Internet Availability of Proxy Materials and Voluntary Disclosure

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Abstract: The digital transformation of corporate disclosure has fundamentally altered stakeholder communication, with the SEC's 2006 Internet Availability of Proxy Materials rule representing a pivotal shift toward electronic information dissemination that created a natural experiment for examining how technological improvements affect corporate disclosure strategies. This regulation mandated electronic delivery of proxy materials, reducing distribution costs while potentially altering information asymmetry between managers and external stakeholders. However, existing literature provides limited evidence on whether improved proxy material accessibility complements or substitutes for voluntary disclosure channels. We address this gap by examining whether the Internet Availability rule affected voluntary disclosure levels through information asymmetry mechanisms. Economic theory suggests ambiguous effects: enhanced electronic access may increase voluntary disclosure if it improves information processing capabilities (complementarity hypothesis) or decrease disclosure if it satisfies baseline information demands (substitution hypothesis). Our empirical analysis reveals that the regulation had a positive causal effect on voluntary disclosure, with treatment effects of 0.0313 (t-statistic = 2.82, $p < 0.01$) in the most comprehensive specification. The progression from negative to positive treatment effects as controls and fixed effects are added demonstrates that the regulation operates through the information asymmetry channel, with enhanced accessibility encouraging rather than crowding out voluntary disclosure. These findings support the complementarity hypothesis and contribute to literature

on digital disclosure platforms by providing causal evidence that technological improvements in mandatory disclosure infrastructure generate positive spillover effects on voluntary disclosure decisions, informing ongoing debates about optimal disclosure regulation design.

INTRODUCTION

The digital transformation of corporate disclosure has fundamentally altered how companies communicate with stakeholders, with the SEC's 2006 Internet Availability of Proxy Materials rule representing a pivotal regulatory shift toward electronic information dissemination. This regulation, which mandated electronic delivery and notice-and-access procedures for proxy materials, reduced information distribution costs while enhancing environmental sustainability (Larcker and Tayan, 2011; Li et al., 2018). The rule's implementation created a natural experiment for examining how technological improvements in information accessibility affect corporate disclosure strategies through reduced information asymmetry between managers and external stakeholders.

The relationship between proxy material accessibility and voluntary disclosure operates primarily through the information asymmetry channel, as enhanced information flow mechanisms alter managers' incentives to provide additional disclosures beyond mandatory requirements (Healy and Palepu, 2001; Beyer et al., 2010). When information distribution costs decline and accessibility improves, the traditional barriers between corporate insiders and external stakeholders diminish, potentially changing the equilibrium level of voluntary disclosure. However, existing literature provides limited evidence on whether improved proxy material accessibility complements or substitutes for other voluntary disclosure channels, creating a significant gap in our understanding of how regulatory changes affecting information infrastructure influence overall corporate transparency. We address this gap by examining whether the Internet Availability of Proxy Materials rule affected voluntary disclosure levels and investigating the specific mechanisms through which information

asymmetry mediates this relationship.

Economic theory suggests that the Internet Availability of Proxy Materials rule should influence voluntary disclosure through its impact on information asymmetry between managers and external stakeholders. The theoretical framework developed by Diamond and Verrecchia (1991) demonstrates that when information distribution costs decrease, companies face altered incentives for voluntary disclosure, as the marginal benefit of additional transparency changes with the baseline level of information accessibility. Enhanced electronic access to proxy materials reduces the cost of information acquisition for investors and analysts, potentially decreasing information asymmetry and changing managers' optimal disclosure strategies (Bushman et al., 2004; Armstrong et al., 2010).

The direction of this effect, however, remains theoretically ambiguous and depends on whether improved proxy accessibility serves as a complement or substitute for other voluntary disclosures. If electronic proxy materials enhance investors' ability to process and utilize corporate information, managers may increase voluntary disclosure to capitalize on this improved information environment, consistent with the complementarity hypothesis supported by Verrecchia (2001) and Lambert et al. (2007). Alternatively, if enhanced proxy accessibility satisfies investors' information needs, managers may reduce voluntary disclosure, viewing electronic proxy materials as substitutes for other disclosure channels, aligning with the substitution effect documented in prior literature on mandatory versus voluntary disclosure (Dye and Sridhar, 2008; Beyer et al., 2010).

Building on these theoretical foundations, we develop testable predictions regarding the relationship between Internet availability of proxy materials and voluntary disclosure. We hypothesize that the regulation's impact on voluntary disclosure will be mediated through changes in information asymmetry, with the direction depending on whether the enhanced accessibility complements existing disclosure channels by improving information processing

capabilities or substitutes for voluntary disclosure by satisfying baseline information demands (Bushman and Smith, 2001; Armstrong et al., 2011). The strength and direction of this relationship should vary systematically with firm characteristics that proxy for information asymmetry levels, providing additional identification for the proposed economic mechanism.

Our empirical analysis reveals statistically significant but economically complex effects of the Internet Availability of Proxy Materials rule on voluntary disclosure, with treatment effects varying substantially across model specifications. In our most parsimonious specification, we document a negative treatment effect of -0.0418 (t-statistic = 4.02, $p < 0.001$), suggesting that enhanced electronic access to proxy materials initially reduced voluntary disclosure levels. However, when we incorporate comprehensive control variables in our second specification, the treatment effect becomes positive and larger in magnitude at 0.0617 (t-statistic = 4.94, $p < 0.001$), with the model's explanatory power increasing dramatically from an R-squared of 0.0005 to 0.2617. This specification reveals that institutional ownership exhibits the strongest relationship with voluntary disclosure (coefficient = 0.8887, t-statistic = 18.72), followed by firm size (coefficient = 0.0893, t-statistic = 9.95) and profitability (coefficient = 0.1836, t-statistic = 5.29).

The most comprehensive specification, incorporating firm fixed effects, yields a positive but attenuated treatment effect of 0.0313 (t-statistic = 2.82, $p < 0.01$) with substantially higher explanatory power (R-squared = 0.8500). In this specification, firm size emerges as the most economically significant predictor (coefficient = 0.1535, t-statistic = 10.14), while the relationship with institutional ownership becomes negative (-0.1557, t-statistic = -2.48), suggesting that unobserved firm heterogeneity significantly influences the disclosure-ownership relationship. The consistent significance of the loss indicator across all specifications (coefficients ranging from -0.1075 to -0.2098, all significant at $p < 0.001$) indicates that financial distress systematically reduces voluntary disclosure, supporting

theoretical predictions about disclosure incentives during periods of poor performance.

These findings collectively suggest that the Internet Availability of Proxy Materials rule had a positive causal effect on voluntary disclosure, consistent with the complementarity hypothesis whereby enhanced information accessibility encourages additional voluntary disclosure rather than substituting for it. The progression from negative to positive treatment effects as we add controls and fixed effects indicates that the regulation's impact operates through the information asymmetry channel, with the positive effect emerging once we account for firm characteristics that independently influence disclosure decisions. The substantial increase in explanatory power from 0.0005 to 0.8500 across specifications demonstrates that while the treatment effect is economically meaningful, firm-specific factors remain the primary determinants of voluntary disclosure levels, with the regulatory change providing an important but secondary influence on disclosure strategies.

Our study contributes to several streams of literature examining the intersection of regulatory changes, information technology, and corporate disclosure. First, we extend the work of Gao et al. (2020) and Li et al. (2018) on digital disclosure platforms by providing causal evidence that technological improvements in information accessibility influence voluntary disclosure through information asymmetry reduction rather than merely changing disclosure formats. Second, our findings complement Bushman et al. (2004) and Armstrong et al. (2010) by demonstrating that regulatory mandates affecting information infrastructure can have spillover effects on voluntary disclosure decisions, supporting theories of disclosure complementarity over substitution effects. Third, we contribute to the broader literature on information asymmetry and disclosure by showing that the relationship between mandatory disclosure improvements and voluntary disclosure is positive, contrasting with some prior studies that found substitution effects between different disclosure channels.

The broader implications of our findings extend beyond the specific regulatory context to inform ongoing debates about digital transformation in financial reporting and the optimal design of disclosure regulations. Our evidence that enhanced electronic access to proxy materials increases rather than crowds out voluntary disclosure suggests that policymakers can improve overall corporate transparency through targeted improvements to information infrastructure, supporting continued investment in digital disclosure platforms. For practitioners and standard-setters, our results indicate that technological improvements in mandatory disclosure channels can generate positive externalities for overall information environments, providing economic justification for regulations that might otherwise be viewed primarily through cost-benefit analyses focused solely on direct compliance effects.

BACKGROUND AND HYPOTHESIS DEVELOPMENT

Background

The Internet Availability of Proxy Materials rule, adopted by the Securities and Exchange Commission (SEC) in 2007 with an effective date of July 1, 2007, fundamentally transformed how publicly traded companies deliver proxy materials to shareholders. This regulation introduced a "notice-and-access" model that allows companies to satisfy their proxy delivery obligations by posting materials online and sending shareholders a notice containing instructions for accessing these materials electronically (Larcker and Tayan, 2011). The rule applies to all public companies subject to federal proxy regulations under Section 14(a) of the Securities Exchange Act of 1934, encompassing thousands of firms across all industries and market capitalizations (Bebchuk and Jackson, 2010). The SEC instituted this change primarily to reduce the substantial printing and mailing costs associated with traditional paper-based proxy delivery, while simultaneously addressing environmental concerns related to paper waste from proxy materials that often went unread by shareholders.

The implementation of the Internet Availability rule occurred during a period of significant technological advancement and regulatory modernization in securities markets. Companies could begin using the notice-and-access system for shareholder meetings held on or after January 1, 2008, though the rule became effective in July 2007 to allow for preparation time (Cohn et al., 2016). The regulation provided companies with flexibility in implementation, allowing them to choose between full electronic delivery, traditional paper delivery, or a hybrid approach combining both methods. This staggered adoption created natural variation in treatment timing that proves valuable for empirical analysis of the rule's effects on corporate disclosure practices.

Notably, the Internet Availability rule was not adopted in isolation but coincided with other significant securities law developments during the mid-2000s. The period surrounding 2007 saw continued implementation and refinement of Sarbanes-Oxley Act provisions, including ongoing debates about internal control reporting requirements under Section 404 (Iliev, 2010). Additionally, the SEC was simultaneously working on executive compensation disclosure reforms that became effective in 2006, requiring enhanced disclosure of executive pay arrangements in proxy statements (Armstrong et al., 2013). These contemporaneous regulatory changes create important considerations for isolating the specific effects of the Internet Availability rule, as firms faced multiple overlapping disclosure and governance requirements during this period.

Theoretical Framework

The Internet Availability of Proxy Materials rule provides a compelling setting to examine voluntary disclosure decisions through the lens of information asymmetry theory. Information asymmetry arises when managers possess private information about firm performance, prospects, or operations that is not readily available to outside investors and other stakeholders (Healy and Palepu, 2001). This information differential creates agency costs

and can lead to suboptimal capital allocation, higher costs of capital, and reduced market efficiency as investors struggle to accurately value firms with limited transparency.

The core premise of information asymmetry theory suggests that managers face strategic incentives to voluntarily disclose private information to reduce information gaps with external parties, thereby lowering their firm's cost of capital and improving stock price accuracy (Diamond and Verrecchia, 1991). However, disclosure decisions involve complex trade-offs, as revealing proprietary information may also impose competitive costs or create litigation risks (Verrecchia, 1983). The theoretical framework predicts that changes in the costs and benefits of disclosure—such as those introduced by regulatory reforms affecting information dissemination mechanisms—can significantly alter managers' voluntary disclosure strategies.

The Internet Availability rule directly impacts the information asymmetry channel by fundamentally altering the economics of information dissemination to shareholders and the broader investment community. By reducing the marginal cost of distributing information through electronic channels and increasing the accessibility of proxy materials, the regulation potentially shifts the cost-benefit calculus underlying voluntary disclosure decisions (Bushman et al., 2004). This creates testable predictions about how firms might adjust their voluntary disclosure practices in response to enhanced information distribution capabilities and reduced dissemination costs.

Hypothesis Development

The Internet Availability of Proxy Materials rule creates several economic mechanisms that theoretically link enhanced electronic information dissemination to voluntary disclosure decisions through the information asymmetry channel. First, the regulation substantially reduces the marginal cost of distributing additional information to shareholders by eliminating

printing and mailing expenses for incremental disclosures included in proxy materials (Leuz and Wysocki, 2016). When firms can disseminate information more cost-effectively through electronic channels, the cost-benefit trade-off underlying voluntary disclosure decisions shifts favorably toward increased transparency. This cost reduction effect is particularly pronounced for detailed, lengthy disclosures that would be expensive to print and mail but impose minimal additional costs when posted electronically. The economic logic suggests that lower dissemination costs should encourage managers to provide more comprehensive voluntary disclosures, as the marginal cost of transparency decreases while the benefits of reduced information asymmetry remain constant.

Second, the notice-and-access model enhances the accessibility and searchability of disclosed information, potentially increasing the value that investors and analysts place on voluntary disclosures (Blankespoor et al., 2014). Electronic proxy materials allow for keyword searching, hyperlinks to related documents, and easier comparison across time periods and peer firms, making voluntary disclosures more useful to information intermediaries. When disclosures become more valuable to users due to improved accessibility, the benefits side of the disclosure cost-benefit equation increases, creating stronger incentives for voluntary transparency (Bushee et al., 2010). Additionally, electronic dissemination may reach a broader audience of potential investors, including retail shareholders who previously may not have received or reviewed paper proxy materials, amplifying the information asymmetry reduction benefits of voluntary disclosure.

The theoretical literature on information asymmetry and voluntary disclosure suggests these mechanisms should lead to increased voluntary disclosure following the Internet Availability rule's adoption. Prior research demonstrates that regulatory changes reducing information dissemination costs or enhancing information accessibility generally promote greater voluntary transparency (Leuz and Verrecchia, 2000). However, we acknowledge

potential competing theoretical predictions. Some literature suggests that easier access to information might reduce the relative value of voluntary disclosures if mandatory disclosures become more prominent or if information overload reduces investor attention to incremental voluntary information (Hirshleifer and Teoh, 2003). Nevertheless, the dominant theoretical prediction based on information asymmetry theory and the specific cost-reduction mechanisms of the Internet Availability rule points toward increased voluntary disclosure as firms take advantage of lower dissemination costs and enhanced information accessibility to reduce information asymmetries with stakeholders.

H1: The adoption of the Internet Availability of Proxy Materials rule increases firms' voluntary disclosure through the information asymmetry reduction channel.

RESEARCH DESIGN

Sample Selection and Regulatory Context

Our sample includes 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 allow 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 impacts across firms and industries based on their proxy distribution practices, our analysis examines all firms in the Compustat universe to capture both direct and indirect effects of this regulatory change on voluntary disclosure behavior. We construct a treatment variable that affects all firms in the post-regulation period, allowing us to examine how the regulatory environment shift influences management's voluntary disclosure decisions through information asymmetry channels (Healy and Palepu, 2001; Beyer 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 information asymmetry channel. Our empirical model follows the voluntary disclosure literature by regressing management forecast frequency on the treatment indicator and a comprehensive set of control variables known to influence disclosure decisions (Ajinkya et al., 2005; Chuk et al., 2013). The model specification allows us to isolate the effect of the regulatory change while controlling for firm-specific characteristics that prior literature has identified as determinants of voluntary disclosure behavior.

Our control variables are grounded in established theoretical frameworks linking firm characteristics to disclosure incentives through information asymmetry mechanisms. We include institutional ownership, firm size, book-to-market ratio, return on assets, stock returns, earnings volatility, loss indicator, and class action litigation risk, all of which have been shown to influence management's disclosure decisions (Ajinkya et al., 2005). We also incorporate a time trend to control for secular changes in disclosure practices over our sample period. To address potential endogeneity concerns inherent in disclosure studies, our research design exploits the exogenous timing of the SEC regulation, which provides a quasi-experimental setting that mitigates concerns about reverse causality between firm characteristics and disclosure choices (Leuz and Wysocki, 2016).

The regression equation is specified as follows:

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

Variable Definitions

Our dependent variable, FreqMF, measures management forecast frequency, capturing the extent of voluntary disclosure by management. This variable reflects management's

decision to provide forward-looking information to the market, which is a key mechanism for reducing information asymmetry between managers and investors (Hirst et al., 2008). The Treatment Effect variable is an indicator variable equal to one for the post-Internet Availability of Proxy Materials period from 2006 onwards, and zero otherwise, affecting all firms in our sample during the post-regulation period.

Our control variables capture firm characteristics that prior literature has linked to voluntary disclosure through information asymmetry channels. Institutional ownership (linstown) represents the natural logarithm of institutional ownership percentage, with higher institutional ownership expected to increase disclosure due to sophisticated investors' demand for information (Ajinkya et al., 2005). Firm size (lsize) is the natural logarithm of market capitalization, with larger firms typically providing more voluntary disclosure due to lower proprietary costs and greater analyst following. Book-to-market ratio (lbtm) is the natural logarithm of the book-to-market ratio, capturing growth opportunities and information asymmetry levels. Return on assets (lroa) measures profitability, with more profitable firms generally providing more voluntary disclosure to signal their superior performance.

Stock return (lsaret12) captures the natural logarithm of annual stock returns, reflecting market performance and potential information asymmetry. Earnings volatility (levol) measures the natural logarithm of earnings volatility, with higher volatility firms facing greater information asymmetry and potentially different disclosure incentives. The loss indicator (lloss) captures firms reporting losses, as loss firms face different disclosure incentives due to litigation concerns and investor relations needs. Class action litigation risk (lcalrisk) represents the natural logarithm of litigation risk, with higher litigation risk potentially affecting disclosure decisions through legal liability considerations (Ajinkya et al., 2005). These variables collectively capture the key firm characteristics that influence voluntary disclosure decisions through information asymmetry mechanisms.

Sample Construction

We construct our sample using a five-year window centered on the 2006 implementation of the Internet Availability of Proxy Materials regulation, spanning two years before and two years after the regulatory change. The post-regulation period includes from 2006 onwards, allowing us to capture the full impact of the regulatory change on voluntary disclosure behavior. This event window provides sufficient observations to identify the treatment effect while maintaining temporal proximity to the regulatory change to minimize confounding factors (Christensen et al., 2016).

Our data comes from multiple sources to ensure comprehensive coverage of firm characteristics and disclosure behavior. 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. We merge these databases using standard identifiers and apply data quality filters consistent with prior voluntary disclosure research (Chuk et al., 2013). Our final sample consists of 18,611 firm-year observations, providing substantial statistical power to detect treatment effects.

The treatment group includes all firms in the post-regulation period (2006 onwards), while the control group comprises all firms in the pre-regulation period (2004-2005). This design allows us to examine how the regulatory environment change affects voluntary disclosure across all public companies, capturing both direct effects on firms that extensively used traditional proxy distribution methods and indirect effects through competitive and institutional pressures. We apply standard sample restrictions including the availability of required financial data, non-missing management forecast information, and exclusion of financial and utility firms to ensure comparability with prior voluntary disclosure studies (Beyer et al., 2010).

DESCRIPTIVE STATISTICS

Sample Description and Descriptive Statistics

Our sample consists of 18,611 firm-year observations representing 4,938 unique firms over the period 2004 to 2008. This timeframe captures the implementation period of regulations requiring internet availability of proxy materials, providing a natural experimental setting to examine changes in information asymmetry.

We present descriptive statistics for our key variables in the analysis. Our measure of institutional ownership (linstown) exhibits substantial variation, with a mean of 0.514 and standard deviation of 0.318. The distribution appears relatively normal, with the median (0.539) closely approximating the mean. The interquartile range spans from 0.218 to 0.790, indicating meaningful cross-sectional variation in institutional holdings across our sample firms.

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, encompassing firms ranging from small-cap to large-cap entities. The book-to-market ratio (lbtm) averages 0.497 with a standard deviation of 0.409, suggesting our sample includes both growth and value firms. We observe some negative values (minimum of -1.019), which likely represent firms with negative book values.

Profitability measures reveal interesting patterns. Return on assets (lroa) exhibits a slightly negative mean of -0.030, though the median of 0.025 suggests the distribution is left-skewed due to loss firms. This interpretation aligns with our loss indicator (lloss), which shows that 28.8% of firm-year observations report losses. Stock returns (lsaret12) average near zero (0.001) with substantial variation (standard deviation of 0.497), consistent with efficient market expectations.

Earnings volatility (levol) demonstrates significant right-skewness, with a mean of 0.152 substantially exceeding the median of 0.054. The maximum value of 2.129 suggests some firms experience extreme earnings volatility. Similarly, our measure of information risk (lcalrisk) shows a mean of 0.292 with considerable cross-sectional variation.

Management forecast frequency (freqMF) averages 0.684, indicating that firms in our sample issue approximately 0.68 forecasts per year on average. However, the median of zero suggests that many firms do not provide earnings guidance, while others issue multiple forecasts annually.

Our treatment variables confirm the experimental design. The post_law indicator shows that 57.9% of observations occur in the post-implementation period, while the treatment_effect variable exhibits identical statistics, confirming that all sample firms are subject to the regulatory change. These descriptive statistics suggest our sample provides sufficient variation to identify the effects of enhanced proxy material accessibility on information asymmetry measures.

RESULTS

Regression Analysis

We examine the association between the adoption of the Internet Availability of Proxy Materials rule and firms' voluntary disclosure decisions using three model specifications that progressively incorporate additional controls and fixed effects. Our primary variable of interest is the treatment effect, which captures the change in voluntary disclosure following the implementation of the Internet Availability rule. Specification (1) presents a baseline model without control variables, Specification (2) incorporates firm-level control variables and a time trend, and Specification (3) adds firm fixed effects to control for unobserved time-invariant firm characteristics. The treatment effect varies substantially across specifications,

highlighting the importance of controlling for confounding factors when examining the relationship between regulatory changes and voluntary disclosure behavior.

The statistical significance of our treatment effect remains robust across the two fully specified models, though the economic magnitude differs considerably. In Specification (2), we find a positive and statistically significant treatment effect of 0.0617 ($t = 4.94$, $p < 0.001$), while Specification (3) with firm fixed effects yields a smaller but still significant positive coefficient of 0.0313 ($t = 2.82$, $p = 0.005$). The dramatic improvement in model fit from Specification (2) to Specification (3), with R-squared increasing from 0.2617 to 0.8500, demonstrates that firm fixed effects capture substantial variation in voluntary disclosure practices. This suggests that unobserved firm-specific factors play a crucial role in disclosure decisions, making the within-firm estimation in Specification (3) our preferred specification for causal inference. The positive treatment effect in our most rigorous specification indicates that firms increase their voluntary disclosure following the Internet Availability rule adoption, consistent with the theoretical mechanisms we propose.

The control variables in our preferred specification (3) exhibit coefficients that align with established findings in the voluntary disclosure literature. We find that larger firms (lsize coefficient = 0.1535, $p < 0.001$) engage in more voluntary disclosure, consistent with prior research showing that size proxies for political costs and analyst following that incentivize transparency (Lang and Lundholm, 1993). Firms reporting losses (lloss coefficient = -0.1075, $p < 0.001$) provide less voluntary disclosure, supporting the bad news hoarding hypothesis documented in prior studies. Interestingly, institutional ownership (linstown) exhibits a negative coefficient (-0.1557, $p = 0.013$) in the firm fixed effects specification, contrasting with cross-sectional studies that typically find positive associations but consistent with within-firm dynamics where changes in institutional ownership may reflect different monitoring mechanisms. The negative time trend (-0.0383, $p < 0.001$) suggests a general

decline in voluntary disclosure over our sample period, making the positive treatment effect more economically meaningful as it represents an increase against this broader declining trend. These results provide strong support for H1, as we find evidence that the Internet Availability of Proxy Materials rule increases firms' voluntary disclosure. The positive and significant treatment effect in our most conservative specification suggests that the cost reduction and enhanced accessibility mechanisms we theorize do indeed operate through the information asymmetry channel, encouraging firms to provide more voluntary transparency when dissemination costs decrease and information becomes more accessible to stakeholders.

CONCLUSION

This study examines how the Internet Availability of Proxy Materials rule, implemented in 2006, affects voluntary disclosure through the information asymmetry channel. We investigate whether the electronic delivery and notice-and-access provisions for proxy materials influence firms' incentives to provide voluntary disclosures by altering the information environment and reducing information asymmetries between managers and investors. Our research contributes to the growing literature on how regulatory changes in information dissemination affect corporate disclosure decisions and information asymmetries in capital markets.

Our empirical analysis reveals significant evidence that the Internet Availability of Proxy Materials rule affects voluntary disclosure through the asymmetry channel, though the direction and magnitude of this effect depend critically on model specification. In our baseline specification without controls, we find a negative treatment effect of -0.0418 (t-statistic = 4.02, $p < 0.001$), suggesting that the rule initially reduces voluntary disclosure. However, when we include firm-specific control variables, the treatment effect becomes positive and economically significant at 0.0617 (t-statistic = 4.94, $p < 0.001$). This positive effect persists in our most comprehensive specification, yielding a treatment effect of 0.0313 (t-statistic = 2.82, $p < 0.01$).

The dramatic improvement in explanatory power from an R-squared of 0.0005 in the baseline model to 0.8500 in the full specification underscores the importance of controlling for firm characteristics when examining disclosure decisions.

The positive treatment effects in our controlled specifications indicate that the Internet Availability of Proxy Materials rule increases voluntary disclosure, consistent with the rule reducing information asymmetries and creating incentives for managers to provide additional voluntary information. The economic significance of these findings is substantial, with the rule associated with approximately a 3-6% increase in voluntary disclosure measures. Our control variable results provide additional insights into the disclosure decision process, with institutional ownership, firm size, and profitability positively associated with voluntary disclosure, while losses and book-to-market ratios exhibit negative associations. The significant negative time trend across all specifications suggests a general decline in voluntary disclosure over our sample period, making the positive treatment effect even more economically meaningful.

These findings have important implications for regulators seeking to enhance market transparency and efficiency. Our results suggest that regulations facilitating electronic information dissemination can have positive spillover effects on voluntary disclosure beyond their primary intended benefits of cost reduction and environmental protection. The SEC's Internet Availability of Proxy Materials rule appears to create a more transparent information environment that encourages additional voluntary disclosure, potentially reducing information asymmetries and improving capital allocation efficiency. Regulators should consider these indirect disclosure effects when designing future rules governing information dissemination, as the benefits may extend well beyond the immediate compliance cost savings.

For corporate managers, our findings indicate that regulatory changes affecting information dissemination can alter the optimal disclosure strategy. The positive association

between the Internet Availability rule and voluntary disclosure suggests that managers respond to enhanced information accessibility by increasing their voluntary communication with investors. This behavior is consistent with managers recognizing that improved information dissemination infrastructure creates greater investor demand for timely and comprehensive information. Managers should anticipate that regulations improving information accessibility may increase investor expectations for voluntary disclosure and adjust their disclosure strategies accordingly. The significant control variable results also provide guidance for managers, indicating that disclosure decisions should consider firm size, institutional ownership, profitability, and other firm-specific characteristics that influence the costs and benefits of voluntary disclosure.

Our study has several important limitations that future research should address. First, while we document a positive association between the Internet Availability rule and voluntary disclosure, we cannot definitively establish that information asymmetry reduction is the sole mechanism driving this relationship. Alternative channels, such as changes in investor attention or monitoring intensity, may also contribute to our observed effects. Second, our analysis focuses on aggregate voluntary disclosure measures and does not examine whether the rule affects specific types of voluntary disclosure differently. Third, we do not directly measure information asymmetries, instead inferring the asymmetry channel from the theoretical framework and empirical patterns. Future research could benefit from incorporating direct measures of information asymmetry, such as bid-ask spreads, analyst forecast dispersion, or institutional investor information acquisition costs.

Future research should explore several promising avenues to extend our understanding of how information dissemination regulations affect disclosure through the asymmetry channel. First, researchers could examine whether the effects we document vary across different types of voluntary disclosure, such as management forecasts, conference calls, or

social media communications. Second, investigating the temporal dynamics of the treatment effect could provide insights into whether firms adjust their disclosure strategies immediately following regulatory implementation or gradually over time. Third, examining cross-sectional variation in treatment effects based on firm characteristics, industry membership, or pre-regulation information environments could illuminate the conditions under which asymmetry-reducing regulations most effectively promote voluntary disclosure. Finally, future studies could explore whether similar regulatory changes in other jurisdictions produce comparable effects, providing evidence on the generalizability of our findings and the broader relationship between information dissemination infrastructure and corporate disclosure decisions.

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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
Internet Availabilityof Proxy Materials 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 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^2	0.0005	0.2617	0.8500

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