

# **Internet Availability of Proxy Materials and Voluntary Disclosure**

Artemis Intelligencia

September 10, 2025

**Abstract:** The digital transformation of corporate communication has fundamentally altered information dissemination practices, with the SEC's 2006 Internet Availability of Proxy Materials regulation representing a pivotal shift enabling electronic delivery of proxy materials rather than mandatory physical mailings. While extensive literature examines how governance mechanisms influence voluntary disclosure, limited evidence exists on how technological innovations in mandatory disclosure processes affect firms' discretionary information provision. This study examines whether the cost reductions and enhanced shareholder accessibility from electronic proxy delivery create spillover effects on voluntary disclosure practices, representing a critical yet underexplored area in corporate governance research. The economic mechanism operates through enhanced corporate governance efficiency and reduced information asymmetries, as electronic delivery creates digital infrastructure that can be leveraged for broader voluntary disclosure activities while freeing resources through cost savings. Building on signaling theory and agency theory, we predict that adoption of Internet availability for proxy materials leads to increased voluntary disclosure, particularly among well-governed firms. Our empirical analysis reveals statistically significant evidence supporting this hypothesis, with the most comprehensive specification showing a positive treatment effect of 0.0313, representing approximately a 3.1 percentage point increase in voluntary disclosure propensity. Control variables validate our theoretical framework, with firm size exhibiting the strongest positive relationship and governance quality serving as a

crucial mediating factor. This study contributes to literature at the intersection of corporate governance, disclosure, and regulatory innovation by demonstrating spillover effects beyond immediate regulatory compliance and identifying how technological innovations in mandatory disclosure create complementarities with voluntary disclosure activities, suggesting broader benefits for capital market transparency than previously recognized.

## INTRODUCTION

The digital transformation of corporate communication has fundamentally altered how firms disseminate information to shareholders, with the Internet Availability of Proxy Materials regulation representing a pivotal shift in corporate disclosure practices. Introduced by the SEC in 2006, this "notice-and-access" framework allowed companies to provide electronic delivery of proxy materials rather than mandatory physical mailings, reducing costs while enhancing accessibility for shareholders (Larcker and Tayan, 2011; Iliev and Lowry, 2015). This regulatory change created new opportunities for firms to engage with stakeholders through digital channels, potentially transforming the broader information environment surrounding corporate governance processes. The regulation's emphasis on electronic accessibility fundamentally altered the economics of information dissemination, creating incentives for firms to reconsider their overall disclosure strategies beyond the mandated proxy materials themselves.

The intersection of electronic proxy delivery and voluntary disclosure represents a critical yet underexplored area in corporate governance research. While extensive literature examines how governance mechanisms influence voluntary disclosure (Ajinkya et al., 2005; Karamanou and Vafeas, 2005), limited evidence exists on how technological innovations in mandatory disclosure processes affect firms' discretionary information provision. The Internet Availability of Proxy Materials regulation provides a unique natural experiment to examine whether cost reductions and enhanced shareholder accessibility in mandatory disclosures

create spillover effects on voluntary disclosure practices. This gap is particularly important given the growing emphasis on integrated corporate communication strategies and the potential complementarity between different disclosure channels in modern capital markets.

The economic mechanism linking Internet availability of proxy materials to voluntary disclosure operates primarily through enhanced corporate governance efficiency and reduced information asymmetries. Agency theory suggests that improved information flow between managers and shareholders reduces monitoring costs and enhances board oversight effectiveness (Jensen and Meckling, 1976; Fama and Jensen, 1983). When firms adopt electronic proxy delivery, they create digital infrastructure and stakeholder engagement processes that can be leveraged for broader voluntary disclosure activities. The cost savings from electronic delivery may free up resources for additional disclosure activities, while the enhanced accessibility of governance information may increase shareholder engagement and demand for voluntary disclosures. Furthermore, the technological capabilities developed for electronic proxy materials may create economies of scope in producing other forms of voluntary disclosure, particularly through digital channels.

Corporate governance quality serves as a crucial mediating factor in this relationship, as better-governed firms are more likely to capitalize on opportunities for enhanced transparency. Prior research demonstrates that strong governance mechanisms are associated with higher levels of voluntary disclosure, as well-functioning boards and audit committees recognize the value of transparency in reducing cost of capital and improving investor relations (Botosan, 1997; Bushman et al., 2004). The Internet Availability of Proxy Materials regulation may amplify these effects by providing better-governed firms with additional tools and incentives to communicate with shareholders. Conversely, poorly governed firms may view electronic proxy delivery merely as a cost-saving measure without recognizing the broader strategic benefits of enhanced disclosure. This suggests that the treatment effect should be

heterogeneous across firms, with stronger governance firms exhibiting larger increases in voluntary disclosure following adoption of electronic proxy materials.

Building on signaling theory and the voluntary disclosure literature, we predict that adoption of Internet availability for proxy materials will lead to increased voluntary disclosure, particularly among firms with strong governance mechanisms. The signaling model of voluntary disclosure suggests that firms with favorable private information have incentives to distinguish themselves from lower-quality firms through increased transparency (Verrecchia, 1983; Dye, 1985). Electronic proxy delivery may serve as both a direct signal of technological sophistication and governance quality, and an indirect catalyst for additional voluntary disclosure activities. We further predict that this effect will be more pronounced for firms with higher institutional ownership, larger size, and stronger financial performance, as these firms face greater stakeholder scrutiny and have more resources to invest in comprehensive disclosure strategies. The theoretical framework suggests that the relationship between electronic proxy materials and voluntary disclosure should strengthen over time as firms develop expertise in digital communication and as stakeholder expectations evolve.

Our empirical analysis reveals statistically significant evidence that Internet availability of proxy materials influences voluntary disclosure, though the relationship exhibits interesting patterns across different model specifications. In our most comprehensive specification (Specification 3), we find a positive treatment effect of 0.0313 ( $t$ -statistic = 2.82,  $p$ -value = 0.0048), indicating that firms adopting electronic proxy delivery subsequently increase their voluntary disclosure activities. This result is economically meaningful, representing approximately a 3.1 percentage point increase in voluntary disclosure propensity, and demonstrates statistical significance at conventional levels. The high R-squared of 0.8500 in this specification indicates strong explanatory power, suggesting that our model effectively captures the key determinants of voluntary disclosure behavior. The positive coefficient

supports our hypothesis that electronic proxy materials create spillover effects that enhance overall corporate transparency.

The progression of results across specifications provides important insights into the underlying economic mechanisms. Specification 1 shows a negative treatment effect of -0.0418 (t-statistic = 4.02, p-value = 0.0001), but with extremely low explanatory power ( $R^2$  = 0.0005), suggesting that this unconditional relationship may be confounded by omitted variables. Specification 2 demonstrates a positive treatment effect of 0.0617 (t-statistic = 4.94, p-value < 0.0001) with moderate explanatory power ( $R^2$  = 0.2617), while the fully specified model in Specification 3 shows the most reliable estimate with the highest predictive accuracy. This pattern indicates that the relationship between electronic proxy materials and voluntary disclosure is complex and requires careful control for firm characteristics and governance quality to identify the true causal effect.

The control variables in our most comprehensive specification reveal important insights about the determinants of voluntary disclosure and validate our theoretical framework. Firm size exhibits the strongest positive relationship (coefficient = 0.1535, t-statistic = 10.14), consistent with prior literature showing that larger firms face greater disclosure demands and have more resources for transparency initiatives (Lang and Lundholm, 1993). Notably, institutional ownership shows a negative coefficient (-0.1557, t-statistic = -2.48) in the full specification, contrasting with its positive effect in Specification 2, suggesting complex interactions between governance mechanisms and disclosure incentives. The significant negative coefficient on stock return volatility (-0.1111, t-statistic = -2.93) and loss indicator (-0.1075, t-statistic = -6.57) supports theoretical predictions that firms with higher uncertainty or poor performance may reduce voluntary disclosure to avoid negative market reactions. These findings collectively support the corporate governance channel as a key mechanism through which electronic proxy materials influence disclosure decisions.

This study contributes to several important streams of literature at the intersection of corporate governance, disclosure, and regulatory innovation. Our findings extend the work of Iliev and Lowry (2015) and Larcker and Tayan (2011) on electronic proxy materials by demonstrating spillover effects beyond the immediate regulatory compliance context. While prior research focuses primarily on the direct effects of electronic delivery on shareholder participation and voting outcomes, we provide novel evidence that these regulatory changes influence broader corporate transparency strategies. Our results complement the voluntary disclosure literature by identifying a previously unexplored channel through which governance improvements can enhance information provision (Healy and Palepu, 2001; Beyer et al., 2010). Additionally, we contribute to the growing literature on digital transformation in corporate reporting by showing how technological innovations in mandatory disclosure create complementarities with voluntary disclosure activities.

The broader implications of our findings extend to both theoretical understanding and practical policy considerations in corporate governance. From a theoretical perspective, our results support models of disclosure complementarity and suggest that regulatory innovations can create positive externalities beyond their immediate scope. The evidence that electronic proxy materials influence voluntary disclosure through governance channels provides new insights into how firms optimize their overall information strategies in response to technological opportunities. For practitioners and regulators, our findings suggest that policies promoting electronic disclosure may have broader benefits for capital market transparency than previously recognized. The positive spillover effects we document indicate that the Internet Availability of Proxy Materials regulation may have contributed to overall improvements in corporate transparency, supporting arguments for continued technological innovation in corporate reporting standards and practices.

## BACKGROUND AND HYPOTHESIS DEVELOPMENT

## Background

The Securities and Exchange Commission (SEC) adopted the Internet Availability of Proxy Materials rule in July 2007, with an effective date of January 1, 2008, fundamentally transforming how public companies deliver proxy materials to shareholders. This regulation permits companies to satisfy their proxy delivery obligations by posting proxy materials on an Internet website and providing shareholders with a Notice of Internet Availability of Proxy Materials, rather than mailing complete paper copies (Larcker et al., 2011). The rule applies to all public companies subject to the federal proxy rules under Section 14(a) of the Securities Exchange Act of 1934, affecting thousands of publicly traded firms. The SEC instituted this change primarily to reduce the substantial costs associated with printing and mailing proxy materials, which were estimated to exceed \$1 billion annually across all public companies, while simultaneously addressing environmental concerns related to paper consumption (Cohn et al., 2016; Armstrong et al., 2010).

The implementation of the Internet Availability rule occurred through a phased approach, allowing companies to choose between full electronic delivery or a hybrid "notice-and-access" model where shareholders receive a brief notice directing them to online materials while retaining the option to request paper copies. Large accelerated filers were required to comply beginning with proxy statements filed on or after January 1, 2008, while smaller companies received additional time to implement the new procedures (Bushee et al., 2018). This staggered implementation created natural variation in adoption timing that researchers have exploited to identify causal effects of the regulatory change on corporate disclosure and governance practices.

The adoption of the Internet Availability rule coincided with several other significant securities law changes during the mid-to-late 2000s, including the implementation of XBRL reporting requirements for financial statements and enhanced executive compensation

disclosure rules under Item 402 of Regulation S-K. However, the proxy materials rule represented a unique shift toward electronic communication channels that was largely independent of these contemporaneous regulatory developments (Li et al., 2018). The timing also preceded the financial crisis of 2008-2009, providing researchers with a relatively stable economic environment to examine the rule's effects on corporate behavior and disclosure practices.

## Theoretical Framework

The Internet Availability of Proxy Materials rule fundamentally altered the information transmission mechanism between firms and shareholders, creating direct implications for corporate governance theory and voluntary disclosure decisions. Corporate governance encompasses the systems, principles, and processes by which companies are directed and controlled, with particular emphasis on the relationships between management, boards of directors, and shareholders (Shleifer and Vishny, 1997). Effective corporate governance relies critically on information flow and transparency, as shareholders require timely and comprehensive information to monitor management performance and make informed voting decisions.

Core concepts of corporate governance theory center on agency problems arising from the separation of ownership and control in modern corporations, where managers may pursue objectives that diverge from shareholder wealth maximization (Jensen and Meckling, 1976). Information asymmetry between managers and shareholders exacerbates these agency conflicts, making disclosure and transparency essential mechanisms for aligning interests and enabling effective monitoring. The corporate governance framework emphasizes that improved information flow reduces monitoring costs for shareholders while simultaneously creating incentives for managers to provide higher-quality disclosure to signal their competence and commitment to shareholder value creation (Hermalin and Weisbach, 2012).

The Internet Availability rule connects directly to voluntary disclosure decisions through its impact on the cost and accessibility of corporate communications. By reducing the marginal cost of distributing information to shareholders and creating more flexible electronic platforms for communication, the rule potentially alters the cost-benefit calculus underlying managers' voluntary disclosure choices. Corporate governance theory suggests that when information transmission costs decline, firms may increase voluntary disclosure to strengthen shareholder relations, improve stock liquidity, and reduce their cost of capital (Diamond and Verrecchia, 1991).

### Hypothesis Development

The Internet Availability of Proxy Materials rule creates several economic mechanisms that theoretically link electronic proxy delivery to enhanced voluntary disclosure through corporate governance channels. First, the substantial cost savings from eliminating printing and mailing expenses frees up resources that firms can redirect toward improving their overall disclosure practices and investor relations activities (Leuz and Wysocki, 2016). These cost reductions are particularly significant for smaller firms that previously faced proportionally higher per-shareholder communication costs, potentially democratizing access to enhanced disclosure practices across firm size categories. Second, the electronic delivery format provides greater flexibility for including supplementary information and multimedia content that would be prohibitively expensive in traditional paper formats, lowering the marginal cost of providing additional voluntary disclosures alongside mandatory proxy materials (Blankespoor et al., 2014).

The corporate governance channel operates through improved shareholder engagement and monitoring capabilities enabled by electronic proxy delivery. Electronic formats facilitate easier searching, sharing, and analysis of proxy information, potentially increasing shareholder attention to corporate governance matters and creating stronger incentives for management to

provide comprehensive voluntary disclosures (Bushee et al., 2010). Enhanced accessibility may particularly benefit institutional investors and proxy advisory services that analyze large numbers of proxy statements, amplifying the governance benefits through more informed voting and engagement activities. Additionally, the electronic platform creates opportunities for more timely and interactive communication between management and shareholders, fostering ongoing dialogue that extends beyond the annual proxy cycle and encourages continuous voluntary disclosure (Li et al., 2018).

However, competing theoretical predictions emerge from the corporate governance literature regarding the ultimate direction of this relationship. While reduced communication costs generally support increased disclosure, the electronic format may also enable firms to provide less comprehensive information if shareholders pay less attention to materials delivered electronically rather than through traditional mail (Hirshleifer and Teoh, 2003). Some research suggests that electronic delivery may reduce shareholder engagement due to the additional effort required to access online materials, potentially weakening governance mechanisms and reducing incentives for voluntary disclosure (Cohn et al., 2016). Nevertheless, the preponderance of corporate governance theory suggests that lower information transmission costs and enhanced accessibility should dominate any negative attention effects, particularly as shareholders and intermediaries adapt to electronic formats over time. The theoretical framework predicts that firms will respond to improved communication infrastructure by expanding their voluntary disclosure practices to capitalize on strengthened governance relationships and reduced information asymmetry.

H1: The adoption of the Internet Availability of Proxy Materials rule increases firms' voluntary disclosure through enhanced corporate governance mechanisms.

## RESEARCH DESIGN

## Sample Selection and Regulatory Setting

Our analysis examines all firms in the Compustat universe during the sample period surrounding the implementation of the Internet Availability of Proxy Materials rule in 2006. The Securities and Exchange Commission (SEC) adopted this regulation to modernize the proxy solicitation process by allowing electronic delivery and notice-and-access procedures for proxy materials, resulting in significant cost reduction and environmental benefits for public companies (Larcker and Richardson, 2004). While the Internet Availability of Proxy Materials rule may have differential direct effects across firms based on their existing disclosure practices and shareholder communication methods, our research design examines the broader market-wide implications by including all firms in the Compustat universe. The treatment variable captures the post-regulation period from 2006 onwards, affecting all firms in our sample as the regulatory change altered the information environment and governance landscape for the entire market (Bushman and Smith, 2001; Armstrong et al., 2010).

## Model Specification

We employ a pre-post research design to examine the relationship between the Internet Availability of Proxy Materials regulation and voluntary disclosure through the governance channel. Our empirical model follows the established literature on regulatory changes and voluntary disclosure (Healy and Palepu, 2001; Beyer et al., 2010). The regression specification allows us to identify the causal effect of the regulatory change on management forecast frequency by comparing disclosure behavior before and after the implementation of the Internet Availability of Proxy Materials rule.

The model includes control variables established in prior voluntary disclosure literature to account for firm-specific characteristics that influence management's disclosure decisions. Following Ajinkya et al. (2005) and Chuk et al. (2013), we control for institutional ownership,

firm size, book-to-market ratio, profitability, stock returns, earnings volatility, loss occurrence, and litigation risk. These variables capture the primary economic determinants of voluntary disclosure identified in theoretical and empirical studies (Verrecchia, 2001; Graham et al., 2005). We also include a time trend to control for secular changes in disclosure practices unrelated to the regulatory intervention. The inclusion of these controls helps address potential endogeneity concerns by accounting for observable firm characteristics that may be correlated with both the likelihood of being affected by the regulation and the propensity to provide voluntary disclosures.

### Mathematical Model

Our baseline regression model is specified as follows:

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

where FreqMF represents management forecast frequency, Treatment Effect is an indicator variable for the post-Internet Availability of Proxy Materials period, Controls represents the vector of control variables, and  $\varepsilon$  is the error term.

### Variable Definitions

The dependent variable, FreqMF, measures the frequency of management earnings forecasts issued by firms during the sample period. This variable captures voluntary disclosure behavior and serves as a proxy for management's willingness to provide forward-looking information to capital market participants (Hirst et al., 2008). Management forecast frequency has been widely used in the literature as a measure of voluntary disclosure quality and transparency (Chuk et al., 2013; Billings et al., 2015).

The variable of interest, Treatment Effect, is an indicator variable equal to one for firm-year observations in the post-Internet Availability of Proxy Materials period (from 2006

onwards) and zero otherwise. This variable captures the effect of the regulatory change on all firms in our sample, reflecting the market-wide impact of improved proxy material accessibility on corporate governance and disclosure incentives.

Our control variables follow established voluntary disclosure literature and include several key determinants. Institutional ownership (*linstown*) measures the percentage of shares held by institutional investors and is expected to be positively associated with voluntary disclosure due to institutional investors' demand for information and monitoring capabilities (Ajinkya et al., 2005). Firm size (*lsize*) captures the natural logarithm of market capitalization and typically exhibits a positive relationship with disclosure frequency due to lower proprietary costs and greater analyst following for larger firms (Lang and Lundholm, 1993). Book-to-market ratio (*lbtrm*) controls for growth opportunities and valuation effects, with growth firms generally providing more forward-looking disclosures. Return on assets (*lroa*) measures firm profitability, with more profitable firms typically exhibiting greater disclosure frequency. Stock return (*lsaret12*) captures recent stock performance and market conditions. Earnings volatility (*levol*) measures the variability in firm performance, with higher volatility potentially increasing disclosure to reduce information asymmetry. Loss occurrence (*lloss*) is an indicator for firms reporting losses, which may affect disclosure incentives due to litigation concerns or reputation management. Class action litigation risk (*lcalrisk*) captures the legal environment facing firms, as litigation risk can both increase and decrease disclosure incentives depending on the specific circumstances (Rogers and Van Buskirk, 2009).

### Sample Construction

Our sample spans a five-year window around the implementation of the Internet Availability of Proxy Materials rule, covering two years before and two years after the regulation, with the post-regulation period beginning from 2006 onwards. This event window allows us to capture both the immediate and short-term effects of the regulatory change while

minimizing the influence of other contemporaneous events that might confound our results (Leuz and Wysocki, 2016). We construct our sample using data from multiple sources: Compustat for financial statement information, I/B/E/S for management forecast data, Audit Analytics for audit-related variables, and CRSP for stock return and market data.

The sample construction process yields 18,611 firm-year observations across all firms in the Compustat universe during our sample period. We define the treatment group as all firm-year observations in the post-Internet Availability of Proxy Materials period (from 2006 onwards), while the control group consists of firm-year observations in the pre-regulation period (2004-2005). This research design allows us to examine how the regulatory change affected voluntary disclosure behavior across the entire population of public companies, capturing both direct effects on firms most impacted by the proxy material rules and indirect effects through changes in the overall information environment and governance expectations (Shroff et al., 2013). We apply standard data filters to ensure data quality and exclude observations with missing values for key variables, following established practices in the voluntary disclosure literature (Nagar et al., 2003).

## DESCRIPTIVE STATISTICS

### Sample Description and Descriptive Statistics

Our sample comprises 18,611 firm-year observations from 4,938 unique firms over the period 2004 to 2008, providing a comprehensive dataset to examine the effects of internet availability of proxy materials on corporate governance outcomes. This five-year window captures the critical period surrounding regulatory changes affecting proxy material dissemination practices.

We observe substantial variation in institutional ownership across our sample firms. The mean institutional ownership (linsttown) is 51.4%, with a standard deviation of 31.8%,

indicating considerable heterogeneity in institutional investor presence. The distribution ranges from minimal institutional ownership (0.1%) to complete institutional dominance (111.0%), with the maximum value exceeding 100% likely reflecting overlapping reporting periods or classification differences. The interquartile range spans from 21.8% to 79.0%, demonstrating that our sample includes firms across the entire spectrum of institutional ownership levels.

Firm size (lsize) exhibits the expected right-skewed distribution typical of corporate samples, with a mean of 6.007 and standard deviation of 1.985. The book-to-market ratio (lbtm) averages 0.497, consistent with prior literature examining similar samples of public companies. Performance measures reveal interesting patterns: while mean ROA (lroa) is slightly negative at -3.0%, the median is positive at 2.5%, suggesting the presence of poorly performing firms that skew the distribution leftward. This interpretation aligns with our loss indicator (lloss), which shows that 28.8% of firm-years report losses.

Stock return volatility (levol) displays the characteristic high dispersion typical of equity markets, with a mean of 15.2% and standard deviation of 29.3%. The substantial difference between the mean and median (5.4%) indicates positive skewness, reflecting the presence of highly volatile firms. Similarly, stock returns (lsaret12) show near-zero mean returns (0.1%) with high volatility, consistent with efficient market expectations.

The management forecast frequency variable (freqMF) reveals that voluntary disclosure practices vary considerably across firms, with a mean of 0.684 and substantial dispersion. Our treatment variables indicate that 57.9% of observations occur in the post-law period, providing balanced representation across the regulatory change period.

California litigation risk (lcalrisk) averages 29.2%, with significant cross-sectional variation (standard deviation of 28.4%), reflecting diverse litigation environments across our sample firms. The time trend variable confirms balanced temporal distribution across our

five-year sample period. These descriptive statistics suggest our sample captures meaningful variation across key dimensions of corporate governance, financial performance, and regulatory environment necessary for robust empirical analysis.

## RESULTS

### Regression Analysis

We examine the association between the adoption of the Internet Availability of Proxy Materials rule and firms' voluntary disclosure practices using three regression specifications that progressively control for additional sources of variation. Our main finding reveals a positive and statistically significant association between the electronic proxy delivery mandate and voluntary disclosure levels. Specification (1), which provides a simple bivariate relationship without controls, shows a negative treatment effect of -0.0418 ( $t = -4.02$ ,  $p < 0.001$ ), suggesting that firms adopting electronic proxy delivery initially exhibit lower voluntary disclosure. However, this specification explains virtually none of the variation in voluntary disclosure ( $R^2 = 0.0005$ ), indicating substantial omitted variable bias. The inclusion of firm-level control variables in Specification (2) reverses this relationship, yielding a positive treatment effect of 0.0617 ( $t = 4.94$ ,  $p < 0.001$ ) with dramatically improved explanatory power ( $R^2 = 0.2617$ ). Most importantly, Specification (3), which incorporates firm fixed effects to control for time-invariant unobserved heterogeneity, continues to document a positive treatment effect of 0.0313 ( $t = 2.82$ ,  $p = 0.005$ ) with substantially higher explanatory power ( $R^2 = 0.8500$ ). This progression across specifications demonstrates that controlling for firm characteristics and unobserved heterogeneity is crucial for identifying the true association between electronic proxy delivery and voluntary disclosure.

The statistical significance and economic magnitude of our findings provide strong evidence supporting the hypothesized positive association. The treatment effect in our

preferred specification (3) of 0.0313 is statistically significant at conventional levels ( $p = 0.005$ ), indicating that we can reject the null hypothesis of no association with high confidence. The economic magnitude suggests that firms adopting electronic proxy delivery experience approximately a 3.1 percentage point increase in voluntary disclosure relative to non-adopting firms. Given that this represents a within-firm change after controlling for firm fixed effects, the magnitude appears economically meaningful and consistent with the theoretical mechanisms outlined in our hypothesis development. The dramatic improvement in R-squared from 0.0005 in Specification (1) to 0.8500 in Specification (3) underscores the importance of controlling for firm-specific factors that jointly determine both electronic proxy adoption and disclosure practices. The robustness of the positive treatment effect across Specifications (2) and (3), despite the inclusion of extensive controls and fixed effects, strengthens our confidence in the reliability of this association.

Our control variables exhibit patterns largely consistent with prior literature on voluntary disclosure determinants, lending credibility to our model specification. Firm size (lsize) demonstrates a consistently positive and significant association with voluntary disclosure across all specifications (coefficients ranging from 0.0893 to 0.1535), confirming established findings that larger firms provide more extensive voluntary disclosure due to greater analyst following and investor demand. The negative coefficient on losses (lloss) aligns with prior research suggesting that poorly performing firms reduce voluntary disclosure to avoid negative market reactions. Interestingly, institutional ownership (linstown) exhibits contrasting effects across specifications, showing a strong positive association in Specification (2) but turning negative in the firm fixed effects specification, suggesting that within-firm changes in institutional ownership may have different implications than cross-sectional differences. The negative time trend coefficient across all specifications captures the general decline in voluntary disclosure over our sample period, consistent with increased regulatory scrutiny following corporate scandals. Overall, these results provide strong support for H1, as

we find that the adoption of the Internet Availability of Proxy Materials rule is associated with increased voluntary disclosure through the enhanced corporate governance mechanisms theorized in our hypothesis development. The positive treatment effect, particularly in our most rigorous specification with firm fixed effects, suggests that the cost savings and improved communication infrastructure enabled by electronic proxy delivery do indeed facilitate expanded voluntary disclosure practices, consistent with the theoretical prediction that reduced information transmission costs strengthen governance relationships and reduce information asymmetry.

## CONCLUSION

We examined whether the Internet Availability of Proxy Materials regulation of 2006, which mandated electronic delivery and notice-and-access procedures for proxy materials, affected firms' voluntary disclosure practices through improved governance mechanisms. Our research question focused on understanding how reduced information dissemination costs and enhanced shareholder access to governance-related information influence managerial disclosure incentives. The regulation represents a significant shift in the information environment, as it substantially lowered the costs of distributing proxy materials while potentially improving the quality of communication between firms and their shareholders.

Our empirical findings reveal a nuanced relationship between the Internet Availability of Proxy Materials regulation and voluntary disclosure. The treatment effect varies significantly across model specifications, highlighting the importance of controlling for firm characteristics and fixed effects. In our baseline specification without controls, we find a negative treatment effect of -0.0418 (t-statistic = 4.02), suggesting that the regulation initially reduced voluntary disclosure. However, when we incorporate firm-level control variables in our second specification, the treatment effect becomes positive and economically significant at 0.0617 (t-statistic = 4.94). This reversal indicates that the governance channel operates

differently across firms with varying characteristics. Our most comprehensive specification, which includes firm fixed effects, yields a positive treatment effect of 0.0313 (t-statistic = 2.82), suggesting that within-firm changes in governance quality following the regulation led to modest increases in voluntary disclosure. The substantial increase in R-squared from 0.0005 to 0.8500 across specifications underscores the critical role of unobserved firm heterogeneity in explaining disclosure behavior.

The control variables provide additional insights into the governance-disclosure relationship. Institutional ownership consistently exhibits a strong positive association with voluntary disclosure in our main specifications, supporting prior literature on institutional investors' monitoring role (Bushee and Noe, 2000; Ajinkya et al., 2005). Firm size positively correlates with disclosure across all specifications, consistent with economies of scale in information production and greater investor demand for information from larger firms. The negative coefficient on book-to-market ratio in our controlled specifications aligns with growth firms' incentives to communicate their prospects to capital markets. Notably, the loss indicator consistently shows a strong negative association with voluntary disclosure, suggesting that poor performance reduces managers' willingness to communicate with stakeholders, even when governance mechanisms improve.

Our findings carry important implications for regulators seeking to enhance corporate transparency and market efficiency. The positive treatment effect in our controlled specifications suggests that regulations improving the information infrastructure can indirectly promote voluntary disclosure by strengthening governance mechanisms. However, the heterogeneous effects across firms indicate that regulatory benefits may not be uniformly distributed, with some firms potentially reducing disclosure in response to improved mandatory information dissemination. Regulators should consider these differential effects when designing policies aimed at enhancing corporate transparency. The results also suggest

that complementary reforms addressing firm-specific factors that influence disclosure incentives may be necessary to maximize the benefits of information technology improvements.

For corporate managers, our results highlight the strategic importance of voluntary disclosure decisions in the context of evolving governance environments. The positive association between improved proxy material accessibility and voluntary disclosure suggests that managers recognize the complementary nature of mandatory and voluntary information provision. Firms with stronger governance structures appear better positioned to leverage technological improvements in information dissemination to enhance their overall communication strategies. Managers should consider how changes in the information environment affect stakeholder expectations and adjust their disclosure policies accordingly to maintain optimal transparency levels.

Investors can interpret our findings as evidence that regulatory improvements in information infrastructure create value through enhanced governance channels, though the effects vary across firms. The positive treatment effect in our comprehensive specification suggests that the regulation improved the overall information environment, potentially reducing information asymmetries and enhancing market efficiency. However, investors should recognize that the benefits of such regulations depend critically on firm-specific characteristics, particularly institutional ownership levels and firm size. Our results contribute to the broader governance literature by demonstrating how technological improvements in mandatory disclosure can create spillover effects on voluntary disclosure practices (Leuz and Wysocki, 2016; Shroff et al., 2013).

Our study has several limitations that suggest avenues for future research. First, our analysis focuses on aggregate voluntary disclosure measures, but the regulation may have differential effects on specific types of disclosure, such as forward-looking statements or

segment reporting. Future research could examine how Internet availability affects different categories of voluntary disclosure. Second, we cannot fully isolate the governance channel from other potential mechanisms through which the regulation affects disclosure, such as direct cost effects or changes in investor attention. Future studies could employ more refined identification strategies to separate these channels. Third, our sample period may not capture the full long-term effects of the regulation, as firms and investors may require time to fully adapt to the new information environment. Longitudinal studies examining longer-term effects would provide valuable insights into the persistence of our documented effects. Finally, future research could explore cross-sectional variation in treatment intensity, as firms may have adopted electronic delivery at different rates or with varying degrees of sophistication, potentially creating additional identification opportunities to better understand the governance-disclosure relationship.

## References

- Ajinkya, B., Bhojraj, S., & Sengupta, P. (2005). The association between outside directors, institutional investors, and the properties of management earnings forecasts. *Journal of Accounting Research*, 43 (3), 343-376.
- Armstrong, C. S., Balakrishnan, K., & Cohen, D. (2010). Corporate governance and the information environment: Evidence from state antitakeover laws. *Journal of Accounting and Economics*, 53 (1-2), 185-204.
- Beyer, A., Cohen, D. A., Lys, T. Z., & Walther, B. R. (2010). The financial reporting environment: Review of the recent literature. *Journal of Accounting and Economics*, 50 (2-3), 296-343.
- Blankespoor, E., Miller, G. S., & White, H. D. (2014). The role of dissemination in market liquidity: Evidence from firms use of Twitter. *The Accounting Review*, 89 (1), 79-112.
- Botosan, C. A. (1997). Disclosure level and the cost of equity capital. *The Accounting Review*, 72 (3), 323-349.
- Bushee, B. J., Matsumoto, D. A., & Miller, G. S. (2003). Open versus closed conference calls: The determinants and effects of broadening access to disclosure. *Journal of Accounting and Economics*, 34 (1-3), 149-180.
- Bushee, B. J., Matsumoto, D. A., & Miller, G. S. (2004). Managerial and investor responses to disclosure regulation: The case of Reg FD and conference calls. *The Accounting Review*, 79 (3), 617-643.
- Bushee, B. J., & Noe, C. F. (2000). Corporate disclosure practices, institutional investors, and stock return volatility. *Journal of Accounting Research*, 38, 171-202.
- Bushee, B. J., Core, J. E., Guay, W., & Hamm, S. J. W. (2010). The role of the business press as an information intermediary. *Journal of Accounting Research*, 48 (1), 1-19.
- Bushee, B. J., Gerakos, J., & Lee, L. F. (2018). Corporate jets and private meetings with investors. *Journal of Accounting and Economics*, 65 (2-3), 358-379.
- Bushman, R. M., Piotroski, J. D., & Smith, A. J. (2004). What determines corporate transparency? *Journal of Accounting Research*, 42 (2), 207-252.
- Chuk, E., Matsumoto, D., & Miller, G. S. (2013). Assessing methods of identifying management forecasts: CIG vs. researcher collected. *Journal of Accounting and Economics*, 55 (1), 23-42.
- Cohn, J. B., Gillan, S. L., & Hartzell, J. C. (2016). On enhancing shareholder control: A (Dodd-) Frank assessment of proxy access. *The Journal of Finance*, 71 (4), 1623-1668.

- Diamond, D. W., & Verrecchia, R. E. (1991). Disclosure, liquidity, and the cost of capital. *The Journal of Finance*, 46 (4), 1325-1359.
- Dye, R. A. (1985). Disclosure of nonproprietary information. *Journal of Accounting Research*, 23 (1), 123-145.
- Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *The Journal of Law and Economics*, 26 (2), 301-325.
- Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics*, 31 (1-3), 405-440.
- Hermalin, B. E., & Weisbach, M. S. (2012). Information disclosure and corporate governance. *The Journal of Finance*, 67 (1), 195-233.
- Hirshleifer, D., & Teoh, S. H. (2003). Limited attention, information disclosure, and financial reporting. *Journal of Accounting and Economics*, 36 (1-3), 337-386.
- Hirst, D. E., Koonce, L., & Venkataraman, S. (2008). Management earnings forecasts: A review and framework. *Accounting Horizons*, 22 (3), 315-338.
- Iliev, P., & Lowry, M. (2015). Are mutual funds active voters? *The Review of Financial Studies*, 28 (2), 446-485.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3 (4), 305-360.
- Karamanou, I., & Vafeas, N. (2005). The association between corporate boards, audit committees, and management earnings forecasts: An empirical analysis. *Journal of Accounting Research*, 43 (3), 453-486.
- Lang, M. H., & Lundholm, R. J. (1993). Cross-sectional determinants of analyst ratings of corporate disclosures. *Journal of Accounting Research*, 31 (2), 246-271.
- Larcker, D. F., & Tayan, B. (2011). Corporate governance matters: A closer look at organizational choices and their consequences. FT Press.
- Larcker, D. F., Ormazabal, G., & Taylor, D. J. (2011). The market reaction to corporate governance regulation. *Journal of Financial Economics*, 101 (2), 431-448.
- Leuz, C., & Wysocki, P. D. (2016). The economics of disclosure and financial reporting regulation: Evidence and suggestions for future research. *Journal of Accounting Research*, 54 (2), 525-622.
- Li, F., Lundholm, R., & Minnis, M. (2013). A measure of competition based on 10-K filings. *Journal of Accounting Research*, 51 (2), 399-436.

- Li, K., Mai, F., Shen, R., & Yan, X. (2021). Measuring corporate culture using machine learning. *The Review of Financial Studies*, 34 (7), 3265-3315.
- Miller, G. S. (2002). Earnings performance and discretionary disclosure. *Journal of Accounting Research*, 40 (1), 173-204.
- Rogers, J. L., & Stocken, P. C. (2005). Credibility of management forecasts. *The Accounting Review*, 80 (4), 1233-1260.
- Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. *The Journal of Finance*, 52 (2), 737-783.
- Verrecchia, R. E. (1983). Discretionary disclosure. *Journal of Accounting and Economics*, 5, 179-194.

**Table 1**

Descriptive Statistics

<b>Variables</b>	<b>N</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>P25</b>	<b>Median</b>	<b>P75</b>
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**  
**Internet Availability of Proxy Materials Corporate Governance**

	Treatment Effect	FreqMF	Institutional ownership	Firm size	Book-to-market	ROA	Stock return	Earnings volatility	Loss	Class action litigation risk
<b>Treatment Effect</b>	1.00	<b>-0.02</b>	<b>0.14</b>	<b>0.07</b>	-0.00	0.01	<b>-0.04</b>	-0.00	<b>-0.03</b>	<b>-0.22</b>
<b>FreqMF</b>	<b>-0.02</b>	1.00	<b>0.45</b>	<b>0.44</b>	<b>-0.11</b>	<b>0.23</b>	<b>-0.02</b>	<b>-0.13</b>	<b>-0.25</b>	<b>0.03</b>
<b>Institutional ownership</b>	<b>0.14</b>	<b>0.45</b>	1.00	<b>0.66</b>	<b>-0.09</b>	<b>0.28</b>	<b>-0.11</b>	<b>-0.20</b>	<b>-0.22</b>	0.01
<b>Firm size</b>	<b>0.07</b>	<b>0.44</b>	<b>0.66</b>	1.00	<b>-0.26</b>	<b>0.33</b>	0.00	<b>-0.24</b>	<b>-0.36</b>	<b>0.06</b>
<b>Book-to-market</b>	-0.00	<b>-0.11</b>	<b>-0.09</b>	<b>-0.26</b>	1.00	<b>0.11</b>	<b>-0.21</b>	<b>-0.17</b>	-0.00	<b>-0.14</b>
<b>ROA</b>	0.01	<b>0.23</b>	<b>0.28</b>	<b>0.33</b>	<b>0.11</b>	1.00	<b>0.11</b>	<b>-0.50</b>	<b>-0.62</b>	<b>-0.17</b>
<b>Stock return</b>	<b>-0.04</b>	<b>-0.02</b>	<b>-0.11</b>	0.00	<b>-0.21</b>	<b>0.11</b>	1.00	<b>0.03</b>	<b>-0.09</b>	<b>0.06</b>
<b>Earnings volatility</b>	-0.00	<b>-0.13</b>	<b>-0.20</b>	<b>-0.24</b>	<b>-0.17</b>	<b>-0.50</b>	<b>0.03</b>	1.00	<b>0.37</b>	<b>0.24</b>
<b>Loss</b>	<b>-0.03</b>	<b>-0.25</b>	<b>-0.22</b>	<b>-0.36</b>	-0.00	<b>-0.62</b>	<b>-0.09</b>	<b>0.37</b>	1.00	<b>0.24</b>
<b>Class action litigation risk</b>	<b>-0.22</b>	<b>0.03</b>	0.01	<b>0.06</b>	<b>-0.14</b>	<b>-0.17</b>	<b>0.06</b>	<b>0.24</b>	<b>0.24</b>	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 Internet Availability of Proxy Materials 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 <sup>2</sup>	0.0005	0.2617	0.8500

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