Resource Extraction Disclosure Rules and Voluntary Disclosure

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Abstract: This study examines how the Securities and Exchange Commission's Resource Extraction Disclosure Rules affect firms' voluntary disclosure practices through changes in litigation risk exposure. While prior research documents general effects of disclosure regulations, the specific mechanism through which mandatory extraction payment disclosures influence voluntary disclosure practices remains unclear. Using a difference-in-differences research design, we investigate how firms adjust their voluntary disclosure practices in response to increased mandatory disclosure requirements. Our analysis reveals that firms significantly reduced their voluntary disclosure following the implementation of Resource Extraction Disclosure Rules, with a treatment effect representing approximately 6.7% reduction relative to the pre-regulation period. This relationship is particularly pronounced for firms with higher litigation risk exposure. The effect remains robust when controlling for various firm characteristics, including institutional ownership and firm size. Our findings provide novel evidence that mandatory disclosure requirements can have unintended consequences on firms' voluntary disclosure practices through the litigation risk channel. The study contributes to the literature by identifying litigation risk as a key mechanism through which mandatory disclosure requirements influence voluntary disclosure decisions, while offering important implications for regulators considering the broader effects of disclosure mandates.

INTRODUCTION

The Securities and Exchange Commission's Resource Extraction Disclosure Rules represent a significant regulatory intervention aimed at enhancing transparency in extractive industries through mandatory disclosure requirements. These rules, implemented in 2016, require resource extraction issuers to disclose payments made to governments for the commercial development of oil, natural gas, or minerals (Christensen et al., 2017; Dyreng et al., 2016). The regulation's introduction creates a unique setting to examine how increased mandatory disclosure requirements affect firms' voluntary disclosure decisions through the litigation risk channel. While prior research documents the general effects of disclosure regulations on firm behavior (Leuz and Wysocki, 2016), the specific mechanism through which mandatory extraction payment disclosures influence voluntary disclosure practices remains unclear.

This study investigates how the Resource Extraction Disclosure Rules affect voluntary disclosure through changes in firms' litigation risk exposure. We specifically examine whether increased mandatory disclosure requirements lead to changes in voluntary disclosure practices as firms attempt to manage their litigation risk profile. Our research addresses two primary questions: (1) How do mandatory extraction payment disclosures affect firms' voluntary disclosure decisions? (2) To what extent does litigation risk mediate this relationship?

The theoretical link between mandatory disclosure requirements and voluntary disclosure decisions operates through the litigation risk channel in several ways. First, increased mandatory disclosures can expose firms to greater litigation risk by providing potential plaintiffs with more information to base their claims (Rogers and Van Buskirk, 2009). Second, firms may adjust their voluntary disclosure practices in response to this increased litigation risk exposure (Skinner, 1994). The Resource Extraction Disclosure Rules

create additional disclosure obligations that could increase firms' litigation risk exposure, potentially affecting their voluntary disclosure decisions.

Building on established theoretical frameworks of disclosure choice under litigation risk (Field et al., 2005), we predict that firms subject to the Resource Extraction Disclosure Rules will modify their voluntary disclosure practices to manage their overall litigation risk exposure. Prior research suggests that firms balance the benefits of voluntary disclosure against litigation-related costs (Kothari et al., 2009). We hypothesize that increased mandatory disclosure requirements will lead to a reduction in voluntary disclosure as firms attempt to minimize their total litigation risk exposure.

The relationship between mandatory and voluntary disclosure through the litigation risk channel is supported by extensive literature on disclosure choice and legal liability. Studies demonstrate that firms consider litigation risk when making voluntary disclosure decisions (Francis et al., 1994), and that mandatory disclosure requirements can influence these choices through their effect on litigation risk exposure (Johnson et al., 2001).

Our empirical analysis reveals a significant negative relationship between the implementation of Resource Extraction Disclosure Rules and voluntary disclosure. The baseline specification shows a treatment effect of -0.069 (t-statistic = 4.45, $p < 0.001$), indicating that firms reduced their voluntary disclosure following the regulation's implementation. This effect remains robust when controlling for various firm characteristics, with a treatment effect of -0.067 (t-statistic = 4.84, $p < 0.001$) in our full specification.

The results demonstrate strong economic significance, with the magnitude of the effect representing approximately 6.7% reduction in voluntary disclosure relative to the pre-regulation period. Our analysis controls for various firm characteristics, including

institutional ownership (coefficient = 0.424, t-statistic = 15.56), firm size (coefficient = 0.122, t-statistic = 25.29), and other relevant factors that might influence voluntary disclosure decisions.

The findings are particularly pronounced for firms with higher litigation risk exposure, as measured by our litigation risk proxy (coefficient = -0.245, t-statistic = -9.86). This result supports our hypothesis that the relationship between mandatory disclosure requirements and voluntary disclosure operates through the litigation risk channel.

This study contributes to the literature on disclosure regulation and firm behavior in several ways. While prior research has examined the general effects of disclosure requirements on firm behavior (Leuz and Verrecchia, 2000), our study provides novel evidence on how specific disclosure mandates affect voluntary disclosure through the litigation risk channel. Our findings extend recent work on the effects of disclosure regulation (Christensen et al., 2017) by identifying litigation risk as a key mechanism through which mandatory disclosure requirements influence voluntary disclosure decisions.

Our results have important implications for regulators and practitioners, suggesting that mandatory disclosure requirements can have unintended consequences on firms' voluntary disclosure practices through their effect on litigation risk. These findings contribute to the broader literature on the interaction between mandatory and voluntary disclosure (Einhorn, 2005), while providing specific evidence on the role of litigation risk in mediating this relationship.

BACKGROUND AND HYPOTHESIS DEVELOPMENT

Background

The Resource Extraction Disclosure Rules, adopted by the Securities and Exchange Commission (SEC) in 2016, represent a significant regulatory change aimed at enhancing transparency in extractive industries (SEC, 2016). This regulation requires resource extraction issuers to disclose payments made to governments for the commercial development of oil, natural gas, or minerals. The rules apply to all U.S. public companies engaged in resource extraction, affecting approximately 755 registrants (Dyreng et al., 2020; Li and Peters, 2020).

The implementation of these rules stems from Section 1504 of the Dodd-Frank Wall Street Reform and Consumer Protection Act, which mandated the SEC to require detailed payment disclosures from resource extraction issuers. The rules became effective on September 26, 2016, with companies required to comply starting with their fiscal years ending on or after September 30, 2018 (Cohen et al., 2019). The disclosure requirements include specific payment types such as taxes, royalties, fees, production entitlements, and infrastructure improvements exceeding $100,000 during a fiscal year.

During this period, the SEC also adopted other significant regulatory changes, including the Pay Ratio Disclosure Rule and amendments to Form ADV reporting requirements (Leuz and Wysocki, 2016). However, the Resource Extraction Disclosure Rules were unique in their focus on payment transparency and their potential impact on litigation risk. Research suggests that these rules significantly influenced firms' disclosure practices and risk management strategies (Christensen et al., 2017; Hope et al., 2016).

Theoretical Framework

The Resource Extraction Disclosure Rules operate through several economic channels, with litigation risk being particularly salient. Litigation risk theory suggests that firms' disclosure decisions are significantly influenced by their exposure to legal liability (Skinner, 1994; Field et al., 2005). In the context of resource extraction disclosures, increased

transparency requirements can either mitigate or exacerbate litigation risk, depending on the nature of the disclosed information and stakeholder reactions.

The core concept of litigation risk encompasses the probability and potential costs of legal action against a firm, which can arise from various sources including shareholders, regulators, and other stakeholders (Rogers and Van Buskirk, 2009). Voluntary disclosure decisions are inherently connected to litigation risk through two competing mechanisms: the deterrence effect, where increased disclosure reduces information asymmetry and potential legal exposure, and the triggering effect, where additional disclosures may provide basis for litigation (Francis et al., 1994).

Hypothesis Development

The relationship between Resource Extraction Disclosure Rules and voluntary disclosure through the litigation risk channel operates through several mechanisms. First, mandatory disclosure requirements create a baseline level of transparency that may influence firms' voluntary disclosure decisions. When firms are required to disclose certain payment information, they may strategically adjust their voluntary disclosures to manage overall litigation exposure (Healy and Palepu, 2001; Verrecchia, 2001).

The impact of these rules on litigation risk is theoretically ambiguous. On one hand, increased mandatory disclosure requirements may reduce information asymmetry and therefore decrease litigation risk, encouraging firms to provide more voluntary disclosures (Dye, 1986). Conversely, detailed payment disclosures might expose firms to increased scrutiny and potential legal challenges, particularly regarding payments in politically sensitive regions or concerning environmental impacts (Kim and Verrecchia, 1994; Rogers et al., 2011).

Building on these theoretical foundations and considering the specific context of resource extraction issuers, we expect that firms subject to these rules will adjust their

voluntary disclosure practices in response to changed litigation risk profiles. The direction of this adjustment depends on whether the deterrence effect or triggering effect dominates. Given the sensitive nature of payment information and the increased scrutiny from various stakeholders, we predict that firms will respond to increased litigation risk by reducing voluntary disclosures to minimize potential legal exposure.

H1: Following the implementation of Resource Extraction Disclosure Rules, affected firms decrease their voluntary disclosures relative to unaffected firms due to increased litigation risk.

MODEL SPECIFICATION

Research Design

We identify firms affected by the Resource Extraction Disclosure Rules (REDR) through a comprehensive screening of firms' primary SIC codes related to extractive industries. Following the Securities and Exchange Commission's (SEC) implementation guidelines, we classify firms as affected if they engage in the commercial development of oil, natural gas, or minerals. This classification aligns with prior literature examining regulatory impacts in extractive industries (Christensen et al., 2017; Rauter, 2020).

To examine the impact of REDR on voluntary disclosure through litigation risk, we estimate the following regression model:

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

where FreqMF represents the frequency of management forecasts, Treatment Effect captures the differential impact of REDR implementation, and Controls represents a vector of

control variables known to influence voluntary disclosure decisions.

We control for institutional ownership, firm size, book-to-market ratio, ROA, stock return, earnings volatility, loss indicator, and class action litigation risk. These controls are consistent with prior literature examining voluntary disclosure (Rogers and Van Buskirk, 2009; Skinner, 1994). To address potential endogeneity concerns, we employ a difference-in-differences design that exploits the exogenous shock of REDR implementation.

The dependent variable, FreqMF, is measured as the natural logarithm of one plus the number of management forecasts issued during the fiscal year. Treatment Effect is an indicator variable that equals one for firms subject to REDR in the post-implementation period, and zero otherwise. Following prior literature (Field et al., 2005), we include several control variables. Institutional Ownership represents the percentage of shares held by institutional investors. Firm Size is the natural logarithm of total assets. Book-to-Market is the ratio of book value of equity to market value of equity. ROA is measured as income before extraordinary items scaled by total assets. Stock Return captures the annual buy-and-hold return. Earnings Volatility is calculated as the standard deviation of quarterly earnings over the previous five years. Loss is an indicator variable equal to one if net income is negative. Class Action Litigation Risk is estimated following Kim and Skinner (2012).

Our sample construction begins with all firms in Compustat for the period 2014-2018, centered around the 2016 REDR implementation. We obtain management forecast data from I/B/E/S, institutional ownership from Thomson Reuters, and stock return data from CRSP. We merge these databases using unique firm identifiers and require non-missing values for all variables in our analyses. The treatment group consists of firms subject to REDR, while the control group comprises firms in similar industries not subject to the regulation.

To ensure robust inference, we exclude financial institutions and utilities, consistent with prior literature (Dechow et al., 1995). We also require firms to have complete data for all variables throughout the sample period to maintain a balanced panel. This approach allows us to isolate the effect of REDR while controlling for time-invariant firm characteristics and common time trends affecting both treatment and control firms.

DESCRIPTIVE STATISTICS

Sample Description and Descriptive Statistics

Our sample comprises 14,066 firm-quarter observations representing 3,703 unique firms across 245 industries from 2014 to 2018. The sample size is comparable to recent studies examining disclosure regulation effects in U.S. markets (e.g., Christensen et al., 2017; Dyer et al., 2017).

We find that institutional ownership (linstown) averages 61.0% with a median of 70.6%, indicating substantial institutional presence in our sample firms. The distribution is slightly left-skewed, with the interquartile range spanning from 33.0% to 88.8%. Firm size (lsize), measured as the natural logarithm of market capitalization, shows a mean of 6.648 and a median of 6.704, suggesting a relatively symmetric distribution. The book-to-market ratio (lbtm) averages 0.508, with considerable variation (standard deviation = 0.547) and some extreme values ranging from -1.019 to 3.676.

Profitability metrics reveal interesting patterns. Return on assets (lroa) exhibits a mean of -6.0% but a median of 2.0%, indicating a left-skewed distribution with some firms experiencing substantial losses. This observation is reinforced by the loss indicator (lloss), which shows that 33.9% of firm-quarters report negative earnings. Stock return volatility

(levol) displays considerable variation (mean = 0.160, standard deviation = 0.329), with some firms showing extremely high volatility (maximum = 2.129).

The frequency of management forecasts (freqMF) averages 0.604, with a median of zero, suggesting that while many firms do not issue forecasts, some firms are quite active in voluntary disclosure. The post-law indicator shows that 59.5% of our observations occur after the regulatory change, providing good balance for our difference-in-differences analysis.

Notably, our sample firms exhibit higher institutional ownership and larger market capitalizations compared to the broader Compustat population, consistent with prior studies examining disclosure regulation effects (e.g., Li et al., 2019). The calculated risk measure (lcalrisk) shows a mean of 0.266 with a right-skewed distribution (median = 0.176), suggesting varying levels of litigation risk across our sample firms.

The treatment effect variable's distribution (mean = 0.595) aligns with our post-law indicator, confirming proper implementation of our research design. All continuous variables are winsorized at the 1st and 99th percentiles to mitigate the influence of outliers, following standard practice in the accounting literature.

RESULTS

Regression Analysis

We find strong evidence that the implementation of Resource Extraction Disclosure Rules is associated with a significant decrease in voluntary disclosure activities among affected firms. Specifically, our baseline specification (1) shows that treated firms experience a 6.90% decrease in voluntary disclosure following the implementation of these rules, relative to

control firms. This negative association persists in our more comprehensive specification (2), which indicates a 6.72% decrease in voluntary disclosure, after controlling for various firm characteristics.

The treatment effects are highly statistically significant across both specifications (t-statistics of -4.45 and -4.84, respectively; p-values < 0.001), suggesting a robust relationship between mandatory disclosure requirements and voluntary disclosure choices. The economic magnitude of these effects is meaningful, representing approximately a 7% reduction in voluntary disclosure activities. The consistency of the treatment effect across specifications, with only a minimal change from -0.0690 to -0.0672, provides strong evidence of the stability of our findings. The substantial improvement in R-squared from 0.14% in specification (1) to 22.48% in specification (2) indicates that our control variables capture important determinants of voluntary disclosure behavior.

The control variables in specification (2) exhibit relationships consistent with prior literature. We find that institutional ownership (0.4243, t=15.56) and firm size (0.1219, t=25.29) are positively associated with voluntary disclosure, aligning with previous findings that larger firms and those with greater institutional ownership tend to provide more voluntary information. The negative associations between voluntary disclosure and book-to-market ratio (-0.0965, t=-8.80), stock return volatility (-0.0839, t=-5.25), and litigation risk (-0.2445, t=-9.86) are consistent with theoretical predictions about firms' disclosure choices under uncertainty and legal exposure. These results strongly support our hypothesis (H1) that firms reduce voluntary disclosures in response to increased litigation risk following the implementation of Resource Extraction Disclosure Rules. The findings suggest that the triggering effect of mandatory disclosures dominates the deterrence effect, leading firms to adopt more conservative voluntary disclosure practices to manage their overall litigation exposure. This behavior is consistent with theoretical arguments about strategic disclosure

decisions in response to changed litigation risk profiles.

CONCLUSION

This study examines how the 2016 Resource Extraction Disclosure Rules influenced firms' voluntary disclosure practices through the litigation risk channel. We investigated whether enhanced mandatory disclosure requirements regarding resource extraction payments affected firms' broader disclosure strategies, particularly in response to changing litigation risk exposure. Our analysis focused on understanding how firms adjusted their voluntary disclosure practices when faced with new regulatory requirements that potentially altered their litigation risk profile.

While our study does not provide direct causal evidence, our theoretical framework and analysis suggest that the Resource Extraction Disclosure Rules created a more complex disclosure environment for affected firms. The rules' requirement for detailed payment disclosures appears to have influenced firms' risk assessments regarding potential litigation, consistent with prior literature documenting the relationship between disclosure requirements and litigation risk (Field et al., 2005; Rogers and Van Buskirk, 2009). The mandatory nature of these disclosures likely altered firms' cost-benefit calculations regarding voluntary disclosure decisions, particularly in areas where information asymmetry between managers and investors was high.

Our analysis builds on the extensive literature examining the relationship between mandatory disclosure requirements and voluntary disclosure practices (Beyer et al., 2010; Leuz and Wysocki, 2016). The findings suggest that firms subject to the Resource Extraction Disclosure Rules faced a modified litigation risk environment that potentially influenced their voluntary disclosure strategies, though the precise magnitude and direction of these effects

warrant further investigation.

These findings have important implications for regulators, managers, and investors. For regulators, our study suggests that mandatory disclosure requirements can have spillover effects on firms' voluntary disclosure practices through the litigation risk channel. This interaction effect should be considered when designing and implementing new disclosure regulations. For managers, our analysis highlights the importance of considering the broader implications of mandatory disclosure requirements on their firms' overall disclosure strategy and risk management practices. Investors benefit from understanding how regulatory changes might affect firms' disclosure behaviors and the resulting information environment.

Our study contributes to the broader literature on litigation risk and corporate disclosure (Skinner, 1994; Francis et al., 1994) by examining these relationships in the specific context of resource extraction disclosures. The findings suggest that the interaction between mandatory and voluntary disclosure decisions is complex and mediated by firms' assessments of litigation risk, consistent with recent work on disclosure regulation and firm behavior (Christensen et al., 2017).

Several limitations of our study warrant mention and suggest promising directions for future research. First, the relatively recent implementation of the Resource Extraction Disclosure Rules limits our ability to draw strong conclusions about long-term effects. Future research could examine how firms' disclosure strategies evolve as they gain experience with the new requirements. Second, our focus on litigation risk as the primary channel may not capture other important mechanisms through which mandatory disclosure requirements influence voluntary disclosure decisions. Additional research could explore alternative channels, such as proprietary costs or capital market benefits. Finally, future studies might investigate how these effects vary across different institutional environments and legal systems, particularly given the global nature of resource extraction activities.

In conclusion, our study provides initial insights into how mandatory disclosure requirements can influence voluntary disclosure practices through the litigation risk channel. While more research is needed to fully understand these relationships, our findings suggest that regulators and managers should carefully consider the broader implications of disclosure requirements on firms' risk management and information environment. As markets continue to demand greater transparency in extractive industries, understanding these dynamics becomes increasingly important for all market participants.

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Table 1

Descriptive Statistics

Variables	N	Mean	Std. Dev.	P25	Median	P75
FreqMF	14,066	0.6044	0.8942	0.0000	0.0000	1.6094
Treatment Effect	14,066	0.5955	0.4908	0.0000	1.0000	1.0000
Institutional ownership	14,066	0.6102	0.3315	0.3297	0.7061	0.8882
Firm size	14,066	6.6484	2.1305	5.1134	6.7042	8.1377
Book-to-market	14,066	0.5079	0.5469	0.2102	0.4099	0.6982
ROA	14,066	-0.0602	0.2757	-0.0437	0.0200	0.0620
Stock return	14,066	0.0078	0.4432	-0.2306	-0.0361	0.1636
Earnings volatility	14,066	0.1596	0.3286	0.0231	0.0538	0.1432
Loss	14,066	0.3386	0.4733	0.0000	0.0000	1.0000
Class action litigation risk	14,066	0.2661	0.2495	0.0853	0.1757	0.3616

This table shows the descriptive statistics. All continuous variables are winsorized at the 1st and 99th percentiles.

Table 2
Pearson Correlations
Resource Extraction Disclosure Rules

	Treatment Effect	FreqMF	Institutional ownership	Firm size	Book-to-market	ROA	Stock return	Earnings volatility	Loss	Class action litigation risk
Treatment Effect	1.00	**-0.04**	**0.06**	-0.01	-0.01	**-0.08**	**-0.06**	**0.05**	**0.07**	**0.06**
FreqMF	**-0.04**	1.00	**0.38**	**0.44**	**-0.15**	**0.25**	-0.01	**-0.20**	**-0.26**	**-0.08**
Institutional ownership	**0.06**	**0.38**	1.00	**0.63**	**-0.17**	**0.36**	**-0.03**	**-0.28**	**-0.30**	-0.02
Firm size	-0.01	**0.44**	**0.63**	1.00	**-0.29**	**0.42**	**0.07**	**-0.30**	**-0.43**	**0.05**
Book-to-market	-0.01	**-0.15**	**-0.17**	**-0.29**	1.00	**0.10**	**-0.15**	**-0.10**	**0.02**	**-0.05**
ROA	**-0.08**	**0.25**	**0.36**	**0.42**	**0.10**	1.00	**0.16**	**-0.61**	**-0.61**	**-0.25**
Stock return	**-0.06**	-0.01	**-0.03**	**0.07**	**-0.15**	**0.16**	1.00	**-0.05**	**-0.13**	**-0.05**
Earnings volatility	**0.05**	**-0.20**	**-0.28**	**-0.30**	**-0.10**	**-0.61**	**-0.05**	1.00	**0.40**	**0.23**
Loss	**0.07**	**-0.26**	**-0.30**	**-0.43**	**0.02**	**-0.61**	**-0.13**	**0.40**	1.00	**0.27**
Class action litigation risk	**0.06**	**-0.08**	-0.02	**0.05**	**-0.05**	**-0.25**	**-0.05**	**0.23**	**0.27**	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 Resource Extraction Disclosure Rules on Management Forecast Frequency

	(1)	(2)
Treatment Effect	-0.0690*** (4.45)	-0.0672*** (4.84)
Institutional ownership		0.4243*** (15.56)
Firm size		0.1219*** (25.29)
Book-to-market		-0.0965*** (8.80)
ROA		0.0650*** (2.82)
Stock return		-0.0929*** (7.37)
Earnings volatility		-0.0839*** (5.25)
Loss		-0.0812*** (4.60)
Class action litigation risk		-0.2445*** (9.86)
N	14,066	14,066
R^2	0.0014	0.2248

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