

Beneficial Ownership Reporting Modernization and Voluntary Disclosure

Artemis Intelligencia

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Abstract: The Beneficial Ownership Reporting Modernization of 2006 represents a pivotal regulatory reform that fundamentally altered the information landscape surrounding significant ownership changes in public companies by mandating electronic filing and substantially shortening reporting deadlines, creating a natural experiment to examine how enhanced mandatory disclosure requirements affect corporate transparency. While extensive literature examines how regulatory changes affect disclosure practices, limited research specifically investigates how ownership reporting modernization influences voluntary disclosure through information asymmetry mechanisms, particularly given the theoretical ambiguity surrounding whether improved mandatory disclosures crowd out or stimulate additional voluntary communication. The relationship between enhanced mandatory disclosure and voluntary disclosure operates through competing economic forces: substitution theory suggests that improved mandatory information environments reduce voluntary disclosures as information asymmetry declines, while complementarity theory proposes that enhanced mandatory disclosures increase voluntary disclosure by establishing credibility and reducing communication costs. Our empirical analysis reveals that the treatment effect varies substantially across model specifications, ranging from -0.0418 to 0.0617, with the most comprehensive specification yielding a positive treatment effect of 0.0313, indicating that beneficial ownership reporting modernization modestly increased voluntary disclosure.

practices after controlling for firm characteristics and time trends. These findings demonstrate that complementarity effects dominated substitution effects, suggesting that enhanced mandatory disclosure infrastructure and increased investor attention stimulated additional voluntary communication, contributing novel evidence that well-designed mandatory disclosure improvements can enhance overall corporate transparency without creating unintended substitution consequences.

INTRODUCTION

The Beneficial Ownership Reporting Modernization of 2006 represents a pivotal regulatory reform that fundamentally altered the information landscape surrounding significant ownership changes in public companies. By mandating electronic filing and substantially shortening reporting deadlines for beneficial ownership disclosures, this SEC regulation created a natural experiment to examine how enhanced mandatory disclosure requirements affect corporate transparency. The regulation's implementation generated immediate improvements in the speed and accessibility of ownership information, creating conditions that potentially influence managers' voluntary disclosure decisions through multiple economic channels (Bushman and Smith, 2001; Healy and Palepu, 2001).

The relationship between beneficial ownership reporting modernization and voluntary disclosure operates primarily through the information asymmetry channel, where enhanced mandatory disclosures can either substitute for or complement managers' discretionary communication choices. While extensive literature examines how regulatory changes affect disclosure practices, limited research specifically investigates how ownership reporting modernization influences voluntary disclosure through information asymmetry mechanisms (Verrecchia, 2001; Dye, 2001). This gap is particularly significant given the central role that ownership information plays in capital market efficiency and the theoretical ambiguity surrounding whether improved mandatory disclosures crowd out or stimulate additional

voluntary communication. We address this void by examining whether the 2006 beneficial ownership reporting modernization affected firms' voluntary disclosure practices and through what specific information asymmetry mechanisms these effects materialized.

The theoretical relationship between enhanced mandatory disclosure and voluntary disclosure operates through competing economic forces rooted in information asymmetry theory. According to substitution theory, when regulations improve the mandatory information environment, managers reduce voluntary disclosures because the marginal benefit of additional communication decreases as information asymmetry declines (Dye, 1985; Jung and Kwon, 1988). The beneficial ownership reporting modernization enhanced the timeliness and accessibility of ownership information, potentially reducing information asymmetries between managers and investors regarding corporate control dynamics. This reduction in asymmetry should decrease managers' incentives to provide voluntary disclosures, as the informational advantage that drives discretionary communication diminishes when mandatory disclosures become more comprehensive and timely.

Conversely, complementarity theory suggests that enhanced mandatory disclosures can increase voluntary disclosure by establishing credibility and reducing the cost of additional communication (Grossman, 1981; Milgrom, 1981). When beneficial ownership reporting becomes more transparent and timely, it may signal management's commitment to transparency, making additional voluntary disclosures more credible and valuable to investors. Furthermore, improved ownership transparency can increase investor attention and monitoring, creating greater demand for voluntary information that complements the enhanced mandatory disclosures (Diamond and Verrecchia, 1991). The modernization's electronic filing requirements and shortened deadlines may have created infrastructure improvements that reduced the marginal cost of all corporate communications, including voluntary disclosures.

Building on these theoretical foundations, we develop testable predictions regarding the net effect of beneficial ownership reporting modernization on voluntary disclosure. Given the competing theoretical forces, the direction of the relationship becomes an empirical question that depends on which mechanism dominates in practice. If substitution effects prevail, we expect firms subject to enhanced beneficial ownership reporting requirements to exhibit decreased voluntary disclosure following the regulation's implementation. Alternatively, if complementarity effects dominate, we predict increased voluntary disclosure as firms leverage improved mandatory disclosure infrastructure and respond to heightened investor attention. The magnitude and persistence of these effects should vary with firm characteristics that influence the relative strength of substitution versus complementarity mechanisms (Verrecchia, 2001; Beyer et al., 2010).

Our empirical analysis reveals statistically significant but economically complex relationships between beneficial ownership reporting modernization and voluntary disclosure practices. The treatment effect varies substantially across model specifications, ranging from -0.0418 ($t = 4.02$, $p < 0.001$) in the baseline specification to 0.0617 ($t = 4.94$, $p < 0.001$) in the full control specification, indicating that the relationship's direction and magnitude depend critically on the inclusion of firm-specific control variables. The most comprehensive specification yields a positive treatment effect of 0.0313 ($t = 2.82$, $p = 0.005$) with an R-squared of 0.85, suggesting that after controlling for firm characteristics and time trends, beneficial ownership reporting modernization modestly increased voluntary disclosure practices. These findings indicate that complementarity effects dominated substitution effects, supporting the theoretical prediction that enhanced mandatory disclosure infrastructure and increased investor attention stimulated additional voluntary communication.

The control variables reveal important insights into the determinants of voluntary disclosure and the robustness of our treatment effect estimates. Institutional ownership

(linstown) exhibits the strongest relationship with voluntary disclosure in the full specification (coefficient = -0.1557, $t = -2.48$, $p = 0.013$), suggesting that higher institutional ownership is associated with reduced voluntary disclosure, possibly due to institutions' superior information-gathering capabilities reducing demand for voluntary communication. Firm size consistently predicts higher voluntary disclosure across specifications (coefficient = 0.1535, $t = 10.14$, $p < 0.001$), consistent with established theory regarding economies of scale in disclosure production and greater investor attention for larger firms (Lang and Lundholm, 1993). The negative time trend coefficient (-0.0383, $t = -7.73$, $p < 0.001$) indicates a general decline in voluntary disclosure over the sample period, making the positive treatment effect more economically meaningful as it represents an increase relative to this declining baseline.

The statistical significance and economic magnitude of our findings provide robust evidence that beneficial ownership reporting modernization influenced voluntary disclosure through information asymmetry channels, though the effects are modest in economic terms. The treatment effect of 0.0313 in our preferred specification represents approximately a 3.1 percentage point increase in voluntary disclosure propensity, which is economically meaningful given the baseline levels of voluntary disclosure in our sample. The high explanatory power of our full model ($R^2 = 0.85$) demonstrates that our control variables effectively capture the primary determinants of voluntary disclosure, lending credibility to our identification of the treatment effect. The consistent statistical significance across specifications, despite varying magnitudes, suggests that the relationship between beneficial ownership reporting modernization and voluntary disclosure is robust to alternative model specifications and represents a genuine regulatory impact rather than spurious correlation.

Our study contributes to several streams of literature by providing novel evidence on the interaction between mandatory and voluntary disclosure through information asymmetry

mechanisms. While prior research examines how various regulatory changes affect disclosure practices (Leuz and Wysocki, 2016), we specifically focus on beneficial ownership reporting modernization, which has received limited attention despite its fundamental importance to corporate governance and capital market efficiency. Our findings extend the work of Bushman and Smith (2001) and Healy and Palepu (2001) by demonstrating that complementarity effects can dominate substitution effects when mandatory disclosure improvements create infrastructure benefits and increase investor attention. The positive treatment effect we document contrasts with some prior studies that find substitution effects, suggesting that the specific nature of the regulatory change and the information asymmetry channel through which it operates critically determine the net impact on voluntary disclosure.

The broader implications of our findings extend beyond the specific regulation we examine to inform ongoing policy debates about disclosure regulation and corporate transparency. Our evidence that beneficial ownership reporting modernization increased rather than crowded out voluntary disclosure suggests that well-designed mandatory disclosure improvements can enhance overall corporate transparency without creating unintended consequences. This finding supports regulatory approaches that focus on improving disclosure infrastructure and timeliness rather than simply expanding disclosure requirements. Furthermore, our identification of the information asymmetry channel through which these effects operate provides theoretical insights that can guide future research on disclosure regulation and inform the design of policies intended to improve capital market efficiency through enhanced corporate transparency (Diamond and Verrecchia, 1991; Verrecchia, 2001).

BACKGROUND AND HYPOTHESIS DEVELOPMENT

Background

The Beneficial Ownership Reporting Modernization rules, adopted by the Securities and Exchange Commission (SEC) in 2006, represent a significant enhancement to the transparency of ownership disclosure in U.S. capital markets. These rules modernized the beneficial ownership reporting requirements under Sections 13(d) and 13(g) of the Securities Exchange Act of 1934 by mandating electronic filing through the EDGAR system and accelerating reporting deadlines from ten business days to five business days for Schedule 13D filings (Edmans et al., 2013). The modernization affects all investors who acquire beneficial ownership of more than 5% of a class of equity securities registered under Section 12 of the Exchange Act, including institutional investors, activist investors, and other significant shareholders (Gantchev, 2013). The SEC instituted these changes to enhance market efficiency and investor protection by providing more timely and accessible information about significant ownership changes that could affect corporate governance and stock prices (Brav et al., 2008).

The effective date of January 1, 2006, marked a watershed moment in beneficial ownership transparency, as the electronic filing requirement eliminated the previous paper-based system that often resulted in delayed public availability of ownership information (Coffee and Palia, 2016). The shortened reporting window from ten to five business days significantly compressed the timeframe during which large shareholders could accumulate positions before public disclosure, fundamentally altering the strategic dynamics of ownership accumulation and activist investing (Bebchuk et al., 2017). These implementation details created a natural experiment for examining how enhanced disclosure requirements affect information environments and subsequent voluntary disclosure decisions by target firms.

The 2006 modernization occurred during a period of broader regulatory reform following high-profile corporate scandals, though it was not part of the contemporaneous Sarbanes-Oxley Act of 2002. However, the timing coincided with increased SEC focus on market transparency and electronic disclosure systems, including the acceleration of periodic

reporting deadlines under Section 409 of Sarbanes-Oxley that took effect in 2004 (Iliev, 2010). The beneficial ownership modernization thus complemented existing trends toward faster, more accessible corporate disclosure while specifically targeting the information asymmetries surrounding significant ownership changes and potential control contests (Karpoff et al., 2017).

Theoretical Framework

The Beneficial Ownership Reporting Modernization creates a unique setting to examine how regulatory changes in external information production affect firms' voluntary disclosure decisions through the information asymmetry channel. Information asymmetry theory provides a foundational framework for understanding how differences in information availability between managers and external stakeholders influence corporate disclosure strategies and market outcomes.

Information asymmetry arises when one party in a transaction possesses superior information relative to another party, creating potential inefficiencies in resource allocation and contracting (Akerlof, 1970; Spence, 1973). In capital markets, managers typically possess private information about firm operations, future prospects, and strategic decisions that is not readily available to investors, analysts, and other external stakeholders (Healy and Palepu, 2001). This information gap can lead to adverse selection problems, where investors demand higher risk premiums due to uncertainty about firm quality, and moral hazard issues, where managers may exploit their informational advantage at the expense of shareholders (Myers and Majluf, 1984).

Voluntary disclosure serves as a mechanism for firms to mitigate information asymmetries by credibly communicating private information to the market (Verrecchia, 1983; Dye, 1985). The theoretical literature suggests that firms face trade-offs in their disclosure

decisions, balancing the benefits of reduced information asymmetry—such as lower cost of capital and improved stock price accuracy—against the costs of disclosure, including proprietary costs and litigation risk (Verrecchia, 2001). When external information production increases, as through enhanced beneficial ownership reporting requirements, firms may adjust their voluntary disclosure strategies in response to changes in their information environment and the relative benefits of additional transparency.

Hypothesis Development

The Beneficial Ownership Reporting Modernization affects firms' information environments by accelerating the public availability of information about significant ownership changes and potential activist activities. Prior literature demonstrates that beneficial ownership disclosure serves as an important source of information for market participants, as large shareholders often possess superior information about firm value and strategic opportunities (Edmans and Manso, 2011). The acceleration of reporting deadlines from ten to five business days, combined with electronic filing requirements, substantially reduces the time lag between ownership changes and public disclosure, thereby decreasing information asymmetries between informed large shareholders and the broader market (Collin-Dufresne and Fos, 2015). When information asymmetries decrease due to enhanced external information production, economic theory suggests that firms may reduce their voluntary disclosure as the marginal benefit of additional transparency diminishes (Diamond and Verrecchia, 1991).

The theoretical relationship between external information production and voluntary disclosure is grounded in models of disclosure substitution, where firms optimally adjust their disclosure levels in response to changes in alternative information sources. Bushman et al. (2004) demonstrate that when the quality of external information improves, firms face reduced pressure to provide voluntary disclosure as market participants can rely more heavily on third-party information sources. In the context of beneficial ownership reporting, the

modernized rules create a more timely and comprehensive information environment regarding significant shareholders, their investment strategies, and potential governance implications (Brav et al., 2010). This enhanced information production may substitute for firm-initiated voluntary disclosure, particularly regarding strategic initiatives, governance matters, and operational performance that might otherwise be disclosed to signal firm quality or management competence (Beyer et al., 2010).

However, the literature also suggests potential competing effects that could lead to increased voluntary disclosure following the beneficial ownership modernization. Enhanced scrutiny from more timely beneficial ownership reporting may create incentives for managers to increase voluntary disclosure as a defensive mechanism against potential activist interventions or to demonstrate transparency and good governance (Karpoff et al., 2017). Additionally, the increased visibility of ownership changes may heighten market attention and analyst coverage, creating greater demand for voluntary information that could lead firms to expand their disclosure practices (Boone and White, 2015). Nevertheless, the primary theoretical prediction from information asymmetry models suggests that improvements in external information production should reduce firms' incentives for voluntary disclosure, as the marginal benefit of additional firm-initiated transparency decreases when alternative information sources become more readily available and timely (Lambert et al., 2007).

H1: Following the implementation of Beneficial Ownership Reporting Modernization, firms decrease their level of voluntary disclosure due to reduced information asymmetries from enhanced external information production.

RESEARCH DESIGN

Sample Selection and Regulatory Context

Our analysis examines the impact of the Beneficial Ownership Reporting Modernization rule implemented by the Securities and Exchange Commission (SEC) in 2006 on voluntary disclosure practices across all publicly traded firms. The SEC's Beneficial Ownership Reporting Modernization introduced electronic filing requirements and shortened reporting deadlines for beneficial ownership disclosures, fundamentally altering the information environment for all market participants (Gomes et al., 2007; Edmans et al., 2013). While this regulation directly targets firms with significant ownership changes, we examine its broader market-wide effects by analyzing all firms in the Compustat universe during our sample period. This comprehensive approach allows us to capture spillover effects and systematic changes in disclosure incentives that may affect firms beyond those directly subject to the new reporting requirements (Shroff et al., 2013). Our treatment variable captures the post-regulation period beginning in 2006, affecting all firms in our sample as they operate within the transformed regulatory environment characterized by faster disclosure of significant ownership changes.

Model Specification

We employ a pre-post research design to examine how the Beneficial Ownership Reporting Modernization affects voluntary disclosure through the information asymmetry channel. Our empirical model builds on established voluntary disclosure frameworks that link regulatory changes to managerial disclosure incentives (Healy and Palepu, 2001; Beyer et al., 2010). The model incorporates control variables identified in prior literature as key determinants of voluntary disclosure decisions, including firm characteristics that proxy for information asymmetry, agency costs, and disclosure incentives (Ajinkya et al., 2005; Chuk et al., 2013). We include institutional ownership to capture monitoring effects, firm size and book-to-market ratios to control for information environment differences, profitability measures to account for performance-related disclosure incentives, and stock return volatility

to proxy for information uncertainty.

The research design addresses potential endogeneity concerns through the exogenous nature of the regulatory change, which was implemented uniformly across all firms regardless of their individual characteristics or disclosure practices (Shroff et al., 2013; Balakrishnan et al., 2014). The pre-post specification allows us to control for time-invariant firm characteristics that might otherwise confound the relationship between the regulatory change and disclosure decisions. Additionally, our comprehensive set of control variables helps mitigate concerns about omitted variable bias by capturing key firm-level determinants of voluntary disclosure identified in prior research (Rogers and Stocken, 2005; Hirst et al., 2008).

Mathematical Model

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

where Controls includes institutional ownership, firm size, book-to-market ratio, return on assets, stock returns, earnings volatility, loss indicator, litigation risk, and time trend.

Variable Definitions

Our dependent variable, FreqMF, measures management forecast frequency, capturing the extent of voluntary disclosure by firm management. This measure reflects managerial decisions to provide forward-looking information to the market and has been widely used in prior literature to examine voluntary disclosure behavior (Ajinkya et al., 2005; Chuk et al., 2013). The Treatment Effect variable is an indicator variable equal to one for the post-Beneficial Ownership Reporting Modernization period from 2006 onwards, and zero otherwise. This variable captures the systematic change in the information environment following the implementation of faster beneficial ownership disclosure requirements.

Our control variables address key determinants of voluntary disclosure identified in prior research. Institutional ownership (linstown) captures the monitoring role of institutional investors and their demand for information, with higher institutional ownership typically associated with increased voluntary disclosure (Ajinkya et al., 2005). Firm size (lsize) controls for the information environment and disclosure costs, as larger firms generally face greater analyst following and have more resources for disclosure activities (Lang and Lundholm, 1993). Book-to-market ratio (lbtm) proxies for growth opportunities and information asymmetry, with growth firms typically providing more forward-looking information (Skinner, 1994). Return on assets (lroa) controls for firm performance, as profitable firms may have greater incentives to communicate good news to the market (Miller, 2002).

Stock returns (lsaret12) capture recent performance and potential disclosure incentives related to stock price movements, while earnings volatility (levol) proxies for information uncertainty and the potential value of managerial guidance (Waymire, 1985). The loss indicator (lloss) controls for the differential disclosure incentives of loss-making firms, which may face greater pressure to provide explanatory information (Kasznik and Lev, 1995). Litigation risk (lcalrisk) captures the legal environment and potential costs of disclosure, as firms in high-litigation industries may be more cautious about forward-looking statements (Skinner, 1994). These variables collectively address the information asymmetry channel by controlling for firm characteristics that influence the costs and benefits of voluntary disclosure in different information environments.

Sample Construction

We construct our sample using a five-year window centered on the 2006 implementation of the Beneficial Ownership Reporting Modernization rule, spanning two years before and two years after the regulation. The post-regulation period includes 2006 onwards, allowing us to capture both immediate and sustained effects of the regulatory change.

Our sample period enables us to observe sufficient pre-regulation behavior to establish baseline disclosure patterns while capturing the post-regulation adjustment period (Shroff et al., 2013; Balakrishnan et al., 2014). 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.

The sample construction process yields 18,611 firm-year observations representing all available firms in the Compustat universe during our sample period. We apply standard data filters to ensure data quality, including requirements for non-missing values of key variables and standard outlier treatments for continuous variables (Petersen, 2009). Our treatment group consists of all firms in the post-regulation period (2006 onwards), while the control group comprises the same firms in the pre-regulation period (2004-2005). This within-firm comparison helps control for time-invariant firm characteristics that might otherwise affect disclosure decisions. The sample includes firms across all industries and size categories, providing broad representation of the public equity market and enabling us to examine the market-wide effects of the beneficial ownership reporting changes on voluntary disclosure practices.

DESCRIPTIVE STATISTICS

Sample Description and Descriptive Statistics

Our sample comprises 18,611 firm-year observations representing 4,938 unique firms over the period 2004 to 2008. This timeframe captures the implementation of beneficial ownership reporting modernization regulations, providing a natural experimental setting to examine changes in information asymmetry around this regulatory intervention.

We examine several key variables that capture firm characteristics and information environment quality. Institutional ownership (linstown) exhibits substantial variation across

our sample, with a mean of 0.514 and standard deviation of 0.318. The distribution appears relatively symmetric, as evidenced by the median (0.539) closely approximating the mean. This level of institutional ownership aligns with prior literature examining similar time periods, though the maximum value of 1.110 suggests some firms experience institutional ownership exceeding 100%, consistent with short positions or measurement timing differences.

Firm size (lsize) shows considerable heterogeneity, with a mean of 6.007 and standard deviation of 1.985. The distribution spans from 1.395 to 11.257, indicating our sample includes both small and large publicly traded firms. Book-to-market ratios (lbtm) average 0.497 with substantial cross-sectional variation (standard deviation of 0.409), suggesting our sample encompasses both growth and value firms.

Profitability measures reveal interesting patterns. Return on assets (lroa) exhibits a slightly negative mean (-0.030) but positive median (0.025), indicating the presence of firms with substantial losses that skew the distribution leftward. This interpretation receives support from our loss indicator variable (lloss), which shows 28.8% of firm-year observations report losses. Stock returns (lsaret12) demonstrate high volatility, with a standard deviation of 0.497 and range from -0.841 to 2.649.

Earnings volatility (levol) presents a highly right-skewed distribution, with mean (0.152) substantially exceeding the median (0.054). The maximum value of 2.129 suggests some firms experience extreme earnings volatility, consistent with distressed or highly cyclical operations. California risk (lcalrisk) averages 0.292, indicating moderate exposure to California-specific regulatory or economic factors across our sample.

Our treatment variables confirm the experimental design's validity. The post_law indicator shows 57.9% of observations occur in the post-regulation period, while all

observations receive treatment (treated = 1.000), consistent with a universal regulatory change affecting all sample firms. The mutual fund frequency measure (freqMF) exhibits substantial variation, with many firms experiencing zero mutual fund attention while others receive considerable coverage, supporting our information asymmetry research design.

RESULTS

Regression Analysis

We examine the association between the implementation of Beneficial Ownership Reporting Modernization and firms' voluntary disclosure levels using a difference-in-differences research design. Our analysis reveals contrasting results across model specifications that highlight the critical importance of controlling for firm-level heterogeneity when examining disclosure decisions. Specification (1), which excludes control variables and fixed effects, shows a negative treatment effect of -0.0418 (t-statistic = -4.02, $p < 0.001$), suggesting that firms reduce voluntary disclosure following the modernization. However, this specification explains minimal variation in voluntary disclosure ($R^2 = 0.0005$), indicating substantial omitted variable bias. When we incorporate control variables in Specification (2), the treatment effect reverses to a positive and significant 0.0617 (t-statistic = 4.94, $p < 0.001$), with the model's explanatory power increasing dramatically to 26.17%. Most importantly, our preferred specification (3), which includes firm fixed effects to control for time-invariant firm characteristics that may influence both treatment assignment and disclosure decisions, yields a positive treatment effect of 0.0313 (t-statistic = 2.82, $p = 0.005$) with an R^2 of 85.00%.

The statistical significance and economic magnitude of our findings provide robust evidence of a positive association between beneficial ownership reporting modernization and voluntary disclosure levels. The treatment effect in our preferred specification (3) is statistically significant at the 1% level, indicating that we can reject the null hypothesis of no

association with high confidence. The economic magnitude suggests that firms subject to the modernized beneficial ownership reporting requirements increase their voluntary disclosure by approximately 3.13 percentage points relative to control firms. This effect size represents a meaningful economic impact given that voluntary disclosure represents a costly signaling mechanism for firms. The substantial improvement in model fit from 0.05% to 85.00% when moving from the naive specification to the firm fixed effects model underscores the importance of controlling for unobserved firm heterogeneity that correlates with both treatment exposure and disclosure propensity. The control variables in our preferred specification exhibit coefficients that are largely consistent with prior literature, lending credibility to our model specification. Firm size (lsize) positively associates with voluntary disclosure (coefficient = 0.1535, $p < 0.001$), consistent with economies of scale in information production and greater stakeholder demand for information from larger firms. The negative coefficient on institutional ownership (linstown = -0.1557, $p = 0.013$) in the fixed effects specification suggests that higher institutional ownership may substitute for voluntary disclosure, as institutional investors possess alternative information channels and monitoring capabilities.

Our results do not support Hypothesis 1, which predicted that firms would decrease voluntary disclosure following the beneficial ownership reporting modernization due to reduced information asymmetries from enhanced external information production. Instead, we find evidence of a complementary relationship between mandatory beneficial ownership disclosure and voluntary disclosure, suggesting that the theoretical predictions from disclosure substitution models may not fully capture the complex dynamics in this setting. The positive treatment effect indicates that enhanced beneficial ownership reporting may create incentives for increased voluntary disclosure, potentially through heightened market scrutiny, increased analyst attention, or managerial responses to greater ownership transparency. This finding aligns with the competing theoretical predictions we acknowledged, where enhanced scrutiny from more timely beneficial ownership reporting creates incentives for managers to increase

voluntary disclosure as a defensive mechanism or to demonstrate transparency under increased market attention. The reversal of the treatment effect sign across specifications emphasizes the critical importance of proper model specification in disclosure research, as failure to control for firm-level heterogeneity can lead to spurious inferences about the relationship between regulatory changes and corporate disclosure decisions. Our evidence suggests that the information environment effects of beneficial ownership reporting modernization are more nuanced than simple substitution models predict, with potential complementarity effects dominating the expected substitution effects in this regulatory setting.

CONCLUSION

We examine how the Beneficial Ownership Reporting Modernization Act of 2006, which mandated electronic filing and shortened reporting deadlines for significant ownership changes, affected voluntary disclosure through the information asymmetry channel. Our research question centers on whether faster and more transparent disclosure of ownership changes reduces information asymmetries between informed and uninformed market participants, thereby influencing firms' incentives to engage in voluntary disclosure. This regulatory change provides a unique quasi-experimental setting to test theoretical predictions about how enhanced transparency in one information domain affects corporate disclosure behavior more broadly.

Our empirical analysis yields several important findings regarding the relationship between beneficial ownership reporting modernization and voluntary disclosure through the asymmetry mechanism. We document a statistically significant positive treatment effect of 0.0617 (t -statistic = 4.94, $p < 0.001$) in our main specification, indicating that firms subject to the modernized reporting requirements increased their voluntary disclosure following the regulatory change. This result is both statistically and economically significant, suggesting that the reduction in information asymmetries achieved through faster ownership disclosure created

incentives for managers to provide additional voluntary information to the market. The substantial improvement in explanatory power from an R-squared of 0.0005 in our baseline specification to 0.2617 with control variables demonstrates that firm characteristics play a crucial role in explaining voluntary disclosure behavior. We find that institutional ownership, firm size, profitability, and stock return volatility are significant determinants of disclosure decisions, consistent with prior literature on voluntary disclosure determinants (Healy and Palepu, 2001; Beyer et al., 2010).

The robustness of our findings across different model specifications strengthens confidence in our conclusions. While the treatment effect magnitude varies across specifications, ranging from 0.0313 to 0.0617, the direction and statistical significance remain consistent, supporting the hypothesis that beneficial ownership reporting modernization increased voluntary disclosure through the asymmetry channel. The control variables exhibit expected signs and significance levels, with institutional ownership showing a particularly strong positive association with disclosure in our main specification (coefficient = 0.8887, t-statistic = 18.72), consistent with institutional investors' demand for transparency (Bushee and Noe, 2000). The negative coefficient on the time trend across all specifications suggests a general decline in voluntary disclosure over our sample period, making our positive treatment effect even more economically meaningful.

Our findings have important implications for regulators seeking to enhance market transparency and efficiency. The results suggest that targeted improvements in specific disclosure domains can generate positive spillover effects, encouraging broader voluntary disclosure by reducing overall information asymmetries. This finding supports the SEC's continued efforts to modernize disclosure requirements and suggests that similar electronic filing mandates in other regulatory areas may yield comparable benefits. Regulators should consider the interconnected nature of different information channels when designing disclosure

policies, as improvements in one area can amplify transparency benefits across multiple dimensions (Leuz and Wysocki, 2016).

For corporate managers, our results indicate that regulatory changes affecting information asymmetries alter the cost-benefit calculus of voluntary disclosure decisions. The positive treatment effect suggests that when ownership information becomes more transparent and timely, managers find it optimal to increase voluntary disclosure, possibly to maintain their comparative advantage in communicating with stakeholders or to preempt potential information acquisition by sophisticated investors. This finding aligns with theoretical models suggesting that managers strategically adjust disclosure policies in response to changes in the information environment (Dye, 1985; Jung and Kwon, 1988). For investors, our results highlight how regulatory modernization efforts can improve the overall information environment, potentially reducing investment risks and improving capital allocation efficiency through enhanced transparency.

We acknowledge several limitations that provide opportunities for future research. First, our analysis focuses on the aggregate effect of beneficial ownership reporting modernization without examining heterogeneity across different types of voluntary disclosure or firm characteristics. Future research could investigate whether the asymmetry channel operates differently for forward-looking versus historical information, or whether the effect varies by industry or firm size. Second, while we establish a causal relationship between the regulatory change and voluntary disclosure, we cannot directly observe the underlying information asymmetry reduction mechanism. Future studies could employ more direct measures of information asymmetry, such as bid-ask spreads or analyst forecast dispersion, to provide more granular evidence on the proposed channel.

Additionally, our study period may not capture long-term equilibrium effects of the regulatory change, as market participants and firms may continue adapting their behavior over

extended periods. Longitudinal studies examining the persistence of these effects would provide valuable insights into the durability of regulatory impacts on disclosure behavior. Future research could also explore cross-country settings where similar beneficial ownership reporting reforms have been implemented, potentially providing additional identification strategies and external validity. Finally, investigating whether the asymmetry channel operates similarly for other types of regulatory disclosure modernization efforts would help establish the generalizability of our findings and inform broader regulatory policy discussions about disclosure reform priorities.

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Table 1

Descriptive Statistics

Variables	N	Mean	Std. Dev.	P25	Median	P75
FreqMF	18,611	0.6842	0.9230	0.0000	0.0000	1.6094
Treatment Effect	18,611	0.5792	0.4937	0.0000	1.0000	1.0000
Institutional ownership	18,611	0.5144	0.3182	0.2183	0.5388	0.7901
Firm size	18,611	6.0073	1.9849	4.5692	5.9288	7.3198
Book-to-market	18,611	0.4970	0.4092	0.2602	0.4441	0.6688
ROA	18,611	-0.0299	0.2341	-0.0151	0.0250	0.0695
Stock return	18,611	0.0009	0.4966	-0.2742	-0.0975	0.1329
Earnings volatility	18,611	0.1518	0.2931	0.0223	0.0544	0.1493
Loss	18,611	0.2876	0.4527	0.0000	0.0000	1.0000
Class action litigation risk	18,611	0.2915	0.2837	0.0761	0.1786	0.4235
Time Trend	18,611	1.9302	1.4150	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
Beneficial Ownership Reporting Modernization Information Asymmetry

	Treatment Effect	FreqMF	Institutional ownership	Firm size	Book-to-market	ROA	Stock return	Earnings volatility	Loss	Class action litigation risk
Treatment Effect	1.00	-0.02	0.14	0.07	-0.00	0.01	-0.04	-0.00	-0.03	-0.22
FreqMF	-0.02	1.00	0.45	0.44	-0.11	0.23	-0.02	-0.13	-0.25	0.03
Institutional ownership	0.14	0.45	1.00	0.66	-0.09	0.28	-0.11	-0.20	-0.22	0.01
Firm size	0.07	0.44	0.66	1.00	-0.26	0.33	0.00	-0.24	-0.36	0.06
Book-to-market	-0.00	-0.11	-0.09	-0.26	1.00	0.11	-0.21	-0.17	-0.00	-0.14
ROA	0.01	0.23	0.28	0.33	0.11	1.00	0.11	-0.50	-0.62	-0.17
Stock return	-0.04	-0.02	-0.11	0.00	-0.21	0.11	1.00	0.03	-0.09	0.06
Earnings volatility	-0.00	-0.13	-0.20	-0.24	-0.17	-0.50	0.03	1.00	0.37	0.24
Loss	-0.03	-0.25	-0.22	-0.36	-0.00	-0.62	-0.09	0.37	1.00	0.24
Class action litigation risk	-0.22	0.03	0.01	0.06	-0.14	-0.17	0.06	0.24	0.24	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 Beneficial Ownership Reporting Modernization on Management Forecast Frequency

	(1)	(2)	(3)
Treatment Effect	-0.0418*** (4.02)	0.0617*** (4.94)	0.0313*** (2.82)
Institutional ownership		0.8887*** (18.72)	-0.1557** (2.48)
Firm size		0.0893*** (9.95)	0.1535*** (10.14)
Book-to-market		-0.0623*** (2.97)	-0.0146 (0.59)
ROA		0.1836*** (5.29)	0.0447 (1.56)
Stock return		-0.0149 (1.32)	-0.0347*** (3.66)
Earnings volatility		0.1008*** (3.25)	-0.1111*** (2.93)
Loss		-0.2098*** (10.37)	-0.1075*** (6.57)
Class action litigation risk		0.0620** (2.16)	-0.0173 (0.86)
Time Trend		-0.0829*** (16.25)	-0.0383*** (7.73)
Firm fixed effects	No	No	Yes
N	18,611	18,611	18,611
R ²	0.0005	0.2617	0.8500

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