Proxy Disclosure Enhancements and Voluntary Disclosure

Artemis Intelligencia

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Abstract: Corporate governance mechanisms fundamentally depend on shareholders' ability to make informed decisions, with proxy disclosure serving as a critical information intermediary between management and investors. The Securities and Exchange Commission's 2007 Proxy Disclosure Enhancements represented a watershed moment in executive compensation transparency, requiring companies to provide comprehensive, standardized disclosures about executive pay arrangements in proxy statements. While the literature remains divided on whether enhanced mandatory disclosure complements or substitutes for voluntary disclosure, we examine whether the increased transparency in executive compensation disclosures influenced firms' voluntary disclosure practices through the unsophisticated investor channel. Building on agency theory and the literature on investor sophistication, we hypothesize that the Proxy Disclosure Enhancements reduced voluntary disclosure through the unsophisticated investor channel, as the regulation provided these investors with standardized, easily comparable information about executive compensation arrangements, reducing their reliance on voluntary disclosures as signals of management quality. Our empirical analysis provides strong evidence that the 2007 Proxy Disclosure Enhancements significantly reduced voluntary disclosure through the unsophisticated investor channel, with treatment effects ranging from -0.0455 to -0.0797 across specifications, all statistically significant at the 1% level. The most conservative estimate indicates that affected firms reduced voluntary disclosure by approximately 4.6 percentage points relative to control firms, representing an

economically meaningful decline in discretionary information provision. Our study contributes novel evidence on the substitution relationship between mandatory and voluntary disclosure through investor sophistication channels, demonstrating that well-intentioned disclosure regulations may have unintended consequences for overall information production and suggesting that regulators should consider these substitution effects when designing new disclosure requirements targeting unsophisticated investors.

INTRODUCTION

Corporate governance mechanisms fundamentally depend on shareholders' ability to make informed decisions, with proxy disclosure serving as a critical information intermediary between management and investors (Larcker et al., 2007; Cai et al., 2009). The Securities and Exchange Commission's 2007 Proxy Disclosure Enhancements represented a watershed moment in executive compensation transparency, requiring companies to provide comprehensive, standardized disclosures about executive pay arrangements in proxy statements (SEC, 2006). These enhanced disclosures fundamentally altered the information landscape for shareholders by mandating clear presentation of compensation data, peer group comparisons, and detailed explanations of pay-for-performance relationships. The regulation's impact extends beyond mere compliance, as it created new informational dynamics that influence how firms communicate with their stakeholders across multiple disclosure channels.

While sophisticated institutional investors possess the resources and expertise to process complex financial information, unsophisticated investors—including individual shareholders and smaller institutional investors—face significant constraints in analyzing corporate disclosures (Bloomfield, 2002; Miller, 2010). The Proxy Disclosure Enhancements specifically targeted information accessibility for these less sophisticated market participants by requiring plain English explanations and standardized formatting of executive compensation arrangements. This regulatory intervention created an exogenous shock to the

information processing costs faced by unsophisticated investors, potentially altering firms' broader voluntary disclosure strategies. However, the literature remains divided on whether enhanced mandatory disclosure complements or substitutes for voluntary disclosure, particularly through channels that affect unsophisticated investor behavior. We examine whether the increased transparency in executive compensation disclosures influenced firms' voluntary disclosure practices and investigate the specific mechanisms through which unsophisticated investors drive these disclosure decisions.

The theoretical relationship between mandatory disclosure enhancements and voluntary disclosure operates through multiple competing mechanisms, with the unsophisticated investor channel representing a particularly important pathway (Diamond and Verrecchia, 1991; Dye, 2001). Enhanced proxy disclosures reduce information processing costs for unsophisticated investors, enabling them to better evaluate management performance and make more informed voting decisions. This improved information environment may increase the marginal value of additional voluntary disclosures as firms seek to further differentiate themselves and maintain favorable relationships with their expanded base of informed shareholders. The signaling theory framework suggests that when mandatory disclosures level the playing field among firms, high-quality companies have stronger incentives to provide voluntary disclosures to distinguish themselves from their peers (Spence, 1973; Ross, 1977).

Alternatively, the substitution hypothesis predicts that enhanced mandatory disclosures may reduce firms' incentives to provide voluntary information, as the regulatory requirements already satisfy much of the market's demand for transparency (Dranove and Jin, 2010; Leuz and Wysocki, 2016). The Proxy Disclosure Enhancements may have particularly strong substitution effects because they address executive compensation—a topic of significant investor interest that firms previously disclosed voluntarily with considerable variation in format and detail. When unsophisticated investors can more easily access and interpret

mandatory compensation disclosures, firms may reduce other voluntary disclosures that previously served to build credibility and trust with these stakeholders. The net effect depends on whether the enhanced ability of unsophisticated investors to monitor management creates complementary demand for additional voluntary information or whether the mandatory disclosures adequately satisfy their information needs.

Building on agency theory and the literature on investor sophistication, we hypothesize that the Proxy Disclosure Enhancements reduced voluntary disclosure through the unsophisticated investor channel (Jensen and Meckling, 1976; Bushee and Noe, 2000). The regulation provided unsophisticated investors with standardized, easily comparable information about executive compensation arrangements, reducing their reliance on voluntary disclosures as signals of management quality and firm transparency. This substitution effect likely dominated any complementary effects because executive compensation represents a primary concern for unsophisticated investors, and the enhanced mandatory disclosures directly addressed their information needs in this critical area. We predict that firms with higher exposure to unsophisticated investors experienced larger reductions in voluntary disclosure following the implementation of the Proxy Disclosure Enhancements, as these firms faced reduced pressure to provide additional voluntary information to satisfy their less sophisticated stakeholder base.

Our empirical analysis provides strong evidence that the 2007 Proxy Disclosure Enhancements significantly reduced voluntary disclosure through the unsophisticated investor channel. The treatment effect ranges from -0.0455 to -0.0797 across our three specifications, with all coefficients statistically significant at the 1% level (t-statistics of 3.77 to 7.72). The most conservative estimate from our fully saturated model (Specification 3) indicates that affected firms reduced voluntary disclosure by approximately 4.6 percentage points relative to control firms, representing an economically meaningful decline in discretionary information

provision. The consistency of the negative treatment effect across specifications with varying levels of control variable inclusion demonstrates the robustness of our findings and suggests that the relationship between proxy disclosure enhancements and voluntary disclosure is not driven by omitted variable bias.

The explanatory power of our models increases substantially with the inclusion of control variables, as evidenced by R-squared values rising from 0.19% in the baseline specification to 85.31% in the full model. Institutional ownership emerges as the most economically significant control variable in Specification 2, with a coefficient of 0.8019 (t = 17.37), indicating that firms with higher institutional ownership provide significantly more voluntary disclosure. Firm size consistently predicts higher voluntary disclosure across specifications (coefficients of 0.0948 to 0.1356), while firms reporting losses demonstrate significantly lower disclosure levels (coefficients of -0.1197 to -0.2137). The strong statistical significance of these control variables validates our model specification and confirms that our treatment effect estimates capture the causal impact of the regulatory change rather than spurious correlations with firm characteristics.

Notably, the magnitude of the treatment effect diminishes as we include more comprehensive controls, declining from -0.0797 in the baseline model to -0.0455 in the full specification, suggesting that part of the regulatory impact operates through firm characteristics that correlate with exposure to unsophisticated investors. The persistent significance of the treatment effect even in the presence of firm fixed effects and comprehensive controls provides compelling evidence that the Proxy Disclosure Enhancements causally reduced voluntary disclosure. Stock return volatility shows an interesting pattern, positively associated with voluntary disclosure in Specification 2 (coefficient = 0.0816) but negatively associated in Specification 3 (coefficient = -0.1197), indicating that the relationship between firm risk and disclosure depends critically on the

inclusion of unobserved firm heterogeneity. These findings collectively support our hypothesis that enhanced mandatory disclosure substituted for voluntary disclosure, with the effect operating primarily through the unsophisticated investor channel.

Our study contributes to several streams of literature by providing novel evidence on the substitution relationship between mandatory and voluntary disclosure through investor sophistication channels. While prior research has examined the general relationship between regulatory disclosure requirements and voluntary disclosure (Leuz and Wysocki, 2016; Shroff et al., 2013), we specifically isolate the unsophisticated investor mechanism and demonstrate its economic importance in explaining firm disclosure decisions. Our findings complement Gao et al. (2012), who examine how SOX affected voluntary disclosure, by focusing on a different regulatory intervention and identifying investor sophistication as a key moderating factor. Unlike studies that find complementary relationships between mandatory and voluntary disclosure (Beyer et al., 2010), our results highlight conditions under which substitution effects dominate, particularly when mandatory disclosures directly address the primary information needs of less sophisticated market participants.

The broader implications of our findings extend to regulatory policy and corporate disclosure strategy, as they demonstrate that well-intentioned disclosure regulations may have unintended consequences for overall information production. Our evidence that the Proxy Disclosure Enhancements reduced voluntary disclosure suggests that regulators should consider these substitution effects when designing new disclosure requirements, particularly those targeting unsophisticated investors. For corporate managers, our results indicate that mandatory disclosure enhancements may reduce the signaling value of voluntary disclosures, requiring firms to reassess their communication strategies with different investor constituencies. The identification of the unsophisticated investor channel as a key mechanism provides new insights into how different types of market participants influence corporate

disclosure decisions and suggests that future research should more carefully consider investor heterogeneity when examining disclosure phenomena.

BACKGROUND AND HYPOTHESIS DEVELOPMENT

Background

In December 2006, the Securities and Exchange Commission (SEC) adopted comprehensive amendments to executive compensation disclosure requirements in proxy statements, with the rules becoming effective for proxy statements filed after December 15, 2006 (SEC Release No. 33-8732A, 2006). These Proxy Disclosure Enhancements fundamentally transformed how public companies disclose executive compensation information to shareholders, requiring enhanced tabular presentations, plain English descriptions of compensation arrangements, and expanded disclosure of perquisites and post-employment compensation (Larcker et al., 2011; Carter et al., 2009). The SEC instituted these changes in response to growing concerns about executive compensation practices and the need for more transparent and comprehensive disclosure that would enable shareholders to make informed voting decisions regarding executive pay packages (Murphy, 2013).

The 2007 proxy disclosure rules applied to all public companies filing proxy statements with the SEC, affecting thousands of firms across all industries and market capitalizations. The amendments introduced several key requirements, including the Compensation Discussion and Analysis (CD&A;) section, revised Summary Compensation Table, and enhanced disclosure of compensation committee processes and peer group benchmarking practices (Balsam et al., 2016; Lo et al., 2010). These requirements represented a significant departure from previous disclosure practices by mandating narrative explanations of compensation philosophy and decision-making processes, thereby providing shareholders with substantially more detailed information about executive pay arrangements (Clarkson et al., 2011).

The implementation of these proxy disclosure enhancements occurred during a period of relatively limited contemporaneous securities law changes, making it an ideal setting for examining the isolated effects of enhanced mandatory disclosure (Robinson et al., 2011). While the Sarbanes-Oxley Act of 2002 had introduced significant corporate governance reforms several years earlier, the 2007 proxy rules represented the most substantial change to executive compensation disclosure requirements since the early 1990s (Core et al., 2008; Bebchuk and Fried, 2004). This timing allows researchers to attribute observed changes in corporate disclosure behavior more directly to the proxy disclosure enhancements rather than to confounding regulatory changes.

Theoretical Framework

The Proxy Disclosure Enhancements of 2007 provide a compelling setting to examine how mandatory disclosure regulations affect voluntary disclosure decisions through their impact on unsophisticated investors. The theoretical framework underlying this relationship draws on the information processing limitations and behavioral biases that characterize unsophisticated investors, who typically lack the financial expertise, resources, or analytical capabilities to process complex corporate information effectively (Hirshleifer and Teoh, 2003; Miller, 2010).

Unsophisticated investors, defined as individual retail investors with limited financial knowledge and analytical capabilities, face significant challenges in processing and interpreting corporate disclosures (Bloomfield, 2002). These investors often exhibit bounded rationality, limited attention, and susceptibility to presentation effects when evaluating corporate information (Libby et al., 2002). The academic literature demonstrates that unsophisticated investors tend to focus on salient, easily interpretable information while struggling to extract meaningful insights from complex financial disclosures (Hirshleifer and Teoh, 2003). This creates an information asymmetry not only between managers and investors,

but also between sophisticated and unsophisticated investor groups.

The connection between mandatory disclosure enhancements and voluntary disclosure decisions operates through managers' recognition of how different investor constituencies process and respond to information. When mandatory disclosure rules improve the ability of unsophisticated investors to understand and evaluate corporate performance, managers may adjust their voluntary disclosure strategies to maintain optimal communication with this important stakeholder group (Miller, 2010; Bloomfield, 2002). The enhanced proxy disclosures serve as a catalyst that changes the information environment and potentially alters the cost-benefit calculus underlying voluntary disclosure decisions.

Hypothesis Development

The economic mechanisms linking the 2007 Proxy Disclosure Enhancements to voluntary disclosure decisions through the unsophisticated investor channel operate through several interconnected pathways. First, the enhanced mandatory disclosures improve unsophisticated investors' ability to process and understand executive compensation information, thereby reducing information processing costs and increasing their engagement with corporate disclosures (Hirshleifer and Teoh, 2003; Bloomfield, 2002). Prior to the 2007 rules, executive compensation information was often presented in fragmented and technical formats that were difficult for unsophisticated investors to interpret effectively (Carter et al., 2009). The standardized tabular presentations and plain English requirements of the new rules significantly reduced the cognitive burden on these investors, enabling them to better understand compensation arrangements and their implications for firm performance.

This improved information processing capability among unsophisticated investors creates incentives for managers to increase voluntary disclosure as a means of maintaining favorable investor relations and stock price support. Research demonstrates that

unsophisticated investors constitute a significant portion of the shareholder base for many public companies and can meaningfully influence stock prices through their trading decisions (Miller, 2010; Hirshleifer and Teoh, 2003). When these investors become more capable of processing corporate information due to enhanced mandatory disclosures, managers face increased pressure to provide additional voluntary information that helps explain firm performance, strategic decisions, and future prospects in accessible formats. The enhanced proxy disclosures essentially raise the baseline level of information sophistication among retail investors, creating demand for more comprehensive voluntary disclosure that complements the newly mandated compensation information (Larcker et al., 2011; Clarkson et al., 2011).

Furthermore, the increased transparency regarding executive compensation may heighten unsophisticated investors' scrutiny of management decisions and firm performance, leading managers to provide more voluntary disclosure as a means of justifying compensation arrangements and demonstrating value creation. The behavioral finance literature suggests that unsophisticated investors are particularly sensitive to perceived fairness and alignment between executive pay and firm performance (Bebchuk and Fried, 2004; Core et al., 2008). When enhanced mandatory disclosures make compensation arrangements more visible and understandable to these investors, managers may respond by increasing voluntary disclosure about firm strategy, performance drivers, and future growth opportunities to provide context that supports their compensation levels. This theoretical prediction is consistent with signaling theory, which suggests that managers use disclosure to communicate private information and distinguish their firms from lower-quality competitors (Spence, 1973; Ross, 1977). The competing theoretical prediction would suggest that enhanced mandatory disclosure could substitute for voluntary disclosure, reducing managers' incentives to provide additional information. However, the specific characteristics of unsophisticated investors and their information processing limitations suggest that complementarity between mandatory and voluntary disclosure is more likely than substitution in this setting.

H1: The implementation of the 2007 Proxy Disclosure Enhancements leads to an increase in voluntary disclosure among firms with higher proportions of unsophisticated investors.

RESEARCH DESIGN

Sample Selection and Regulatory Framework

Our sample includes all firms in the Compustat universe during the five-year period surrounding the implementation of the Proxy Disclosure Enhancements. The Securities and Exchange Commission (SEC) enacted these regulations in 2007 to enhance disclosure requirements in proxy statements regarding executive compensation, thereby improving shareholder voting information (Larcker et al., 2011). While the Proxy Disclosure Enhancements may have more direct implications for certain firms with complex compensation structures, our analysis examines the broader market-wide effects by including all firms in the Compustat universe. This comprehensive approach allows us to capture potential spillover effects and industry-wide changes in disclosure practices following the regulatory implementation (Armstrong et al., 2010). The treatment variable affects all firms in our sample, as the regulatory change created a new information environment that influenced investor expectations and firm disclosure incentives across the entire market (Shroff et al., 2013).

Model Specification

We employ a pre-post research design to examine the relationship between the Proxy Disclosure Enhancements and voluntary disclosure through the investor channel. Our empirical model builds on established voluntary disclosure frameworks that examine how regulatory changes affect managerial communication with capital markets (Healy and Palepu, 2001; Beyer et al., 2010). The regression model captures the effect of enhanced proxy

disclosure requirements on management forecast frequency, controlling for firm-specific characteristics that prior literature has identified as determinants of voluntary disclosure behavior.

Our baseline specification includes control variables established in the voluntary disclosure literature to isolate the effect of the regulatory change. We control for institutional ownership, as institutional investors demand greater transparency and monitoring (Ajinkya et al., 2005). Firm size captures economies of scale in disclosure production and litigation concerns, while book-to-market ratio reflects growth opportunities and information asymmetry (Waymire, 1985). We include return on assets and stock returns to control for performance-related disclosure incentives, earnings volatility to capture information uncertainty, loss indicators for firms with poor performance, and class action litigation risk to account for legal exposure (Skinner, 1994). The model addresses potential endogeneity concerns through the exogenous nature of the regulatory change, which provides a natural experiment setting that is not driven by firm-specific characteristics or voluntary adoption decisions (Roberts and Whited, 2013).

Mathematical Model

We estimate the following regression model:

$$\text{FreqMF} = \beta_0 + \beta_1\text{Treatment Effect} + \gamma_1\text{Institutional Ownership} + \gamma_2\text{Firm Size} + \gamma_3\text{Book-to-Market} + \gamma_4\text{ROA} + \gamma_5\text{Stock Return} + \gamma_6\text{Earnings Volatility} + \gamma_7\text{Loss} + \gamma_8\text{Class Action Risk} + \gamma_9\text{Time Trend} + \varepsilon$$

Variable Definitions

The dependent variable, FreqMF, measures management forecast frequency as the number of earnings forecasts issued by firm management during the fiscal year, capturing the extent of voluntary disclosure through forward-looking guidance (Hirst et al., 2008). The

Treatment Effect variable is an indicator variable equal to one for the post-Proxy Disclosure Enhancements period from 2007 onwards, and zero otherwise, affecting all firms in our sample as the regulatory change altered the overall information environment.

Our control variables follow established measures in the voluntary disclosure literature (Ajinkya et al., 2005). Institutional Ownership represents the percentage of shares held by institutional investors, as these sophisticated investors demand greater transparency and create incentives for voluntary disclosure. Firm Size is measured as the natural logarithm of market value of equity, capturing economies of scale in disclosure production and greater analyst following for larger firms. Book-to-Market ratio reflects growth opportunities and information asymmetry, with higher ratios indicating value firms that may have different disclosure incentives. ROA measures return on assets as an indicator of firm performance, as managers of well-performing firms have incentives to communicate good news to investors. Stock Return captures the firm's stock performance over the previous twelve months, reflecting market-based performance measures that influence disclosure decisions. Earnings Volatility measures the standard deviation of earnings, capturing information uncertainty and the potential value of managerial guidance in reducing uncertainty. Loss is an indicator variable for firms reporting negative earnings, as these firms face different disclosure incentives and litigation risks. Class Action Risk measures the firm's exposure to securities litigation, capturing legal costs that may influence disclosure decisions. These variables collectively capture the key economic determinants of voluntary disclosure identified in prior research and their relationship to investor information demand.

Sample Construction

We construct our sample using data from multiple sources over a five-year event window centered on the 2007 implementation of the Proxy Disclosure Enhancements. The sample period spans two years before and two years after the regulation, with the

post-regulation period beginning from 2007 onwards to capture the full impact of the regulatory change. We obtain financial statement data from Compustat, management forecast data from I/B/E/S, auditor information from Audit Analytics, and stock return data from CRSP to construct our comprehensive dataset (Chuk et al., 2013). This multi-source approach ensures we capture all relevant dimensions of firm characteristics and disclosure behavior necessary for our analysis.

Our final sample consists of 18,045 firm-year observations representing all firms in the Compustat universe during our sample period. We apply standard data filters to ensure data quality, requiring non-missing values for key variables and excluding financial firms due to their unique regulatory environment (Barth et al., 2008). In our research design, all firms serve as treated units in the post-2007 period, as the Proxy Disclosure Enhancements created market-wide changes in investor expectations and information processing that affected disclosure incentives across all firms. The pre-2007 period serves as the baseline for comparison, allowing us to identify changes in voluntary disclosure patterns attributable to the enhanced proxy disclosure environment. This comprehensive sample construction approach provides sufficient statistical power to detect the economic effects of regulatory changes on voluntary disclosure behavior while maintaining external validity across different firm types and industries (Gow et al., 2016).

DESCRIPTIVE STATISTICS

Sample Description and Descriptive Statistics

Our sample comprises 18,045 firm-year observations representing 4,856 unique firms over the period 2005 to 2009. This timeframe captures the implementation and effects of proxy disclosure enhancements, providing a comprehensive view of the regulatory change's impact on unsophisticated investors.

We examine several key variables that capture firm characteristics and investment behavior. Institutional ownership (linstown) exhibits substantial variation, with a mean of 54.6% and standard deviation of 32.1%. The distribution shows considerable cross-sectional heterogeneity, ranging from minimal institutional presence (0.1%) to complete institutional dominance (111.0%), with the latter suggesting potential measurement issues or unique ownership structures. The interquartile range spans from 25.7% to 82.3%, indicating that most firms in our sample attract meaningful institutional investment.

Firm size (lsize) displays typical characteristics for publicly traded companies, with a mean log market value of 5.976 and standard deviation of 2.018. The distribution appears reasonably symmetric given the proximity of mean and median values. Book-to-market ratios (lbtm) average 0.579, consistent with prior literature examining similar samples of public firms. The negative minimum value (-1.019) likely reflects firms with very high market valuations relative to book values, characteristic of growth companies during this period.

Profitability measures reveal interesting patterns. Return on assets (lroa) shows a negative mean (-0.038) but positive median (0.025), suggesting the presence of firms with substantial losses that skew the distribution leftward. This finding aligns with the loss indicator variable (lloss), which shows that 30.2% of firm-year observations report losses. Stock returns (lsaret12) similarly exhibit negative mean performance (-0.015) with high volatility (standard deviation of 0.461), reflecting the challenging market conditions during our sample period, which encompasses the 2008 financial crisis.

Earnings volatility (levol) and analyst forecast risk (lcalrisk) demonstrate the expected positive skewness common in risk measures, with means substantially exceeding medians. The mutual fund frequency variable (freqMF) shows considerable variation, with a mean of 0.644 and standard deviation of 0.910, indicating heterogeneous levels of mutual fund attention across sample firms.

The treatment variables confirm our research design's structure. The post_law indicator shows that 58.2% of observations occur in the post-implementation period, while all firms receive treatment (treated = 1.000), consistent with the universal nature of the regulatory change. These descriptive statistics provide confidence in our sample's representativeness and support the validity of our empirical approach to examining proxy disclosure enhancements' effects.

RESULTS

Regression Analysis

Our regression analysis examines the association between the 2007 Proxy Disclosure Enhancements and voluntary disclosure levels among firms with varying proportions of unsophisticated investors. Across all three specifications, we find a consistent negative treatment effect, indicating that the implementation of enhanced mandatory proxy disclosures is associated with a decrease in voluntary disclosure. In Specification (1), which presents the baseline model without controls, we observe a treatment effect of -0.0797 ($t = -7.72$, $p < 0.001$). The inclusion of control variables in Specification (2) attenuates this effect to -0.0634 ($t = -4.89$, $p < 0.001$), while the most restrictive specification with firm fixed effects (Specification 3) yields a treatment effect of -0.0455 ($t = -3.77$, $p < 0.001$). The negative coefficient suggests that enhanced mandatory disclosure requirements lead to a reduction in voluntary disclosure, contrary to our theoretical prediction of complementarity between mandatory and voluntary disclosure channels.

The treatment effects demonstrate strong statistical significance across all specifications, with p-values well below conventional thresholds, providing robust evidence of a systematic relationship between the regulatory change and voluntary disclosure behavior. From an economic magnitude perspective, the treatment effects represent meaningful changes

in voluntary disclosure levels. The most conservative estimate from Specification (3) suggests that the 2007 Proxy Disclosure Enhancements are associated with a 4.55 percentage point decrease in voluntary disclosure, representing a substantial economic impact given the baseline levels of voluntary disclosure in our sample. The progression of R-squared values across specifications—from 0.0019 in the baseline model to 0.8531 with firm fixed effects—demonstrates the importance of controlling for firm-specific heterogeneity and time-invariant characteristics that influence disclosure decisions. The dramatic improvement in explanatory power when firm fixed effects are included suggests that unobserved firm characteristics play a crucial role in voluntary disclosure decisions, reinforcing the importance of our most restrictive specification for causal inference.

The control variables exhibit patterns largely consistent with prior disclosure literature, though their significance varies across specifications. Firm size (lsize) maintains a positive and significant association with voluntary disclosure across all specifications, consistent with established findings that larger firms face greater disclosure demands and have more resources to support comprehensive disclosure programs (Lang and Lundholm, 1993). Institutional ownership (linstown) shows a positive association in Specification (2) but becomes insignificant when firm fixed effects are included, suggesting that the cross-sectional relationship may be driven by time-invariant firm characteristics rather than dynamic changes in ownership structure. The negative association between stock return volatility (levol) and voluntary disclosure in Specification (3) aligns with theoretical predictions that managers may reduce disclosure during periods of uncertainty to avoid potential litigation costs (Skinner, 1994). Loss firms (lloss) consistently exhibit lower levels of voluntary disclosure across specifications, supporting the notion that managers strategically reduce disclosure when reporting unfavorable performance outcomes. Importantly, our results do not support Hypothesis H1, which predicted that enhanced mandatory proxy disclosures would increase voluntary disclosure among firms with higher proportions of unsophisticated investors.

Instead, we find evidence consistent with a substitution effect, where enhanced mandatory disclosures appear to crowd out voluntary disclosure efforts. This finding suggests that managers may view the enhanced proxy disclosures as satisfying investor information demands, reducing their incentives to provide additional voluntary information. The substitution effect we document challenges the complementarity mechanism proposed in our hypothesis development and suggests that regulatory enhancements in mandatory disclosure may have unintended consequences for the overall information environment by reducing managers' voluntary communication with stakeholders.

CONCLUSION

We examined whether the 2007 Proxy Disclosure Enhancements, which mandated enhanced disclosure of executive compensation in proxy statements, influenced firms' voluntary disclosure behavior through the investors channel. Our research question centered on understanding how regulatory improvements in mandatory disclosure quality affect managers' incentives to provide voluntary information, particularly when enhanced transparency enables more informed shareholder oversight and decision-making. Using a comprehensive sample of public companies around the regulatory change, we employed a difference-in-differences research design to identify the causal impact of enhanced proxy disclosures on voluntary disclosure practices.

Our empirical results provide robust evidence that the Proxy Disclosure Enhancements led to a significant reduction in voluntary disclosure. Across all three specifications, we find consistently negative and statistically significant treatment effects. The baseline specification yields a treatment effect of -0.0797 (t-statistic = 7.72, $p < 0.001$), indicating that affected firms reduced their voluntary disclosure by approximately 8 percentage points following the regulatory change. When we include firm-level control variables in specification (2), the treatment effect remains economically meaningful at -0.0634 (t-statistic = 4.89, $p < 0.001$), and

the R-squared increases substantially to 0.2547, suggesting that our control variables capture important cross-sectional variation in disclosure behavior. The most stringent specification (3), which likely includes firm fixed effects given the high R-squared of 0.8531, continues to show a significant negative effect of -0.0455 (t-statistic = 3.77, $p < 0.001$). The consistency of these results across specifications with varying degrees of control for unobserved heterogeneity strengthens our confidence in the causal interpretation. These findings suggest that enhanced mandatory disclosure in proxy statements operates as a substitute for voluntary disclosure, consistent with theoretical predictions that managers reduce costly voluntary disclosures when mandatory disclosures already satisfy investor information demands (Dye, 1985; Verrecchia, 1983).

The implications of our findings extend to multiple stakeholders in the capital markets. For regulators, our results demonstrate that mandatory disclosure regulations can have unintended consequences on the overall information environment. While the Proxy Disclosure Enhancements successfully improved the quality and comparability of executive compensation information, they simultaneously reduced the quantity of voluntary information available to investors. This substitution effect suggests that regulators should consider the broader equilibrium effects on corporate disclosure when designing new mandatory reporting requirements (Leuz and Wysocki, 2016). The net effect on investor welfare depends on whether the improved quality of mandatory disclosures compensates for the reduction in voluntary information, highlighting the importance of comprehensive cost-benefit analyses in regulatory design.

For corporate managers, our findings indicate that enhanced mandatory disclosure requirements can provide opportunities to reduce disclosure costs while maintaining adequate communication with stakeholders. However, managers should carefully consider whether reducing voluntary disclosure following mandatory disclosure improvements might signal

negative private information or reduce their ability to differentiate their firms from competitors (Beyer et al., 2010). For investors, our results suggest that regulatory improvements in mandatory disclosure may come at the cost of reduced voluntary information, potentially affecting their ability to obtain firm-specific insights beyond standardized regulatory requirements. This trade-off is particularly relevant for institutional investors who rely heavily on comprehensive information sets for investment decisions and corporate governance activities (Bushee and Noe, 2000).

Our study has several limitations that suggest caution in interpreting the results and point toward fruitful avenues for future research. First, while we document a significant reduction in voluntary disclosure following the Proxy Disclosure Enhancements, we do not directly measure the quality or value-relevance of the information that firms ceased to provide voluntarily. Future research could examine whether the reduction in voluntary disclosure represents the elimination of less useful information or the loss of valuable firm-specific insights. Second, our analysis focuses on the aggregate effect across all firms, but the substitution between mandatory and voluntary disclosure may vary systematically across firm characteristics such as governance quality, institutional ownership, or information asymmetry levels. Investigating these cross-sectional differences could provide deeper insights into the mechanisms through which the investors channel operates.

Future research could also explore the long-term dynamics of this substitution effect, as firms and investors may adjust their disclosure and information-processing strategies over time following regulatory changes. Additionally, examining similar regulatory changes in other disclosure domains could help establish the generalizability of our findings beyond executive compensation disclosures. Another promising avenue involves investigating whether the reduction in voluntary disclosure affects real outcomes such as cost of capital, analyst following, or investment efficiency, which would provide direct evidence on the welfare

implications of the documented substitution effect. Finally, future studies could explore how technological advances in information processing and dissemination might moderate the relationship between mandatory and voluntary disclosure, particularly as investors become more sophisticated in utilizing standardized regulatory information (Blankespoor et al., 2014).

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Table 1

Descriptive Statistics

Variables	N	Mean	Std. Dev.	P25	Median	P75
FreqMF	18,045	0.6445	0.9100	0.0000	0.0000	1.6094
Treatment Effect	18,045	0.5823	0.4932	0.0000	1.0000	1.0000
Institutional ownership	18,045	0.5465	0.3208	0.2574	0.5809	0.8228
Firm size	18,045	5.9763	2.0179	4.5194	5.9058	7.3195
Book-to-market	18,045	0.5791	0.5635	0.2750	0.4769	0.7395
ROA	18,045	-0.0382	0.2507	-0.0220	0.0248	0.0702
Stock return	18,045	-0.0145	0.4614	-0.2780	-0.0879	0.1438
Earnings volatility	18,045	0.1509	0.2914	0.0227	0.0552	0.1498
Loss	18,045	0.3024	0.4593	0.0000	0.0000	1.0000
Class action litigation risk	18,045	0.2560	0.2575	0.0701	0.1561	0.3481
Time Trend	18,045	1.9447	1.4164	1.0000	2.0000	3.0000

This table shows the descriptive statistics. All continuous variables are winsorized at the 1st and 99th percentiles.

Table 2
Pearson Correlations
Proxy Disclosure Enhancements Unsophisticated Investors

	Treatment Effect	FreqMF	Institutional ownership	Firm size	Book-to-market	ROA	Stock return	Earnings volatility	Loss	Class action litigation risk
Treatment Effect	1.00	**-0.04**	**0.12**	-0.01	**0.16**	**-0.05**	**-0.03**	0.01	**0.06**	**-0.15**
FreqMF	**-0.04**	1.00	**0.44**	**0.44**	**-0.13**	**0.23**	**-0.02**	**-0.14**	**-0.26**	0.00
Institutional ownership	**0.12**	**0.44**	1.00	**0.63**	**-0.07**	**0.26**	**-0.13**	**-0.20**	**-0.20**	0.01
Firm size	-0.01	**0.44**	**0.63**	1.00	**-0.30**	**0.35**	**0.02**	**-0.25**	**-0.38**	**0.07**
Book-to-market	**0.16**	**-0.13**	**-0.07**	**-0.30**	1.00	**0.03**	**-0.21**	**-0.12**	**0.12**	**-0.14**
ROA	**-0.05**	**0.23**	**0.26**	**0.35**	**0.03**	1.00	**0.19**	**-0.52**	**-0.62**	**-0.15**
Stock return	**-0.03**	**-0.02**	**-0.13**	**0.02**	**-0.21**	**0.19**	1.00	**-0.04**	**-0.20**	**-0.06**
Earnings volatility	0.01	**-0.14**	**-0.20**	**-0.25**	**-0.12**	**-0.52**	**-0.04**	1.00	**0.36**	**0.23**
Loss	**0.06**	**-0.26**	**-0.20**	**-0.38**	**0.12**	**-0.62**	**-0.20**	**0.36**	1.00	**0.18**
Class action litigation risk	**-0.15**	0.00	0.01	**0.07**	**-0.14**	**-0.15**	**-0.06**	**0.23**	**0.18**	1.00

This table shows the Pearson correlations for the sample. Correlations that are significant at the 0.05 level or better are highlighted in bold.

Table 3

The Impact of Proxy Disclosure Enhancements on Management Forecast Frequency

	(1)	(2)	(3)
Treatment Effect	-0.0797*** (7.72)	-0.0634*** (4.89)	-0.0455*** (3.77)
Institutional ownership		0.8019*** (17.37)	-0.0587 (0.93)
Firm size		0.0948*** (10.65)	0.1356*** (10.91)
Book-to-market		-0.0328** (2.29)	-0.0204 (1.51)
ROA		0.1178*** (3.68)	0.0275 (0.97)
Stock return		-0.0423*** (3.47)	-0.0376*** (4.06)
Earnings volatility		0.0816*** (2.66)	-0.1197*** (3.19)
Loss		-0.2137*** (10.74)	-0.1197*** (8.31)
Class action litigation risk		-0.0311 (1.04)	-0.0227 (1.16)
Time Trend		-0.0227*** (3.86)	-0.0016 (0.28)
Firm fixed effects	No	No	Yes
N	18,045	18,045	18,045
R^2	0.0019	0.2547	0.8531

Notes: t-statistics in parentheses. *, **, and *** represent significance at the 10%, 5%, and 1% level, respectively.