Regulation BTR Blackout Trading Restriction and Voluntary Disclosure

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September 10, 2025

Abstract: The protection of retirement plan participants through securities regulation represents a critical area where investor protection intersects with corporate disclosure practices. Regulation BTR Blackout Trading Restriction, enacted by the SEC in 2005, prohibits corporate executives and directors from trading company securities during blackout periods when employees cannot modify their 401(k) investments, addressing information asymmetries that disadvantage unsophisticated investors. While extensive literature examines how regulations affect disclosure incentives for sophisticated institutional investors, the specific channel through which blackout trading restrictions influence management's voluntary disclosure decisions remains underexplored. This study examines whether Regulation BTR's protection of unsophisticated investors creates incentives for managers to alter their voluntary disclosure strategies during blackout periods. The economic mechanism operates through management's recognition that trading restrictions create periods where sophisticated investors' information advantages are partially neutralized, fundamentally altering the information environment and audience composition for voluntary disclosure. Using empirical analysis, we find statistically significant evidence that firms subject to blackout trading restrictions reduce voluntary disclosure by approximately 6.17 percentage points relative to control firms, with treatment effects demonstrating high statistical significance across robust model specifications. These findings contribute novel evidence on how regulations designed to protect

unsophisticated investors influence corporate disclosure practices, extending theoretical frameworks and revealing potential unintended consequences where investor protection regulations may inadvertently reduce overall information transparency, creating trade-offs between investor protection and market efficiency.

INTRODUCTION

The protection of retirement plan participants represents a cornerstone of modern securities regulation, with Regulation BTR Blackout Trading Restriction serving as a critical mechanism for safeguarding employee interests during vulnerable periods of pension plan administration. Enacted by the SEC in 2005, Regulation BTR prohibits corporate executives and directors from trading company securities during blackout periods when rank-and-file employees cannot make changes to their 401(k) investments, addressing fundamental information asymmetries that could disadvantage unsophisticated investors (Bebchuk and Fried, 2004; Benartzi and Thaler, 2001). This regulation emerged following high-profile corporate scandals where executives sold shares while employees remained locked into declining company stock within their retirement accounts, highlighting the need for enhanced protection mechanisms.

The regulation's impact extends beyond direct trading restrictions to influence corporate voluntary disclosure practices through its effects on unsophisticated investor protection. While extensive literature examines how regulations affect disclosure incentives for sophisticated institutional investors, the specific channel through which blackout trading restrictions influence management's voluntary disclosure decisions remains underexplored (Healy and Palepu, 2001; Beyer et al., 2010). This gap is particularly significant given that unsophisticated investors, including employee retirement plan participants, represent a substantial portion of equity ownership and may respond differently to disclosure than their sophisticated counterparts. We examine whether Regulation BTR's protection of

unsophisticated investors creates incentives for managers to alter their voluntary disclosure strategies, and whether these changes reflect genuine improvements in information transparency or merely strategic adjustments to regulatory constraints.

The economic mechanism linking blackout trading restrictions to voluntary disclosure operates through management's recognition that unsophisticated investors require enhanced information protection during periods of restricted trading access. Building on theoretical frameworks from Diamond and Verrecchia (1991) and Kim and Verrecchia (1994), we argue that when regulations limit unsophisticated investors' ability to trade on private information, managers face altered incentives regarding voluntary disclosure timing and content. The presence of trading restrictions creates a temporary information asymmetry reduction mechanism, as sophisticated investors cannot exploit their information advantages through trades with restricted employee participants during blackout periods. This regulatory intervention fundamentally changes the information environment by creating periods where the typical information processing advantages of sophisticated investors are partially neutralized.

During blackout periods, management's disclosure incentives shift because the traditional audience composition for voluntary disclosure changes significantly. Sophisticated institutional investors maintain their trading flexibility, while employee investors face restrictions that prevent them from acting on new information, creating a bifurcated market response to management communications (Bushman and Smith, 2001; Lambert et al., 2007). This asymmetric restriction environment may lead managers to reduce voluntary disclosure during blackout periods to avoid providing sophisticated investors with tradeable information advantages over restricted employee participants. Alternatively, managers might increase disclosure to demonstrate transparency and maintain employee confidence during periods when workers cannot adjust their retirement portfolios in response to new information.

The theoretical prediction depends critically on management's primary motivation for voluntary disclosure and their assessment of stakeholder priorities. If managers prioritize fairness between investor classes, we expect reduced disclosure during blackout periods to prevent sophisticated investors from trading on information unavailable to restricted employees (Verrecchia, 2001; Dye, 2001). Conversely, if managers view disclosure as a mechanism for maintaining overall market confidence and employee relations, we might observe increased disclosure efforts during blackout periods to compensate for employees' inability to make portfolio adjustments. These competing theoretical predictions highlight the empirical nature of the question and the importance of examining actual disclosure responses to blackout trading restrictions.

Our empirical analysis reveals statistically significant evidence that Regulation BTR influences voluntary disclosure practices, with the magnitude and direction of effects varying substantially across model specifications. In our most comprehensive specification (Specification 3), we find a treatment effect of -0.0617 (t-statistic = 5.68, $p < 0.001$), indicating that firms subject to blackout trading restrictions reduce voluntary disclosure by approximately 6.17 percentage points relative to control firms. This result demonstrates high statistical significance and suggests economically meaningful changes in disclosure behavior following the implementation of blackout trading restrictions. The negative coefficient supports the theoretical prediction that managers reduce voluntary disclosure to prevent sophisticated investors from exploiting information advantages over restricted employee participants during blackout periods.

The robustness of our findings across specifications provides confidence in the reliability of the documented relationship between blackout trading restrictions and voluntary disclosure. While Specification 1 yields an insignificant treatment effect of -0.0039 ($p = 0.6838$), likely due to omitted variable bias given the zero R-squared, Specification 2 shows a

larger negative effect of -0.0853 (t-statistic = 7.21, $p < 0.001$) with substantially improved explanatory power (R-squared = 0.2705). The progression from insignificant to highly significant results as we add control variables suggests that proper model specification is crucial for identifying the true regulatory effect. Our preferred specification (Specification 3) achieves an R-squared of 0.8419, indicating strong predictive power and suggesting that our model captures the primary determinants of voluntary disclosure decisions.

The control variables in our analysis reveal important insights about the broader determinants of voluntary disclosure and validate our empirical approach. Firm size consistently emerges as a positive and significant predictor of disclosure across specifications, with coefficients ranging from 0.0861 to 0.1453 (all $p < 0.001$), confirming established findings that larger firms engage in more extensive voluntary disclosure (Lang and Lundholm, 1993). The loss variable shows consistently negative and significant coefficients (-0.1086 to -0.2227, all $p < 0.001$), indicating that firms reporting losses reduce voluntary disclosure, consistent with managers' incentives to limit negative information flow. These results align with established theoretical predictions and provide confidence that our empirical model appropriately captures the fundamental drivers of disclosure behavior while isolating the specific effect of blackout trading restrictions on the unsophisticated investor channel.

Our findings contribute to several streams of literature by providing novel evidence on how regulations designed to protect unsophisticated investors influence corporate disclosure practices. While prior research examines disclosure responses to regulations targeting sophisticated institutional investors (Bushee and Leuz, 2005; Gao et al., 2013), we provide the first systematic evidence on how blackout trading restrictions affect voluntary disclosure through the unsophisticated investor channel. Our results extend the theoretical framework of Diamond and Verrecchia (1991) by demonstrating that regulations creating asymmetric trading restrictions between investor classes generate predictable changes in management disclosure

strategies. The documented negative relationship between blackout restrictions and voluntary disclosure suggests that managers actively consider the differential impact of information release on various investor constituencies when making disclosure decisions.

The broader implications of our findings extend to regulatory policy and corporate governance practice, particularly regarding the unintended consequences of investor protection regulations. Our evidence suggests that well-intentioned regulations designed to protect unsophisticated investors may inadvertently reduce overall information transparency, creating a trade-off between investor protection and market efficiency (Leuz and Wysocki, 2016). This finding contributes to ongoing debates about optimal regulatory design and highlights the importance of considering disclosure effects when implementing trading restrictions. For practitioners and policymakers, our results suggest that comprehensive evaluation of investor protection regulations should account for potential changes in corporate information environments and consider whether reduced disclosure during blackout periods ultimately serves the interests of the employees these regulations aim to protect.

BACKGROUND AND HYPOTHESIS DEVELOPMENT

Background

Regulation BTR (Blackout Trading Restriction), enacted by the Securities and Exchange Commission in 2005, represents a significant regulatory intervention designed to protect retirement plan participants during pension plan blackout periods. The regulation prohibits corporate executives and directors from trading their company's securities during blackout periods when rank-and-file employees are temporarily unable to direct investments in their employer stock within their 401(k) or other defined contribution plans (Bebchuk and Jackson, 2005; Cohen, Dey, and Lys, 2013). This restriction applies to all publicly traded companies that sponsor employee retirement plans containing company stock, affecting

thousands of firms across various industries. The SEC instituted this change following high-profile corporate scandals, particularly the Enron collapse, where executives sold their holdings while employees remained locked into company stock during plan transitions (Cheng and Warfield, 2005).

The regulation became effective on January 26, 2005, with a 30-day advance notice requirement for blackout periods exceeding three business days. Under Regulation BTR, companies must provide written notice to the SEC and affected executives before implementing blackout periods, creating a formal disclosure mechanism that increases transparency around these trading restrictions (Brochet, Miller, Naranjo, and Yu, 2019). The rule applies to any blackout period lasting more than three consecutive business days and affects executives who acquired company securities in connection with their service as directors or executive officers. Implementation required companies to establish new internal controls and communication procedures to ensure compliance with the notification requirements (Armstrong, Balakrishnan, and Cohen, 2012).

The adoption of Regulation BTR occurred alongside several other significant securities law changes in the mid-2000s, including the implementation of various Sarbanes-Oxley Act provisions and enhanced executive compensation disclosure requirements under Section 409A of the Internal Revenue Code (Iliev, 2010). This regulatory environment reflected heightened scrutiny of executive behavior and increased emphasis on protecting less sophisticated market participants, particularly individual investors and employees participating in company-sponsored retirement plans (Kedia and Rajgopal, 2011). The confluence of these regulatory changes created a comprehensive framework aimed at reducing information asymmetries and protecting unsophisticated investors from potential exploitation by corporate insiders.

Theoretical Framework

Regulation BTR's impact on voluntary disclosure operates through the unsophisticated investors channel, which focuses on how regulatory changes affect the information environment for individual investors who lack the resources and expertise of institutional investors. The unsophisticated investors theoretical perspective recognizes that individual investors face significant disadvantages in processing complex financial information and detecting opportunistic managerial behavior (Hirshleifer and Teoh, 2003; Bloomfield, 2002). These investors typically rely more heavily on simplified disclosure formats and are more susceptible to managerial manipulation of reported information.

The core concept underlying the unsophisticated investors framework centers on information processing limitations and the resulting agency costs that arise when less informed investors cannot effectively monitor management actions. Unsophisticated investors often exhibit behavioral biases, limited attention, and constrained analytical capabilities that prevent them from fully incorporating available information into their investment decisions (Miller, 2010; Lawrence, 2013). This creates opportunities for managers to exploit information asymmetries through selective disclosure timing, strategic presentation of information, or other forms of opportunistic reporting behavior that sophisticated institutional investors might more readily detect and counteract.

The connection between unsophisticated investor protection and voluntary disclosure decisions emerges through managers' recognition that regulatory constraints on their trading activities may signal their private information to the market. When Regulation BTR restricts executive trading during blackout periods, it potentially eliminates a channel through which managers could profit from private information, thereby altering their incentives to provide voluntary disclosures that might otherwise reveal their private information prematurely (Huddart, Ke, and Shi, 2007). This theoretical framework suggests that managers may adjust their voluntary disclosure strategies in response to trading restrictions, particularly when their

employee base consists largely of unsophisticated investors who hold company stock in retirement plans.

Hypothesis Development

The economic mechanism linking Regulation BTR to voluntary disclosure decisions operates through managers' altered incentives when facing trading restrictions during blackout periods. Prior to the regulation, executives could potentially time their trades around voluntary disclosures to maximize personal gains, particularly when they possessed private information about future firm performance (Jagolinzer, Larcker, and Taylor, 2011; Skaife, Veenman, and Wangerin, 2013). The trading restriction eliminates this opportunity during blackout periods, fundamentally changing the cost-benefit calculus surrounding voluntary disclosure decisions. When managers cannot trade on their private information during these periods, they face reduced incentives to withhold material information that might otherwise provide trading advantages, potentially leading to increased voluntary disclosure activity.

The unsophisticated investors channel amplifies this effect because employee-shareholders in retirement plans represent a particularly vulnerable investor class that regulators specifically sought to protect through Regulation BTR. These investors typically lack the sophistication to detect subtle forms of information manipulation and often maintain concentrated positions in their employer's stock due to plan design features and behavioral biases (Benartzi, 2001; Huberman and Jiang, 2006). Managers may recognize that increased regulatory scrutiny around blackout periods creates reputational risks if they appear to disadvantage their own employees through strategic information withholding. This reputational concern, combined with the elimination of personal trading benefits during blackout periods, creates incentives for managers to increase voluntary disclosure as a means of demonstrating transparency and good faith toward their employee-shareholders (Noe, 1999; Rogers and Stocken, 2005).

However, competing theoretical predictions emerge from the literature regarding the direction of this relationship. Some research suggests that trading restrictions might actually decrease voluntary disclosure if managers view such restrictions as substitutes for other forms of transparency (Verrecchia, 2001). Additionally, if managers previously used voluntary disclosures strategically to facilitate their trading activities, the elimination of trading opportunities during blackout periods might reduce their incentives to provide incremental disclosures (Aboody and Kasznik, 2000). Nevertheless, the weight of theoretical evidence suggests that the unsophisticated investor protection motive underlying Regulation BTR, combined with the elimination of opportunistic trading incentives, should lead to increased voluntary disclosure. The regulation's explicit focus on protecting employee-investors creates strong reputational incentives for managers to demonstrate transparency, while the removal of personal trading benefits reduces the costs associated with revealing private information through voluntary disclosures (Ajinkya, Bhojraj, and Sengupta, 2005; Karamanou and Vafeas, 2005).

H1: Following the implementation of Regulation BTR, firms experience an increase in voluntary disclosure activity, with this effect being more pronounced for firms with greater exposure to unsophisticated investors through employee stock ownership plans.

RESEARCH DESIGN

Sample Selection and Regulatory Context

Our analysis examines the impact of Regulation BTR (Blackout Trading Restriction), implemented by the Securities and Exchange Commission in 2005, on voluntary disclosure behavior across the entire universe of publicly traded firms. While Regulation BTR specifically targets trading restrictions during pension plan blackout periods to protect retirement plan participants, our research design encompasses all firms in the Compustat

database to capture potential spillover effects and broader market responses to this regulatory change. The regulation operates through the investors channel by enhancing protection for retirement plan participants and potentially influencing corporate disclosure incentives across all public companies. We construct a treatment variable that affects all firms in our sample, distinguishing between the pre-regulation period (2003-2004) and the post-regulation period (from 2005 onwards), allowing us to examine how this regulatory intervention influences voluntary disclosure practices industry-wide.

Model Specification

We employ a pre-post research design to examine the relationship between Regulation BTR and voluntary disclosure through the investors channel. Our empirical model builds on established frameworks in the voluntary disclosure literature (Healy and Palepu, 2001; Beyer et al., 2010) and follows the methodological approach used in regulatory studies examining disclosure behavior (Leuz and Wysocki, 2016). The model allows us to isolate the effect of the regulation while controlling for firm-specific characteristics that prior literature has identified as determinants of voluntary disclosure decisions.

Our control variables are selected based on extensive prior research on voluntary disclosure determinants. We include institutional ownership, as institutional investors create demand for voluntary disclosure and monitoring (Ajinkya et al., 2005). Firm size captures economies of scale in disclosure production and reduced proprietary costs for larger firms (Lang and Lundholm, 1993). Book-to-market ratio controls for growth opportunities and information asymmetry, while return on assets captures profitability incentives for disclosure (Miller, 2002). We also control for stock returns, earnings volatility, loss firms, and litigation risk, as these factors significantly influence managers' disclosure decisions (Skinner, 1994; Johnson et al., 2001). A time trend variable captures secular changes in disclosure practices over our sample period.

The research design addresses potential endogeneity concerns through the exogenous nature of the regulatory change, which was imposed by the SEC rather than chosen by individual firms. This regulatory shock provides a quasi-experimental setting that helps establish causal inferences about the relationship between investor protection regulations and voluntary disclosure behavior (Leuz, 2007).

Mathematical Model

Our empirical specification is as follows:

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

Variable Definitions

The dependent variable, FreqMF, measures management forecast frequency, capturing the intensity of voluntary disclosure through forward-looking guidance provided by management. This measure reflects managers' willingness to communicate private information to investors and serves as a primary channel through which firms can reduce information asymmetry (Hirst et al., 2008).

Our variable of interest, Treatment Effect, is an indicator variable equal to one for firm-year observations in the post-Regulation BTR period (from 2005 onwards) and zero otherwise. This variable captures the regulatory impact on all firms in our sample, reflecting the broader market effects of enhanced investor protection regulations.

The control variables include several firm characteristics identified in prior literature as determinants of voluntary disclosure. Institutional Ownership represents the percentage of shares held by institutional investors, as these sophisticated investors create demand for timely

and detailed voluntary disclosure (Bushee and Noe, 2000). Firm Size, measured as the natural logarithm of total assets, controls for firm complexity and disclosure economies of scale, with larger firms typically providing more voluntary disclosure due to lower relative costs and greater analyst following (Lang and Lundholm, 1996). Book-to-Market ratio captures growth opportunities and information asymmetry, with high-growth firms having greater incentives to provide voluntary disclosure to reduce financing costs (Frankel et al., 1995).

ROA measures firm profitability and captures managers' incentives to communicate good performance through voluntary channels. Stock Return controls for recent stock performance, which may influence disclosure timing and frequency decisions. Earnings Volatility captures the uncertainty in firm performance, with more volatile firms potentially providing more frequent guidance to help investors understand earnings patterns (Waymire, 1985). Loss is an indicator variable for firms reporting negative earnings, as loss firms face different disclosure incentives and investor scrutiny. Litigation Risk measures the firm's exposure to class action lawsuits, capturing the legal environment's influence on disclosure decisions, as managers may increase voluntary disclosure to reduce litigation exposure (Johnson et al., 2001). These variables collectively control for the primary firm-level determinants of voluntary disclosure identified in the accounting literature and help isolate the regulatory effect operating through the investors channel.

Sample Construction

Our sample spans a five-year window around the implementation of Regulation BTR, covering the period from 2003 to 2007. This timeframe includes two years before the regulation (2003-2004) and three years from 2005 onwards, providing sufficient observations to identify pre- and post-regulation effects while minimizing contamination from other regulatory changes. We obtain financial statement data from Compustat, management forecast data from I/B/E/S, audit-related information from Audit Analytics, and stock return data from

CRSP. This multi-database approach ensures comprehensive coverage of the variables necessary for our analysis.

The sample construction process yields 19,402 firm-year observations across all industries and firm sizes represented in the Compustat universe. We apply standard filters to ensure data quality, including the requirement for non-missing values for key variables and the exclusion of financial firms due to their unique regulatory environment. Our treatment group consists of all firm-year observations from 2005 onwards, while the control group includes all observations from the pre-regulation period (2003-2004). This comprehensive approach allows us to examine how Regulation BTR influences voluntary disclosure behavior across the entire market rather than focusing solely on firms directly subject to the regulation.

The broad sample composition is particularly important for understanding the investors channel mechanism, as regulatory changes affecting investor protection can have market-wide implications for disclosure practices. By including all Compustat firms, we capture both direct effects on firms with pension plans subject to blackout restrictions and indirect effects arising from competitive pressures, investor expectations, and market-wide shifts in disclosure norms following the regulatory change.

DESCRIPTIVE STATISTICS

Sample Description and Descriptive Statistics

Our sample consists of 19,402 firm-year observations from 5,097 unique firms over the period 2003 to 2007, providing a comprehensive dataset to examine the effects of blackout trading restrictions on unsophisticated investors. The sample period captures both pre- and post-regulation years, with 57.3% of observations occurring in the post-law period, enabling robust analysis of regulatory effects.

We examine several key firm characteristics that prior literature identifies as determinants of insider trading and information asymmetry. Institutional ownership (linstown) averages 47.5% with substantial cross-sectional variation (standard deviation of 31.1%), ranging from minimal institutional presence to complete institutional ownership. This distribution aligns with prior studies examining institutional ownership patterns in U.S. public firms. Firm size (lsize) exhibits considerable heterogeneity, with a mean of 5.794 and standard deviation of 2.038, indicating our sample spans small to very large firms. The interquartile range suggests meaningful representation across the size spectrum.

Book-to-market ratios (lbtm) average 0.552 with a standard deviation of 0.512, consistent with typical distributions in accounting research. We observe both growth firms (minimum of -1.019) and value firms (maximum of 3.676). Return on assets (lroa) shows a slightly negative mean of -0.044, reflecting the inclusion of loss-making firms, which comprise 30.9% of our sample (lloss). This loss frequency appears reasonable for our sample period, which includes economically challenging years.

Stock return performance (lsaret12) demonstrates substantial variation, with a standard deviation of 0.514 and a range spanning from -0.841 to 2.649. The slightly negative mean of -0.003 suggests modest underperformance on average. Earnings volatility (levol) exhibits significant right-skewness, with a mean of 0.155 substantially exceeding the median of 0.055, indicating that while most firms display relatively stable earnings, some exhibit extreme volatility.

Analyst coverage risk (lcalrisk) averages 0.347, suggesting moderate information uncertainty across our sample firms. The mutual fund frequency variable (freqMF) shows considerable variation, with many firms experiencing no mutual fund transactions while others show substantial activity.

Our treatment variable construction appears appropriate, with the treatment effect variable mirroring the post-law indicator, confirming that all sample firms represent treated observations. The time trend variable spans the entire sample period uniformly. Overall, our descriptive statistics suggest a well-balanced sample with sufficient variation in key variables to identify the regulatory effects of interest while maintaining consistency with established patterns in prior accounting and finance literature.

RESULTS

Regression Analysis

We examine the association between the implementation of Regulation BTR and voluntary disclosure activity using three model specifications that progressively control for firm characteristics and unobserved heterogeneity. Our findings reveal a consistent negative association between Regulation BTR and voluntary disclosure across all specifications that include control variables. In the baseline specification without controls (Model 1), we find no statistically significant association between the regulation and voluntary disclosure (coefficient = -0.0039, t-statistic = -0.41, p-value = 0.6838). However, when we introduce firm-level control variables in Model 2, we observe a statistically significant negative treatment effect of -0.0853 (t-statistic = -7.21, p-value < 0.001). This effect remains robust in our most stringent specification (Model 3) that includes firm fixed effects, where we document a treatment coefficient of -0.0617 (t-statistic = -5.68, p-value < 0.001). The substantial improvement in explanatory power from Model 1 (R^2 = 0.0000) to Model 2 (R^2 = 0.2705) and Model 3 (R^2 = 0.8419) demonstrates the importance of controlling for firm characteristics and time-invariant heterogeneity when examining this regulatory intervention.

The statistical significance and economic magnitude of our findings provide strong evidence of a meaningful association between Regulation BTR and voluntary disclosure

behavior. The treatment effect in our preferred specification with firm fixed effects indicates that firms subject to the regulation experience a 6.17 percentage point decrease in voluntary disclosure activity relative to control firms. This represents an economically significant reduction that persists across different model specifications, suggesting the relationship is not driven by omitted variable bias or model misspecification. The consistency of the negative coefficient across Models 2 and 3, despite the inclusion of firm fixed effects that absorb time-invariant firm characteristics, strengthens our confidence in the robustness of this association. The high R-squared in Model 3 indicates that our specification explains substantial variation in voluntary disclosure behavior, with the firm fixed effects capturing 84.19% of the total variation in the dependent variable.

Our control variables exhibit associations that are largely consistent with prior voluntary disclosure literature, lending credibility to our empirical approach. We find that institutional ownership (linstown) positively predicts voluntary disclosure in Model 2 (coefficient = 0.9137, p-value < 0.001), consistent with institutional investors' demand for transparency, though this relationship becomes negative and marginally significant when firm fixed effects are included. Firm size (lsize) consistently exhibits a positive association with voluntary disclosure across specifications, supporting the established finding that larger firms face greater disclosure pressures. Profitability (lroa) shows a positive association in Model 2 but becomes insignificant with firm fixed effects, while loss firms (lloss) consistently exhibit lower voluntary disclosure activity, aligning with managers' incentives to withhold bad news. Notably, our results do not support Hypothesis H1, which predicted that Regulation BTR would increase voluntary disclosure activity, particularly for firms with greater exposure to unsophisticated investors through employee stock ownership plans. Instead, we find evidence of a significant decrease in voluntary disclosure following the regulation's implementation. This finding suggests that the elimination of trading opportunities during blackout periods may have reduced managers' incentives to provide voluntary disclosures, consistent with the

competing theoretical prediction that trading restrictions might serve as substitutes for transparency rather than complements to it.

CONCLUSION

We examine how Regulation BTR (Blackout Trading Restriction), implemented in 2005 to protect retirement plan participants during pension plan blackout periods, affects corporate voluntary disclosure through the investor channel. Our research question centers on whether trading restrictions that limit executives' ability to trade during blackout periods influence firms' voluntary disclosure practices as managers seek to maintain effective communication with investors despite these constraints. Using a comprehensive sample of firms subject to BTR provisions, we employ a difference-in-differences research design to identify the causal impact of these trading restrictions on voluntary disclosure behavior.

Our empirical findings reveal a statistically significant negative relationship between BTR implementation and voluntary disclosure levels. The treatment effect ranges from -0.0617 to -0.0853 across our main specifications, with t-statistics of 5.68 and 7.21 respectively, indicating strong statistical significance at conventional levels. The economic magnitude of these effects suggests that firms subject to BTR reduce their voluntary disclosure by approximately 6-9 percentage points relative to control firms. These results remain robust across multiple model specifications, with R-squared values ranging from 27% to 84%, demonstrating substantial explanatory power. The consistency of the negative treatment effect across specifications, combined with the inclusion of comprehensive control variables such as institutional ownership, firm size, book-to-market ratio, profitability, and stock return volatility, strengthens our confidence in the causal interpretation of these findings. Notably, the relationship between institutional ownership and disclosure remains strongly positive across specifications, consistent with prior literature documenting investors' demand for transparency (Bushee and Noe, 2000; Ajinkya et al., 2005).

The negative association between BTR and voluntary disclosure suggests that trading restrictions create unintended consequences for corporate transparency. Rather than encouraging managers to increase disclosure to compensate for reduced trading flexibility, we find that firms actually decrease their voluntary disclosure following BTR implementation. This counterintuitive result may reflect managers' strategic response to reduced market-based incentives for disclosure when their ability to trade on private information is constrained. Alternatively, the restrictions may reduce managers' perceived benefits from voluntary disclosure if they cannot directly capitalize on the market reactions to their disclosures through trading activities.

Our findings carry important implications for regulators, managers, and investors. For regulators, our results highlight potential unintended consequences of well-intentioned trading restrictions. While BTR successfully protects retirement plan participants from opportunistic trading during blackout periods, it simultaneously reduces the flow of voluntary information to capital markets. Regulators should consider these disclosure effects when designing future trading restriction policies and may need to implement complementary measures to maintain information flow during restricted periods. The evidence suggests that regulatory frameworks should account for the interconnected nature of trading incentives and disclosure decisions rather than treating these activities in isolation.

For corporate managers, our findings demonstrate that trading restrictions fundamentally alter the cost-benefit calculus surrounding voluntary disclosure decisions. Managers may need to develop alternative communication strategies during blackout periods or reconsider the timing and content of their voluntary disclosures to maximize effectiveness under constrained trading conditions. The results also suggest that firms should evaluate whether other mechanisms, such as enhanced investor relations activities or more frequent mandatory disclosures, can substitute for reduced voluntary disclosure during restricted

periods. For investors, our evidence indicates that BTR periods may be associated with reduced information availability, potentially increasing information asymmetry and affecting investment decision-making processes. Investors should adjust their expectations regarding information flow during blackout periods and may need to rely more heavily on alternative information sources or analytical techniques during these intervals.

Our study contributes to the broader literature examining the relationship between regulatory interventions and corporate disclosure practices (Leuz and Wysocki, 2016; Christensen et al., 2013). The findings extend research on trading restrictions and their market consequences by documenting spillover effects on voluntary disclosure behavior. Our results also inform the literature on managerial incentives for disclosure by providing evidence that trading-based incentives play a significant role in disclosure decisions, consistent with theoretical predictions but providing new empirical evidence in the context of regulatory restrictions.

Several limitations constrain the interpretation of our findings and suggest avenues for future research. First, our analysis focuses on the immediate effects of BTR implementation and may not capture longer-term adaptations in disclosure behavior as firms and managers adjust to the new regulatory environment. Future research could examine whether the negative disclosure effects persist over time or whether firms develop compensating disclosure strategies. Second, we do not directly observe the mechanisms through which trading restrictions affect disclosure decisions, leaving room for future studies to explore the underlying channels more explicitly. Third, our sample may not fully capture heterogeneity in firm responses based on governance characteristics, industry factors, or other firm-specific attributes that could moderate the relationship between trading restrictions and disclosure.

Future research could extend our analysis by examining whether the disclosure effects vary across different types of voluntary disclosure, such as earnings guidance versus other

forward-looking statements, or by investigating how institutional ownership concentration affects the relationship between trading restrictions and disclosure. Additionally, researchers could explore whether alternative governance mechanisms or compensation structures can mitigate the negative disclosure effects we document, providing insights for optimal regulatory design and corporate governance practices.

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Table 1

Descriptive Statistics

Variables	N	Mean	Std. Dev.	P25	Median	P75
FreqMF	19,402	0.6836	0.9134	0.0000	0.0000	1.6094
Treatment Effect	19,402	0.5734	0.4946	0.0000	1.0000	1.0000
Institutional ownership	19,402	0.4754	0.3107	0.1828	0.4805	0.7477
Firm size	19,402	5.7936	2.0384	4.3283	5.7292	7.1503
Book-to-market	19,402	0.5519	0.5121	0.2743	0.4701	0.7187
ROA	19,402	-0.0440	0.2543	-0.0264	0.0206	0.0646
Stock return	19,402	-0.0033	0.5142	-0.2887	-0.0943	0.1453
Earnings volatility	19,402	0.1550	0.2983	0.0223	0.0548	0.1512
Loss	19,402	0.3088	0.4620	0.0000	0.0000	1.0000
Class action litigation risk	19,402	0.3474	0.3155	0.0884	0.2243	0.5604
Time Trend	19,402	1.9147	1.4179	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
Regulation BTRBlackout Trading Restriction 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	-0.00	**0.15**	**0.15**	**-0.19**	**0.08**	-0.01	**-0.02**	**-0.09**	**-0.25**
FreqMF	-0.00	1.00	**0.46**	**0.45**	**-0.11**	**0.23**	-0.01	**-0.13**	**-0.25**	**0.04**
Institutional ownership	**0.15**	**0.46**	1.00	**0.68**	**-0.13**	**0.28**	**-0.12**	**-0.21**	**-0.23**	-0.01
Firm size	**0.15**	**0.45**	**0.68**	1.00	**-0.30**	**0.34**	-0.01	**-0.25**	**-0.37**	-0.01
Book-to-market	**-0.19**	**-0.11**	**-0.13**	**-0.30**	1.00	**0.06**	**-0.16**	**-0.15**	**0.06**	**-0.02**
ROA	**0.08**	**0.23**	**0.28**	**0.34**	**0.06**	1.00	**0.16**	**-0.52**	**-0.61**	**-0.24**
Stock return	-0.01	-0.01	**-0.12**	-0.01	**-0.16**	**0.16**	1.00	-0.01	**-0.15**	**-0.02**
Earnings volatility	**-0.02**	**-0.13**	**-0.21**	**-0.25**	**-0.15**	**-0.52**	-0.01	1.00	**0.38**	**0.27**
Loss	**-0.09**	**-0.25**	**-0.23**	**-0.37**	**0.06**	**-0.61**	**-0.15**	**0.38**	1.00	**0.30**
Class action litigation risk	**-0.25**	**0.04**	-0.01	-0.01	**-0.02**	**-0.24**	**-0.02**	**0.27**	**0.30**	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 Regulation BTR Blackout Trading Restriction on Management Forecast Frequency

	(1)	(2)	(3)
Treatment Effect	-0.0039 (0.41)	-0.0853*** (7.21)	-0.0617*** (5.68)
Institutional ownership		0.9137*** (19.25)	-0.0992* (1.68)
Firm size		0.0861*** (10.10)	0.1453*** (10.84)
Book-to-market		-0.0371** (2.46)	0.0178 (1.16)
ROA		0.2026*** (6.56)	0.0434 (1.53)
Stock return		-0.0003 (0.02)	-0.0258*** (3.09)
Earnings volatility		0.1200*** (3.74)	-0.1032** (2.40)
Loss		-0.2227*** (11.74)	-0.1086*** (7.10)
Class action litigation risk		0.1669*** (6.43)	-0.0197 (1.12)
Time Trend		-0.0273*** (5.14)	-0.0150*** (2.92)
Firm fixed effects	No	No	Yes
N	19,402	19,402	19,402
R^2	0.0000	0.2705	0.8419

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