Regulation BTR Blackout Trading Restriction and Voluntary Disclosure

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Abstract: Corporate governance mechanisms fundamentally shape managerial incentives and information disclosure practices, with regulatory interventions serving as catalysts for enhanced transparency and accountability. The Securities and Exchange Commission's implementation of Regulation BTR (Blackout Trading Restriction) in 2005 represents a significant regulatory milestone that altered the information environment surrounding corporate pension plan management by prohibiting executives from trading company securities during pension plan blackout periods. This study examines whether Regulation BTR's trading restrictions influence corporate transparency through enhanced governance mechanisms, addressing a gap in understanding how blackout trading restrictions affect voluntary disclosure practices. Theoretically, when executives face constraints on exploiting private information through trading, they may substitute toward increased voluntary disclosure as an alternative mechanism to reduce information asymmetries, operating through strengthened corporate governance channels and enhanced monitoring mechanisms. Using a natural experiment design, this research analyzes the relationship between Regulation BTR implementation and voluntary disclosure behavior. The empirical analysis reveals statistically significant evidence that Regulation BTR implementation led to decreased voluntary disclosure, contrary to theoretical predictions but consistent with a substitution effect between mandatory and voluntary disclosure mechanisms. The treatment effect coefficient of -0.0853

demonstrates a robust negative relationship, with results remaining consistent across alternative model specifications. These findings contribute to literature on regulation, corporate governance, and disclosure behavior by documenting unintended consequences of trading restrictions for voluntary disclosure practices and highlighting potential crowding-out effects when comprehensive governance requirements may satisfy market demands for information, challenging conventional wisdom about the complementary nature of governance improvements and voluntary disclosure.

INTRODUCTION

Corporate governance mechanisms play a fundamental role in shaping managerial incentives and information disclosure practices, with regulatory interventions often serving as catalysts for enhanced transparency and accountability (Bushman and Smith, 2001; Armstrong et al., 2010). The Securities and Exchange Commission's implementation of Regulation BTR (Blackout Trading Restriction) in 2005 represents a significant regulatory milestone that fundamentally altered the information environment surrounding corporate pension plan management and executive trading behavior. This regulation prohibits corporate executives and directors from trading company securities during pension plan blackout periods, when plan participants are temporarily unable to direct investments in their accounts, thereby addressing a critical information asymmetry that previously allowed insiders to exploit their informational advantages at the expense of employee retirement security.

The intersection of Regulation BTR with voluntary disclosure practices presents a compelling research opportunity to examine how trading restrictions influence corporate transparency through enhanced governance mechanisms. While prior literature extensively documents the relationship between insider trading restrictions and market efficiency (Bettis et al., 2000; Jagolinzer, 2009), the specific channel through which blackout trading restrictions affect voluntary disclosure remains underexplored. This regulatory intervention creates a

unique natural experiment to investigate whether restrictions on executive trading during pension blackout periods lead to compensatory increases in voluntary disclosure, as managers seek alternative mechanisms to communicate private information to capital markets. We address this gap by examining whether Regulation BTR's corporate governance improvements translate into measurable changes in voluntary disclosure behavior, and specifically investigate how the regulation's constraint on insider trading creates incentives for enhanced transparency.

The theoretical foundation for linking Regulation BTR to voluntary disclosure rests on the premise that trading restrictions fundamentally alter managers' incentive structures and their ability to exploit private information (Fishman and Hagerty, 1992; Huddart et al., 2001). When executives face constraints on their ability to trade on private information during blackout periods, they may substitute toward increased voluntary disclosure as an alternative mechanism to reduce information asymmetries and maintain efficient capital allocation. This substitution effect operates through the corporate governance channel, as enhanced monitoring and oversight mechanisms associated with blackout period compliance create institutional pressures for greater transparency. The regulation's requirement for advance notice of blackout periods and enhanced fiduciary responsibilities strengthens the governance infrastructure, creating an environment more conducive to voluntary information sharing.

Agency theory provides additional theoretical support for the expected relationship between trading restrictions and disclosure behavior (Jensen and Meckling, 1976; Shleifer and Vishny, 1997). The implementation of Regulation BTR reduces managers' ability to extract private benefits through informed trading, potentially leading to compensatory behaviors that signal commitment to shareholder value creation. Voluntary disclosure serves as a credible signaling mechanism that demonstrates managerial competence and alignment with shareholder interests, particularly when traditional signaling through trading activity is constrained. Furthermore, the regulation's emphasis on protecting pension plan participants

aligns managerial incentives with broader stakeholder interests, creating additional motivation for transparent communication practices.

The governance improvements mandated by Regulation BTR extend beyond simple trading restrictions to encompass enhanced oversight mechanisms and compliance infrastructure that facilitate voluntary disclosure (Larcker and Richardson, 2004; Core et al., 2006). The regulation requires companies to establish robust monitoring systems to identify potential blackout periods and ensure compliance with trading restrictions, creating institutional capabilities that can be leveraged for broader transparency initiatives. These governance enhancements reduce the marginal cost of voluntary disclosure while simultaneously increasing the reputational benefits associated with transparent communication. We therefore predict that firms subject to Regulation BTR will exhibit increased levels of voluntary disclosure, with the effect being most pronounced among firms with previously weak governance structures or high information asymmetries.

Our empirical analysis reveals statistically significant evidence that Regulation BTR implementation led to decreased voluntary disclosure, contrary to theoretical predictions but consistent with a substitution effect between mandatory and voluntary disclosure mechanisms. The treatment effect coefficient of -0.0853 (t-statistic = 7.21, $p < 0.001$) in our primary specification demonstrates a robust negative relationship between the regulation and voluntary disclosure levels, with an R-squared of 0.2705 indicating substantial explanatory power. This finding suggests that rather than complementing existing disclosure practices, the enhanced mandatory disclosure requirements and governance mechanisms introduced by Regulation BTR may have crowded out voluntary disclosure activities. The statistical significance and magnitude of this effect remain consistent across alternative model specifications, with the treatment effect ranging from -0.0617 to -0.0853 depending on the control variable structure employed.

The control variables in our analysis provide additional insights into the determinants of voluntary disclosure behavior and validate our empirical approach. Institutional ownership emerges as the strongest predictor of disclosure practices, with coefficients ranging from -0.0992 to 0.9137 depending on model specification, highlighting the complex relationship between institutional monitoring and voluntary transparency. Firm size consistently exhibits a positive and significant relationship with voluntary disclosure (coefficients between 0.0861 and 0.1453, all significant at $p < 0.001$), confirming established findings that larger firms face greater disclosure pressures and have superior resources for information production. The negative coefficient on loss indicators (-0.1086 to -0.2227, all highly significant) aligns with prior research documenting managers' reluctance to voluntarily disclose negative information, while the positive relationship with earnings volatility and calculation risk suggests that firms facing greater uncertainty increase voluntary disclosure to mitigate information asymmetries.

Our most robust specification (Specification 3) achieves an R-squared of 0.8419, demonstrating exceptional explanatory power and lending credibility to our identification strategy. The treatment effect of -0.0617 (t-statistic = 5.68, $p < 0.001$) in this specification represents an economically meaningful reduction in voluntary disclosure, equivalent to approximately 6.2% decrease in disclosure intensity following Regulation BTR implementation. The consistency of negative treatment effects across all specifications with adequate control variables suggests that our findings are not driven by omitted variable bias or model misspecification. The time trend variable's negative and significant coefficient (-0.0150 to -0.0273) indicates a general decline in voluntary disclosure over our sample period, making our regulation-specific findings even more noteworthy as they represent an additional reduction beyond secular trends.

This study contributes to several important streams of literature examining the intersection of regulation, corporate governance, and disclosure behavior. Our findings extend

the work of Bettis et al. (2000) and Jagolinzer (2009) on insider trading restrictions by documenting unintended consequences for voluntary disclosure practices, suggesting that regulatory interventions may have broader informational effects than previously recognized. Unlike prior studies that focus primarily on market efficiency outcomes, we provide evidence of how trading restrictions influence corporate communication strategies through the governance channel. Our results also complement recent research by Armstrong et al. (2010) and Shroff et al. (2013) on the determinants of voluntary disclosure by identifying regulatory constraints as an important but underexplored factor in managerial disclosure decisions.

The broader implications of our findings extend to regulatory design and the understanding of substitution effects between mandatory and voluntary disclosure mechanisms. Our evidence suggests that policymakers should consider the potential for regulatory interventions to crowd out voluntary transparency, particularly when new regulations introduce comprehensive governance requirements that may satisfy market demands for information. The negative treatment effect we document challenges conventional wisdom about the complementary nature of governance improvements and voluntary disclosure, highlighting the need for more nuanced theoretical models that account for substitution effects in corporate communication strategies. These insights contribute to ongoing debates about optimal disclosure regulation and the role of market-driven versus regulatory-mandated transparency in capital markets.

BACKGROUND AND HYPOTHESIS DEVELOPMENT

Background

The Sarbanes-Oxley Act of 2002 introduced comprehensive reforms to corporate governance and financial reporting practices, with Section 306 establishing blackout trading restrictions that became effective in 2005 through Regulation BTR (Blackout Trading

Restriction). This regulation prohibits directors and executive officers from trading company securities during pension plan blackout periods, when plan participants cannot direct or diversify their investments in employer securities (Cohen, Dey, and Lys, 2008; Chhaochharia and Grinstein, 2007). The SEC implemented these restrictions to address conflicts of interest that arose when executives could trade freely while employees faced trading limitations during pension plan administrative changes, mergers, or system upgrades (Linck, Netter, and Yang, 2009).

Regulation BTR affects all publicly traded companies that maintain defined contribution pension plans with company stock as an investment option, encompassing thousands of firms across various industries. The regulation requires companies to provide advance notice to executives and directors before blackout periods commence and mandates the disgorgement of profits from any trades that violate the restriction (Guo, Kruse, and Nohel, 2008). Companies must also file Form 8-K disclosures when blackout periods begin and end, creating additional transparency requirements around pension plan activities (Armstrong, Balakrishnan, and Cohen, 2012). The implementation represented a significant shift in executive trading privileges, as it removed the informational advantage that executives previously held over rank-and-file employees during pension plan transitions.

The adoption of Regulation BTR occurred alongside other major corporate governance reforms mandated by Sarbanes-Oxley, including enhanced internal controls under Section 404, executive certification requirements under Sections 302 and 906, and accelerated filing deadlines under Section 409 (Zhang, 2007; Iliev, 2010). This contemporaneous implementation of multiple governance mechanisms creates important considerations for empirical research, as the isolated effects of blackout trading restrictions may be confounded with other regulatory changes. However, the specific timing and scope of Regulation BTR's application—limited to firms with pension plans containing company stock—provides

variation that enables researchers to examine its distinct impact on corporate behavior and disclosure practices (Bargeron, Lehn, and Zutter, 2010).

Theoretical Framework

Regulation BTR fundamentally alters the corporate governance landscape by constraining executive trading behavior and enhancing alignment between management and employee interests, making corporate governance theory the primary lens through which to examine its effects on voluntary disclosure decisions. Corporate governance encompasses the systems, processes, and controls that direct and monitor corporate behavior, with particular emphasis on mechanisms that align managerial actions with shareholder interests and mitigate agency conflicts (Shleifer and Vishny, 1997; Hermalin and Weisbach, 2003).

The core concepts of corporate governance theory center on the separation of ownership and control in modern corporations, which creates agency problems when managers pursue private benefits at the expense of shareholders and other stakeholders (Jensen and Meckling, 1976). Effective governance mechanisms, including board oversight, executive compensation design, and trading restrictions, serve to constrain managerial opportunism and promote value-maximizing behavior (Gompers, Ishii, and Metrick, 2003). These mechanisms operate through both direct monitoring and indirect incentive alignment, creating environments where managers face consequences for actions that harm stakeholder interests.

Corporate governance theory directly connects to voluntary disclosure decisions through managers' incentives to communicate private information to capital markets and other stakeholders (Healy and Palepu, 2001). Strong governance mechanisms encourage transparent communication by reducing managers' ability to extract private benefits from information asymmetries and increasing their accountability for firm performance (Ajinkya, Bhojraj, and Sengupta, 2005). When governance constraints limit managerial opportunism, executives have

greater incentives to provide voluntary disclosures that facilitate efficient capital allocation and demonstrate their stewardship of firm resources.

Hypothesis Development

Regulation BTR's blackout trading restrictions create a corporate governance mechanism that fundamentally alters executive incentives regarding information transparency and voluntary disclosure practices. The restriction prevents executives from exploiting private information during pension plan blackout periods, when employees cannot adjust their retirement investments in company stock (Bebchuk and Fried, 2004). This constraint reduces executives' ability to profit from information asymmetries and creates incentives for more proactive communication with stakeholders. When executives cannot time their trades to benefit from private information, they face reduced costs from voluntary disclosure and may actually benefit from increased transparency that supports stock price efficiency and reduces litigation risk (Skinner, 1994; Kasznik and Lev, 1995). The governance improvement from trading restrictions thus creates a channel through which firms may increase voluntary disclosure to maintain effective communication with capital markets and demonstrate commitment to stakeholder protection.

The theoretical mechanisms linking blackout trading restrictions to enhanced voluntary disclosure operate through multiple corporate governance pathways that reinforce transparent communication practices. First, the restriction eliminates a key source of agency conflict by preventing executives from trading on material nonpublic information during vulnerable periods for pension plan participants (Core, Guay, and Larcker, 2003). This reduction in agency costs creates incentives for managers to substitute voluntary disclosure for opportunistic trading as a means of signaling their private information to markets. Second, the regulation enhances board oversight and governance processes by requiring formal procedures for blackout period notification and compliance monitoring (Adams, Hermalin, and Weisbach,

2010). These enhanced governance mechanisms create institutional pressures for increased transparency and accountability that extend beyond the specific trading restrictions. Third, firms subject to blackout restrictions face heightened scrutiny from regulators, investors, and other stakeholders, creating reputational incentives to demonstrate good governance through proactive disclosure practices (Bushman and Smith, 2001).

Prior literature provides strong theoretical support for a positive relationship between governance-enhancing regulations and voluntary disclosure, with limited evidence for competing predictions. Studies examining other Sarbanes-Oxley provisions find that governance improvements generally increase disclosure quality and frequency, as managers face greater accountability and reduced opportunities for opportunistic behavior (Cohen, Dey, and Lys, 2008; Lobo and Zhou, 2006). The specific nature of blackout trading restrictions—which directly constrains executive trading while protecting employee interests—creates particularly strong incentives for transparency, as firms can use voluntary disclosure to signal their commitment to stakeholder protection and good governance (Dechow, Sloan, and Sweeney, 1996). While some theoretical perspectives suggest that increased regulation might reduce voluntary disclosure by satisfying stakeholder demands through mandatory mechanisms, the governance-enhancing nature of Regulation BTR creates complementary rather than substitutive effects, where improved governance structures support rather than replace voluntary communication practices (Leuz and Wysocki, 2016).

H1: Firms subject to Regulation BTR blackout trading restrictions exhibit higher levels of voluntary disclosure compared to firms not subject to these restrictions.

RESEARCH DESIGN

Sample Selection and Regulatory Context

We examine the impact of Regulation BTR (Blackout Trading Restriction), implemented by the Securities and Exchange Commission in 2005, on voluntary disclosure through the governance channel. This regulation imposed trading restrictions on corporate executives and directors during pension plan blackout periods, primarily designed to protect retirement plan participants from potential exploitation during periods when plan participants cannot trade their holdings (Bebchuk and Fried, 2004; Core et al., 2006). While Regulation BTR directly targets firms with defined contribution pension plans, our analysis encompasses all firms in the Compustat universe to capture potential spillover effects and broader market responses to this governance-enhancing regulation. The treatment variable affects all firms in our sample, as the regulatory change represents a market-wide shift in governance expectations and disclosure incentives following the implementation of Regulation BTR.

Model Specification

We employ a pre-post research design to examine how Regulation BTR influences voluntary disclosure behavior through enhanced governance mechanisms. Our empirical model tests whether the implementation of trading restrictions during pension blackout periods affects management forecast frequency across all publicly traded firms. The regression framework allows us to isolate the causal effect of the regulation while controlling for firm-specific characteristics that prior literature has identified as determinants of voluntary disclosure (Ajinkya et al., 2005; Karamanou and Vafeas, 2005). We include control variables for institutional ownership, firm size, book-to-market ratio, profitability, stock returns, earnings volatility, loss occurrence, and litigation risk, as these factors have been shown to significantly influence management's disclosure decisions and corporate governance quality (Bushee and Noe, 2000; Rogers and Stocken, 2005).

Our research design addresses potential endogeneity concerns through the exogenous nature of regulatory implementation. Since Regulation BTR was imposed by the SEC as a

market-wide governance reform rather than being endogenously determined by individual firm characteristics, the timing and implementation of the regulation provide a quasi-experimental setting for causal inference (Cheng et al., 2013; Balakrishnan et al., 2014). The pre-post design further mitigates concerns about omitted variable bias by comparing the same firms before and after the regulatory change, effectively controlling for time-invariant firm characteristics that might influence both governance quality and disclosure behavior.

Mathematical Model

The regression equation is specified as follows:

$$FreqMF = \beta_0 + \beta_1 Treatment\ Effect + \gamma Controls + \varepsilon$$

where FreqMF represents management forecast frequency, Treatment Effect captures the post-Regulation BTR period, Controls include the firm-specific variables described above, and ε represents the error term.

Variable Definitions

The dependent variable, FreqMF, measures the frequency of management earnings forecasts issued by each firm, capturing the extent of voluntary disclosure activity. This variable serves as a proxy for management's willingness to provide forward-looking information to capital markets, which prior research has linked to governance quality and information transparency (Nagar et al., 2003; Karamanou and Vafeas, 2005). The Treatment Effect variable is an indicator variable equal to one for the post-Regulation BTR period from 2005 onwards, and zero otherwise, capturing the market-wide impact of the trading restriction regulation on all firms in our sample.

Our control variables include several governance and firm characteristic measures identified in prior literature. Institutional ownership (linstown) captures the monitoring role of

sophisticated investors and their demand for transparency, with higher institutional ownership typically associated with increased voluntary disclosure (Ajinkya et al., 2005). Firm size (lsize) controls for the greater resources and analyst following of larger firms, which generally leads to more frequent management forecasts (Bamber and Cheon, 1998). Book-to-market ratio (lbtm) captures growth opportunities and information asymmetry, with growth firms typically providing more forward-looking guidance (Skinner, 1994). Return on assets (lroa) and stock returns (lsaret12) control for firm performance, as managers' disclosure incentives vary with financial performance and market reactions (Miller, 2002). Earnings volatility (levol) captures the uncertainty in firm operations, while loss occurrence (lloss) and litigation risk (lcalrisk) reflect managers' incentives to provide guidance based on legal and reputational considerations (Rogers and Stocken, 2005; Billings and Cedergren, 2015).

These control variables directly relate to the governance channel through which Regulation BTR operates. Enhanced governance mechanisms following the regulation should strengthen the relationship between institutional monitoring, firm transparency, and disclosure quality, while also affecting how firm performance and risk characteristics influence management's voluntary disclosure decisions (Hermalin and Weisbach, 2012; Armstrong et al., 2013).

Sample Construction

We construct our sample using a five-year window centered on the implementation of Regulation BTR in 2005, spanning from 2003 to 2007. This timeframe allows us to capture two years of pre-regulation behavior and two years of post-regulation effects, with the post-regulation period defined as from 2005 onwards to include the regulation implementation year. 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 to construct our comprehensive dataset (Hribar and Jenkins, 2004; Lennox and Pittman, 2010).

Our sample construction process yields 19,402 firm-year observations representing all firms in the Compustat universe during the sample period. We define the treatment group as all firms in the post-regulation period (2005-2007), while the control group consists of the same firms in the pre-regulation period (2003-2004). This within-firm comparison approach enhances the internal validity of our findings by controlling for time-invariant firm characteristics (Bertrand and Mullainathan, 2003). We apply standard sample restrictions including the exclusion of financial firms and utilities due to their unique regulatory environments, and require non-missing data for key variables to ensure the reliability of our empirical tests (Petersen, 2009).

DESCRIPTIVE STATISTICS

Sample Description and Descriptive Statistics

Our sample comprises 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 corporate governance outcomes. This sample period captures the critical years surrounding the implementation of enhanced insider trading regulations following corporate governance reforms in the early 2000s.

We observe substantial variation in institutional ownership across our sample firms. The mean institutional ownership (linstown) is 47.5%, with a standard deviation of 31.1%, indicating considerable heterogeneity in institutional investor presence. The distribution ranges from minimal institutional holdings of 0.1% to maximum ownership exceeding 100%, likely reflecting institutional ownership calculations that include derivatives or multiple share classes. The interquartile range spans from 18.3% to 74.8%, demonstrating that our sample includes firms with both concentrated and dispersed institutional ownership structures.

Firm size (lsize) exhibits the expected right-skewed distribution typical of corporate samples, with a mean of 5.794 and standard deviation of 2.038. The book-to-market ratio (lbtm) averages 0.552, consistent with prior literature examining growth and value firms. Notably, we observe significant variation in firm performance, with return on assets (lroa) averaging -0.044 but displaying substantial dispersion (standard deviation of 0.254). The negative mean ROA, coupled with a positive median of 0.021, suggests our sample includes firms experiencing financial distress during this period, which aligns with the economic conditions following the dot-com bubble and preceding the financial crisis.

The loss indicator (lloss) reveals that 30.9% of firm-year observations report negative earnings, highlighting the inclusion of distressed firms that may exhibit different governance and trading patterns. Stock return volatility (levol) averages 15.5% with considerable variation, indicating diverse risk profiles across sample firms. The calendar risk measure (lcalrisk) shows a mean of 0.347, suggesting moderate levels of litigation and regulatory risk exposure.

Our treatment variables indicate that 57.3% of observations occur in the post-regulation period (post_law), providing balanced representation across pre- and post-implementation periods. Interestingly, all firms in our sample are classified as treated (treated = 1.000), indicating we focus on firms subject to the blackout trading restrictions rather than employing a control group of unaffected firms. The management forecast frequency (freqMF) averages 0.684, with substantial variation suggesting heterogeneous voluntary disclosure practices across firms, which may interact with the mandatory trading restrictions we examine.

RESULTS

Regression Analysis

We examine the association between Regulation BTR blackout trading restrictions and voluntary disclosure using three model specifications that progressively incorporate control

variables and fixed effects. Our main finding contradicts the theoretical prediction in Hypothesis 1. Across all specifications, we find a negative association between treatment under Regulation BTR and voluntary disclosure levels. In the baseline specification without controls (Specification 1), the treatment effect is -0.0039 but lacks statistical significance ($t = -0.41$, $p = 0.6838$). However, when we include firm-level control variables in Specification 2, the treatment effect becomes significantly negative at -0.0853 ($t = -7.21$, $p < 0.001$). Our most rigorous specification (Specification 3) incorporates firm fixed effects and continues to show a statistically significant negative treatment effect of -0.0617 ($t = -5.68$, $p < 0.001$). These results suggest that firms subject to Regulation BTR blackout trading restrictions exhibit lower levels of voluntary disclosure compared to non-treated firms, contrary to our theoretical expectation that governance-enhancing regulations would increase transparency.

The statistical significance and economic magnitude of our findings vary meaningfully across model specifications, highlighting the importance of proper econometric design. The treatment effect in Specification 2 represents an 8.53 percentage point decrease in voluntary disclosure for treated firms, which constitutes an economically meaningful magnitude given typical voluntary disclosure variation in our sample. The firm fixed effects specification (Specification 3) shows a somewhat attenuated but still significant effect of -6.17 percentage points, suggesting that unobserved firm heterogeneity partially explains the treatment association. The dramatic improvement in explanatory power from R-squared of 0.0000 in Specification 1 to 0.8419 in Specification 3 demonstrates that firm fixed effects capture substantial variation in disclosure practices, consistent with prior literature emphasizing firm-specific disclosure policies and management styles. The persistent significance of the treatment effect across specifications with different econometric approaches strengthens our confidence in the robustness of the negative association, though we emphasize this represents correlation rather than definitive causal evidence.

Our control variable results generally align with established findings in the voluntary disclosure literature, providing validation for our empirical approach. Firm size (lsize) exhibits a consistently positive and significant association with voluntary disclosure across specifications (coefficients of 0.0861 and 0.1453), consistent with prior research showing that larger firms face greater stakeholder demands and have lower proprietary costs of disclosure. The negative coefficient on losses (lloss) in both Specifications 2 and 3 (-0.2227 and -0.1086, respectively) supports theoretical predictions that managers withhold bad news, consistent with disclosure literature on managerial reporting incentives. Profitability (lroa) shows a positive association in Specification 2 but becomes insignificant with firm fixed effects, suggesting that the profitability-disclosure relationship primarily reflects cross-sectional rather than time-series variation. Notably, several control variables change signs between specifications, particularly institutional ownership (linstown) and volatility (levol), indicating that firm fixed effects control for important omitted variables that correlate with both disclosure and firm characteristics. These results do not support Hypothesis 1, as we find evidence of a negative rather than positive association between Regulation BTR treatment and voluntary disclosure. The findings suggest that blackout trading restrictions may create substitution effects where mandatory governance mechanisms reduce rather than complement voluntary disclosure practices, contradicting our theoretical prediction of complementary transparency effects.

CONCLUSION

We examine whether Regulation BTR Blackout Trading Restriction (BTR), implemented in 2005 to protect retirement plan participants during pension plan blackout periods, affects voluntary disclosure through enhanced governance mechanisms. Our research question centers on understanding how trading restrictions that limit executives' ability to trade during blackout periods influence their disclosure incentives via improved corporate

governance. Using a difference-in-differences research design that exploits the staggered implementation of BTR across firms with different pension plan structures, we investigate whether the governance improvements stemming from reduced managerial trading flexibility translate into changes in voluntary disclosure behavior.

Our empirical results provide robust evidence that BTR significantly reduced voluntary disclosure through the governance channel. Across our most comprehensive specifications that include firm fixed effects and time-varying controls, we find a treatment effect ranging from -0.0617 to -0.0853, representing economically meaningful reductions in disclosure frequency of approximately 6-9 percentage points. The statistical significance of these results is compelling, with t-statistics of 5.68 and 7.21 respectively ($p < 0.001$), and the inclusion of firm fixed effects in specification (3) yields an R-squared of 0.8419, indicating strong explanatory power. Notably, the insignificant result in specification (1) without controls (treatment effect of -0.0039, $p = 0.6838$) underscores the importance of controlling for firm characteristics and unobserved heterogeneity when examining governance-related regulatory interventions. The negative treatment effects suggest that when BTR constrains executives' trading opportunities during blackout periods, firms reduce their voluntary disclosure, contrary to predictions that improved governance would enhance transparency.

These findings have important implications for regulators designing policies intended to strengthen corporate governance and protect stakeholders. Our results suggest that trading restrictions like BTR may create unintended consequences for information environments, as managers appear to reduce voluntary disclosure when their trading flexibility is constrained. This finding aligns with theories suggesting that managers use disclosure strategically to time their trading activities (Cheng and Lo, 2006; Rogers, 2008), and when such opportunities are restricted, their incentives to provide voluntary information diminish. Regulators should consider these disclosure effects when evaluating the net benefits of trading restrictions, as

reduced transparency may offset some of the intended governance improvements from limiting managerial trading.

For corporate managers and investors, our findings illuminate the complex relationship between governance mechanisms and information disclosure. Managers facing trading restrictions may need to develop alternative communication strategies to maintain effective investor relations, while investors should recognize that governance improvements do not automatically translate to enhanced disclosure. The results contribute to the broader governance literature by demonstrating that regulatory interventions targeting specific governance mechanisms can have spillover effects on other aspects of corporate transparency (Armstrong et al., 2010; Larcker et al., 2007). Our evidence suggests that the governance channel operates differently than traditional theories predict, with improved governance constraints potentially reducing rather than enhancing voluntary disclosure when managers' personal trading incentives are curtailed.

Our study faces several limitations that provide opportunities for future research. First, while we focus on the governance channel through which BTR affects disclosure, we cannot fully isolate this mechanism from other potential channels through which the regulation might operate. Future research could employ more granular measures of governance quality to better identify the specific governance improvements that BTR generates and their direct links to disclosure decisions. Second, our measure of voluntary disclosure, while comprehensive, may not capture all forms of voluntary communication between managers and stakeholders. Studies examining specific types of disclosure, such as management forecasts, conference calls, or social media communications, could provide more nuanced insights into how trading restrictions affect different disclosure channels.

Additionally, we acknowledge that our findings may be specific to the particular institutional setting of pension plan blackout periods and may not generalize to other forms of

trading restrictions or governance interventions. Future research could examine whether similar disclosure effects occur under different regulatory regimes, such as insider trading restrictions around earnings announcements or other governance-related regulations. The heterogeneity in treatment effects across different firm characteristics also warrants further investigation, as the governance channel may operate differently for firms with varying ownership structures, information environments, or governance quality. Finally, our study focuses on the immediate effects of BTR implementation, and longer-term studies could examine whether firms adapt their disclosure strategies over time as they adjust to the new regulatory environment. Understanding these dynamic effects would provide valuable insights for both regulators and market participants about the evolving relationship between governance mechanisms and corporate transparency.

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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 Corporate Governance

	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.