership. Journal of Financial and Quantitative Analysis, 46(1), 247–273. https://doi.org/10.1017/s0022109010000682

De Franco, G., Hope, O. K., & Vyas, D. (2015). Analyst report readability. Contemporary Accounting Research, 32(1), 76–104. https://doi.org/10.1111/1911-3846.12062

Dittmar, A., & Mahrt-Smith, J. (2007). Corporate governance and the value of cash holdings. Journal of Financial Economics, 83(3), 599–634. https://doi.org/10.1016/j.jfineco.2006.01.002

Durnev, A., & Kim, E. H. (2005). To steal or not to steal: Firm attributes, legal environment, and valuation. Journal of Finance, 60(3), 1461–1493. https://doi.org/10.1111/j.1540-6261.2005.00767.x

Faulkender, M., & Wang, R. (2006). Corporate financial policy and the value of cash. Journal of Finance, 61(4), 1957–1990. https://doi.org/10.1111/j.1540-6261.2006.00894.x

Hwang, B. H., & Kim, H. H. (2017). It pays to write well. Journal of Financial Economics, 124(2), 373–394. https://doi.org/10.1016/j.jfineco.2017.01.006

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. Journal of Financial Economics, 3(4), 305–360. https://doi.org/10.1016/0304-405X(76)90026-X

Kim, C., Wang, K., & Zhang, L. (2019). Readability of 10-K reports and stock price crash risk.

Contemporary Accounting Research, 36(2), 1184–1216. https://doi.org/10.1111/1911-3846.12452

Kuang, Y. F., Lee, G., & Qin, B. (2020). Does government report readability matter? Evidence from market reactions to AAERs. Journal of Accounting and Public Policy, 39(2), 106697. https://doi.org/10.1016/j.jaccpubpol.2019.106697

Lambert, R. A., Leuz, C., & Verrecchia, R. E. (2007). Accounting information, disclosure, and the cost of capital. Journal of Accounting Research, 45(2), 385–420. https://doi.org/10.1111/j.1475-679X.2007.00238.x

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (2002). Investor protection and corporate valuation. Journal of Finance, 57(3), 1147–1170. https://doi.org/10.1111/1540-6261.00457

Lawrence, A. (2013). Individual investors and financial disclosure. Journal of Accounting and Economics, 56(1), 130–147. https://doi.org/10.1016/j.jacceco.2013.05.001

Lehavy, R., Li, F., & Merkley, K. (2011). The effect of annual report readability on analyst following and the properties of their earnings forecasts. The Accounting Review, 86(3), 1087–1115. https://doi.org/10.2308/accr.00000043

Li, F. (2008). Annual report readability, current earnings, and earnings persistence. Journal of Accounting and Economics, 45(2-3), 221–247. https://doi.org/10.1016/j.jacceco.2008.02.003

Loughran, T., & McDonald, B. (2014). Measuring readability in financial disclosures. Journal of Finance, 69(4), 1643–1671. https://doi.org/10.1111/jofi.12162

Miller, B. P. (2010). The effects of reporting complexity on small and large investor trading. The Accounting Review, 85(6), 2107–2143. https://doi.org/10.2308/accr.00000001

Minton, B. A., & Schrand, C. (1999). The impact of cash flow volatility on discretionary investment and the costs of debt and equity financing. Journal of Financial Economics, 54(3), 423–460. https://doi.org/10.1016/s0304-405x(99)00042-2

Panta, H., & Panta, A. (2023). Organizational capital and readability of financial reports. Finance Research Letters, 55, 103895. https://doi.org/10.1016/j.frl.2023.103895

Rjiba, H., Saadi, S., Boubaker, S., & Ding, X. S. (2021). Annual report readability and the cost of equity capital. Journal of Corporate Finance, 67, 101902. https://doi.org/10.1016/j.jcorpfin.2021.101902

Schwartz-Ziv, M., & Volkova, E. (2024). Is blockholder diversity detrimental? Management Science. https://doi.org/10.1287/mnsc.2023.00528

Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. Journal of Finance, 52(2), 737–783. https://doi.org/10.1111/j.1540-6261.1997.tb04820.x

Sun, W., & Ding, Y. (2020). Corporate social responsibility and cash flow volatility: The curvilinear moderation of marketing capability. Journal of Business Research, 116, 48–59.

https://doi.org/10.1016/j.jbusres.2020.05.016

Yin, S., Chevapatrakul, T., & Yao, K. (2022). The causal effect of improved readability of financial reporting on stock price crash risk: Evidence from the Plain Writing Act of 2010. Economics Letters, 216, 110614. https://doi.org/10.1016/j.econlet.2022.110614

You, H., & Zhang, X. J. (2009). Financial reporting complexity and investor underreaction to 10-K information. Review of Accounting Studies, 14, 559–586. https://doi.org/10.1007/s11142-008-9083-2

Fig. 1. This figure illustrates the marginal value of cash holdings for firms with varying levels of readability stability (measured by *CV-Bog* and *CV-Length*).

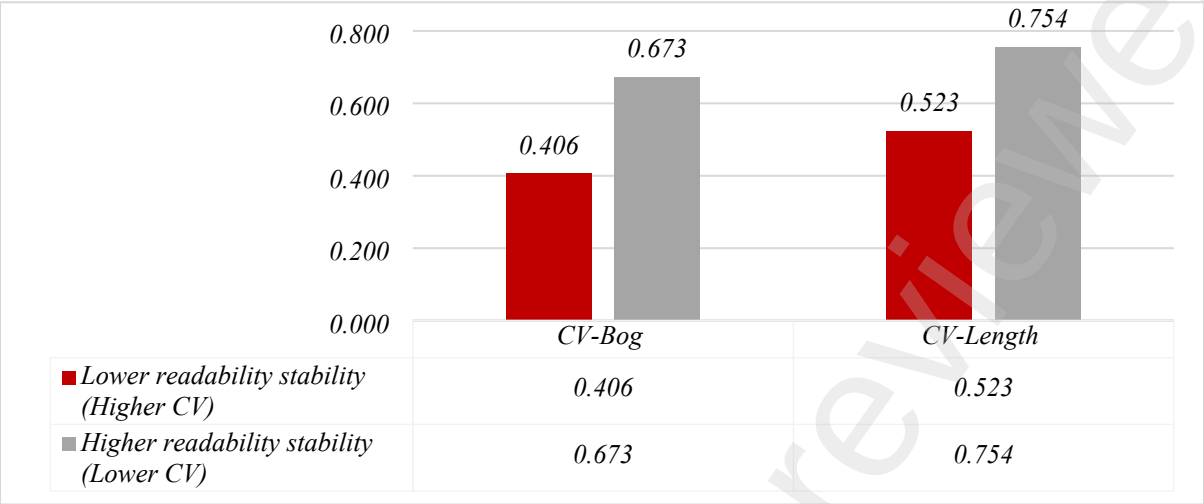

Table 1. Summary Statistics.

	N	Mean	Std. Dev.	p1	p25	Median	p75	p99
10-K readability								
CV-Bog $_t$	27,795	2.793	1.956	0.540	1.549	2.317	3.470	9.835
CV-Length $_t$	27,795	0.902	1.239	0.060	0.279	0.515	0.963	6.244
Bog $_t$	27,795	84.320	7.193	66.000	80.000	84.000	89.000	101.000
Length $_t$	27,795	10.361	0.575	8.706	10.045	10.406	10.714	11.700
MVCH variable								
$r_t - R_t^B$	27,795	0.038	0.595	-0.844	-0.258	-0.039	0.202	2.167
Δ*Cash* $_t$	27,795	0.009	0.182	-0.334	-0.020	0.002	0.032	0.436
Δ*Earning* $_t$	27,795	0.057	4.204	-0.539	-0.020	0.005	0.028	1.054
Δ*Non-Cash* $_t$	27,795	0.022	1.123	-1.149	-0.032	0.017	0.084	1.143
Δ*R&D* $_t$	27,795	-0.001	0.116	-0.094	0.000	0.000	0.001	0.055
Δ*Interest* $_t$	27,795	0.000	0.038	-0.049	-0.001	0.000	0.001	0.057
Δ*Dividend* $_t$	27,795	0.000	0.058	-0.055	0.000	0.000	0.001	0.044
Cash $_{t-1}$	27,795	0.157	0.300	0.001	0.031	0.085	0.195	1.054
Leverage $_t$	27,795	0.162	0.178	0.000	0.008	0.109	0.247	0.740
Net Financing $_t$	27,795	0.013	0.290	-0.420	-0.035	-0.002	0.022	0.723

Note: This table presents descriptive statistics for the firm-level variables used in our empirical models. The sample comprises publicly listed U.S. companies from 1999 to 2016. For detailed descriptions of the variables, please refer to Appendix.

Table 2. Baseline regression.

	Dependent variable = $r_t - R_t^B$	
	(1)	(2)
$\Delta Cash_t$	1.004***	0.952***
	(7.391)	(9.696)
$\Delta Cash_t$ * $CV\text{-}Bog_t$	-0.089***	
	(-2.644)	
$CV\text{-}Bog_t$	-0.002	
	(-0.917)	
$\Delta Cash_t$ * $CV\text{-}Length_t$		-0.201***
		(-5.944)
$CV\text{-}Length_t$		0.002
		(0.923)
$\Delta Earning_t$	-0.000	-0.000
	(-0.673)	(-0.865)
$\Delta Non\text{-}Cash_t$	0.064***	0.114***
	(3.865)	(6.660)
$\Delta R\&D_t$	0.075	0.063
	(1.284)	(1.158)
$\Delta Interest_t$	0.246	0.151
	(0.953)	(0.636)
$\Delta Dividend_t$	0.248**	0.228*
	(1.979)	(1.769)
$Cash_{t-1}$	-0.012	0.010
	(-0.394)	(0.341)
$Leverage_t$	-0.464***	-0.456***
	(-19.838)	(-19.877)
$Net\ Financing_t$	-0.063	-0.109***
	(-1.511)	(-2.630)
$\Delta Cash_t$ * $Cash_{t-1}$	0.006	0.000
	(1.202)	(0.027)
$\Delta Cash_t$ * $Leverage_t$	-1.371***	-1.115***
	(-7.853)	(-6.341)
Constant	0.114***	0.101***
	(14.054)	(14.742)
Observations	27,795	27,795
Adjusted R-squared	0.048	0.052
Industry dummy	Yes	Yes
Year dummy	Yes	Yes

Note: This table displays the results from the baseline regression analysis examining how the stability of 10-K readability affects the marginal value of corporate cash holdings. Column (1) shows the outcomes using *CV-Bog* to measure readability stability, whereas Column (2) presents the results employing document length as the metric (*CV-Length*). For detailed descriptions of the variables, please refer to Appendix. Robust standard errors, clustered by firm, are reported in parentheses. Statistical significance is indicated by *, **, and *** for significance levels of 10%, 5%, and 1%, respectively.

Table 3. Impact of the Plain Writing Act of 2010.

	Dependent variable = $r_t - R_t^B$			
	(1)	(2)	(3)	(4)
$\Delta Cash_t$	0.904***	0.984***	0.866***	0.924***
	(7.090)	(8.929)	(6.796)	(6.612)
$\Delta Cash_t$ * *I_CV-Bog* $_t$	-0.267**	-0.521***		
	(-2.142)	(-3.975)		
$\Delta Cash_t$ * *I_CV-Bog* $_t$ * *PWA*		0.551**		
		(2.518)		
I_CV-Bog $_t$	-0.008	-0.012		
	(-1.266)	(-1.419)		
I_CV-Bog $_t$ * *PWA*		0.005		
		(0.366)		
$\Delta Cash_t$ * *I_CV-Length* $_t$			-0.231*	-0.466***
			(-1.887)	(-3.063)
$\Delta Cash_t$ * *I_CV-Length* $_t$ * *PWA*				0.534**
				(2.308)
I_CV-Length $_t$			0.007	0.012
			(0.998)	(1.310)
I_CV-Length $_t$ * *PWA*				-0.011
				(-0.871)
$\Delta Cash_t$ * *PWA*		-0.119		-0.100
		(-0.766)		(-0.537)
$\Delta Cash_t$ * *Cash* $_{t-1}$	0.007	0.008	0.007	0.008
	(1.410)	(1.584)	(1.500)	(1.628)
$\Delta Cash_t$ * *Leverage* $_t$	-1.432***	-1.426***	-1.381***	-1.336***
	(-8.002)	(-8.546)	(-7.912)	(-7.815)
Constant	0.114***	0.112***	0.109***	0.107***
	(16.167)	(16.042)	(14.747)	(14.424)
Observations	27,795	27,795	27,795	27,795
Adjusted R-squared	0.047	0.049	0.047	0.048
Controls	Yes	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes

Note: This table presents the analysis results, examining the impact of readability stability measures and the Plain Writing Act of 2010 (PWA) on the marginal value of corporate cash holdings. Columns (1) and (2) display results using dummy variables derived from continuous *CV-readability* measures, categorized as above-median and below-median. Columns (3) and (4) report the results of the difference-in-differences estimation to evaluate the effect of the PWA on firms classified by their initial readability variability, with higher variability firms as the treated group (*I_CV-Readability* = 1) and lower variability firms as the control group (*I_CV-Readability* = 0). *PWA* is assigned a value of 0 for reports issued before the enactment of the PWA and 1 for reports issued after. For detailed descriptions of the variables, please refer to Appendix. Robust standard errors are in parentheses. ***, *, and * denote significance levels of 1%, 5%, and 10%, respectively.

Table 4. The effect of readability stability on the marginal value of cash by financial constraints.

Panel A. Market leverage (median>)

	Dependent variable = $r_{i,t} - R_{i,t}$			
	(1)	(2)	(3)	(4)
	Low	High	Low	High
$\Delta Cash_t$	1.032***	1.209***	1.196***	0.948***
	(5.168)	(8.027)	(8.002)	(7.323)
$\Delta Cash_t$ * *CV-Bog* $_t$	0.049	-0.144***		
	(0.671)	(-4.915)		
CV-Bog $_t$	-0.005*	0.003		
	(-1.813)	(1.152)		
$\Delta Cash_t$ * *CV-Length* $_t$			-0.031	-0.173***
			(-0.528)	(-5.028)
CV-Length $_t$			0.001	0.002
			(0.277)	(0.762)
Constant	0.103***	0.101***	0.088***	0.103***
	(7.120)	(9.127)	(7.218)	(9.204)
Observations	13,903	13,892	13,903	13,892
Adjusted R-squared	0.067	0.069	0.066	0.072
Controls	Yes	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes

Panel B. Net income/total assets (median>)

	Dependent variable = $r_{i,t} - R_{i,t}$			
	(1)	(2)	(3)	(4)
	Low	High	Low	High
$\Delta Cash_t$	0.772***	1.442***	0.680***	1.589***
	(5.276)	(7.311)	(6.796)	(6.619)
$\Delta Cash_t$ * *CV-Bog* $_t$	-0.083***	0.025		
	(-2.623)	(0.354)		
CV-Bog $_t$	-0.000	-0.003		
	(-0.134)	(-1.181)		
$\Delta Cash_t$ * *CV-Length* $_t$			-0.127***	-0.106
			(-4.981)	(-1.291)
CV-Length $_t$			0.005	-0.003
			(1.342)	(-0.826)
Constant	-0.000	0.133***	-0.008	0.128***
	(-0.008)	(10.944)	(-0.772)	(12.399)
Observations	13,903	13,892	13,903	13,892
Adjusted R-squared	0.053	0.059	0.057	0.059
Controls	Yes	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes

Panel C. Free cash flow (median>)

	Dependent variable = $r_{i,t} - R_{i,t}$			
	(1)	(2)	(3)	(4)
	Low	High	Low	High
$\Delta Cash_t$	1.050***	1.173***	0.935***	1.122***
	(7.109)	(6.305)	(6.821)	(6.574)
$\Delta Cash_t$ * *CV-Bog* $_t$	-0.108**	-0.027		
	(-2.326)	(-0.941)		
CV-Bog $_t$	-0.003	-0.002		
	(-1.117)	(-0.749)		

$\Delta Cash_t$ * $CV\text{-}Length_t$			-0.201***	-0.032
			(-4.664)	(-0.642)
$CV\text{-}Length_t$			-0.001	0.001
			(-0.367)	(0.391)
Constant	0.105***	0.109***	0.092***	0.103***
	(9.161)	(8.821)	(8.875)	(9.754)
Observations	13,898	13,897	13,898	13,897
Adjusted R-squared	0.037	0.072	0.039	0.072
Controls	Yes	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes

Note: This table presents the effects of readability stability on the marginal value of corporate cash, differentiated by financial constraints. Panel A shows results based on market leverage, with firms classified as having higher or lower leverage relative to the median. Panel B reports findings based on net income relative to total assets, categorizing firms as having higher or lower net income ratios compared to the median. Panel C examines results using free cash flow, with firms classified by median levels of free cash flow. For detailed descriptions of the variables, please refer to Appendix. Robust standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 5. The effect of different monitoring conditions.

Panel A. Institutional ownership ratio (median>)

	Dependent variable = $r_{i,t} - R_{i,t}$			
	(1)	(2)	(3)	(4)
	Low	High	Low	High
$\Delta Cash_t$	1.381***	0.699***	1.081***	0.860***
	(8.902)	(3.797)	(8.665)	(5.654)
$\Delta Cash_t$ * *CV-Bog* $_t$	-0.197***	0.053		
	(-4.555)	(0.941)		
CV-Bog $_t$	0.000	-0.004*		
	(0.077)	(-1.722)		
$\Delta Cash_t$ * *CV-Length* $_t$			-0.288***	-0.025
			(-5.958)	(-0.654)
CV-Length $_t$			0.001	0.004
			(0.302)	(1.063)
Constant	0.113***	0.106***	0.111***	0.092***
	(9.689)	(9.596)	(12.233)	(9.744)
Observations	13,819	13,803	13,819	13,803
Adjusted R-squared	0.055	0.057	0.060	0.056
Controls	Yes	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes

Panel B. Analyst coverage (median>)

	Dependent variable = $r_{i,t} - R_{i,t}$			
	(1)	(2)	(3)	(4)
	Low	High	Low	High
$\Delta Cash_t$	1.086***	0.843**	0.905***	1.483***
	(8.338)	(2.407)	(9.145)	(4.537)
$\Delta Cash_t$ * *CV-Bog* $_t$	-0.124***	0.185		
	(-3.984)	(1.158)		
CV-Bog $_t$	-0.003	-0.003		
	(-0.965)	(-1.439)		
$\Delta Cash_t$ * *CV-Length* $_t$			-0.191***	-0.148**
			(-4.981)	(-2.027)
CV-Length $_t$			-0.002	0.005*
			(-0.340)	(1.782)
Constant	0.095***	0.131***	0.086***	0.117***
	(8.159)	(13.136)	(8.810)	(13.888)
Observations	15,336	12,289	15,336	12,289
Adjusted R-squared	0.047	0.083	0.050	0.082
Controls	Yes	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes

Panel C. Breadth of institutional ownership (median>)

	Dependent variable = $r_{i,t} - R_{i,t}$			
	(1)	(2)	(3)	(4)
	Low	High	Low	High
$\Delta Cash_t$	1.023***	1.752***	0.861***	2.115***
	(8.247)	(5.166)	(9.091)	(4.853)
$\Delta Cash_t$ * *CV-Bog* $_t$	-0.117***	0.101		
	(-3.894)	(0.666)		
CV-Bog $_t$	-0.002	-0.003		
	(-0.662)	(-1.121)		
$\Delta Cash_t$ * *CV-Length* $_t$			-0.190***	-0.077
			(-5.113)	(-1.137)
CV-Length $_t$			-0.003	0.004

			(-0.744)	(1.272)
Constant	0.089***	0.116***	0.083***	0.104***
	(8.818)	(9.789)	(9.698)	(8.802)
Observations	17,053	10,742	17,053	10,742
Adjusted R-squared	0.050	0.094	0.054	0.093
Controls	Yes	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes

Note: This table examines the effects of readability stability on the marginal value of corporate cash, differentiating results by monitoring intensity. Panel A presents results based on the institutional ownership ratio, where firms are classified as having either higher or lower institutional ownership relative to the median. Panel B reports findings based on analyst coverage, categorizing firms as having higher or lower analyst coverage compared to the median. Panel C analyzes results using breadth of institutional ownership, dividing firms by median ownership ratios. For detailed descriptions of the variables, please refer to Appendix. Robust standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 6. Robustness tests.

Panel A. Controlled for traditional readability measures

	Dependent variable = $r_t - R_t^B$	
	(1)	(2)
$\Delta Cash_t$	1.504*	4.168***
	(1.754)	(3.170)
$\Delta Cash_t$ * *CV-Bog* $_t$	-0.084**	
	(-2.571)	
CV-Bog $_t$	-0.002	
	(-0.960)	
$\Delta Cash_t$ * *Bog* $_t$	-0.006	
	(-0.625)	
Bog $_t$	0.001	
	(0.920)	
$\Delta Cash_t$ * *CV-Length* $_t$		-0.144***
		(-3.793)
CV-Length $_t$		-0.002
		(-0.678)
$\Delta Cash_t$ * *Length* $_t$		-0.314**
		(-2.451)
Length $_t$		0.026***
		(3.501)
Constant	0.070	-0.161**
	(1.450)	(-2.152)
Observations	27,795	27,795
Adjusted R-squared	0.048	0.054
Controls	Yes	Yes
Industry dummy	Yes	Yes
Year dummy	Yes	Yes

Panel B. Firm fixed effects

	Dependent variable = $r_t - R_t^B$	
	(1)	(2)
$\Delta Cash_t$	0.869***	0.873***
	(6.089)	(8.506)
$\Delta Cash_t$ * *CV-Bog* $_t$	-0.070*	
	(-1.949)	
CV-Bog $_t$	-0.002	
	(-0.923)	
$\Delta Cash_t$ * *CV-Length* $_t$		-0.194***
		(-6.042)
CV-Length $_t$		0.003
		(0.737)
Constant	0.195***	0.180***
	(17.102)	(16.354)
Observations	27,795	27,795
Adjusted R-squared	0.053	0.057
Controls	Yes	Yes
Industry dummy	Yes	Yes
Year dummy	Yes	Yes

Panel C. PSM analysis

	Dependent variable = $r_t - R_t^B$	
	(1)	(2)

$\Delta Cash_t$	1.174***	1.140***
	(7.285)	(7.809)
$\Delta Cash_t$ * $CV\text{-}Bog_t$	-0.113***	
	(-3.135)	
$CV\text{-}Bog_t$	0.002	
	(0.731)	
$\Delta Cash_t$ * $CV\text{-}Length_t$		-0.226***
		(-5.342)
$CV\text{-}Length_t$		0.001
		(0.349)
Constant	0.104***	0.108***
	(9.927)	(11.188)
Observations	21,557	21,375
Adjusted R-squared	0.048	0.052
Controls	Yes	Yes
Industry dummy	Yes	Yes
Year dummy	Yes	Yes

Note: This table presents the results of robustness tests evaluating the stability of the findings. Panel A investigates the impact of readability stability on the marginal value of corporate cash, including traditional readability measures (e.g., Bog index and Length) as controls. Panel B now includes firm fixed effects to account for unobserved heterogeneity across firms. Panel C applies propensity score matching (PSM) to address potential selection bias by pairing firms with similar attributes. For detailed descriptions of the variables, please refer to Appendix. Robust standard errors are in parentheses. ***, **, and * denote significance levels of 1%, 5%, and 10%, respectively.

Appendix. Variable definition.

Variable Name	Definition and Calculation	Data Source
CV-Bog	Coefficient of variation (CV) of the Bog Index, calculated as the ratio of the standard deviation to the mean of the Bog Index over a given period.	Brian P. Miller's website
CV-Length	Coefficient of variation (CV) of document length, calculated as the ratio of the standard deviation to the mean of the natural logarithm of total word count over a given period.	SEC Analytics Suite
Bog	The Bog Index score, which evaluates readability based on sentence structure, sentence length, and word complexity.	Brian P. Miller's website
Length	The natural logarithm of the total word count in a document, representing document length.	SEC Analytics Suite
$r - R^B$	Excess return, measured as the difference between the firm's stock return and a benchmark return.	CRSP
ΔCash	Change in cash holdings from the previous year, scaled by the firm's market value of equity at the end of the prior year.	Compustat
ΔEarnings	Change in earnings from the previous year, calculated as the current year's earnings minus the prior year's earnings.	Compustat
ΔNon-Cash	Change in non-cash assets, calculated as the difference between the current year's and prior year's non-cash assets.	Compustat
ΔR&D	Change in R&D expenditures, calculated as the difference between the current year's and prior year's R&D expenses.	Compustat
ΔInterest	Change in interest expenses, calculated as the current year's interest expenses minus the prior year's interest expenses.	Compustat
ΔDividend	Change in dividend payments, calculated as the difference between the current year's and prior year's dividends paid.	Compustat
Cash	Cash holdings scaled by the firm's market value of equity.	Compustat
Leverage	Leverage ratio, calculated as the total debt divided by the total assets of the firm.	Compustat
Net Financing	Net financing activities, calculated as the sum of new equity issuance and new debt minus repayments made during the year.	Compustat
I_CV-Bog	Dummy variable for *CV-Bog*, assigned a value of 1 for firms with above-median variability in the Bog Index and 0 otherwise.	Brian P. Miller's website
I_CV-Length	Dummy variable for *CV-Length*, assigned a value of 1 for firms with above-median variability in document length and 0 otherwise.	SEC Analytics Suite
Institutional ownership ratio	The proportion of a firm's shares owned by institutional investors. Calculated as the total number of shares held by institutional investors divided by the total number of shares outstanding.	Schwartz-Ziv and Volkova (2024), Elena Volkova's website
Analyst coverage	The number of analysts providing earnings forecasts or stock recommendations for a firm.	IBES
Breadth of institutional ownership	The number of unique institutional investors holding the firm's shares, as reported in 13-F filings.	Thomson Reuters