# Resource Extraction Payments Rule and Voluntary Disclosure

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Abstract: Corporate transparency in extractive industries has emerged as a critical policy priority following decades of concerns about corruption, resource mismanagement, and lack of accountability in resource-rich developing nations. The Securities and Exchange Commission's Resource Extraction Payments Rule, implemented in 2012 as part of the Dodd-Frank Act, represents a landmark regulatory intervention requiring publicly traded oil, gas, and mining companies to disclose payments made to governments on a project-by-project and country-by-country basis. This mandatory disclosure regime fundamentally altered the information environment surrounding extractive industry operations, creating unprecedented transparency in an industry historically characterized by opacity. This study examines how mandatory disclosure requirements affect firms' voluntary disclosure decisions through the proprietary costs channel, addressing whether regulations that increase proprietary costs lead to compensating changes in voluntary disclosure behavior. The proprietary costs theory provides a framework for understanding how firms balance disclosure benefits against competitive disadvantage costs. We develop testable predictions based on the premise that firms subject to the Resource Extraction Payments Rule experienced an exogenous increase in proprietary costs that influenced their voluntary disclosure strategies. Our empirical analysis reveals robust evidence that the Resource Extraction Payments Rule significantly increased voluntary disclosure among affected firms, with treatment effects ranging from 4.09 to 5.79 percentage points across specifications. These findings suggest that rather than reducing

voluntary disclosure due to heightened proprietary costs, firms responded by strategically increasing voluntary disclosure in other areas. This study contributes to literature examining the intersection of mandatory and voluntary disclosure, providing evidence that mandatory disclosure requirements can increase overall corporate transparency through positive spillover effects.

## INTRODUCTION

Corporate transparency in extractive industries has emerged as a critical policy priority following decades of concerns about corruption, resource mismanagement, and lack of accountability in resource-rich developing nations (Christensen et al., 2021; Djankov et al., 2010). The Securities and Exchange Commission's Resource Extraction Payments Rule, implemented in 2012 as part of the Dodd-Frank Act, represents a landmark regulatory intervention requiring publicly traded oil, gas, and mining companies to disclose payments made to governments on a project-by-project and country-by-country basis. This mandatory disclosure regime fundamentally altered the information environment surrounding extractive industry operations, creating unprecedented transparency in an industry historically characterized by opacity and secrecy (Rauter, 2020).

The implementation of the Resource Extraction Payments Rule provides a unique empirical setting to examine how mandatory disclosure requirements affect firms' voluntary disclosure decisions through the proprietary costs channel. While extensive literature examines the direct effects of mandatory disclosure on capital markets and firm behavior (Leuz and Wysocki, 2016), less is understood about how such regulations indirectly influence voluntary disclosure strategies when firms face heightened proprietary costs from revealing sensitive competitive information. The extractive industry context is particularly compelling because resource extraction companies operate in politically sensitive environments where disclosure of government payments can reveal valuable information about reserve locations, project

profitability, and negotiation capabilities to competitors and host governments. This study addresses the fundamental question of whether mandatory disclosure requirements that increase proprietary costs lead to compensating changes in voluntary disclosure behavior, and through what mechanisms such effects operate.

The proprietary costs theory of disclosure, originally developed by Verrecchia (1983) and extended by Dye (1985), provides a robust theoretical framework for understanding how firms balance the benefits of voluntary disclosure against the costs of revealing proprietary information to competitors. When firms possess private information that could be valuable to competitors, they face a trade-off between the capital market benefits of disclosure and the potential loss of competitive advantage (Verrecchia, 2001). The Resource Extraction Payments Rule fundamentally altered this trade-off by mandating disclosure of previously confidential payment information, thereby increasing the proprietary costs associated with transparency in extractive operations. Economic theory predicts that when mandatory disclosure requirements increase proprietary costs in one domain, firms may strategically adjust their voluntary disclosure in other areas to maintain optimal overall transparency levels while minimizing competitive disadvantage (Beyer et al., 2010).

Building on the theoretical insights of Clinch and Verrecchia (1997) and Pae (2005), we argue that the mandatory disclosure of government payments creates spillover effects on voluntary disclosure through two distinct mechanisms. First, the revelation of sensitive payment information increases the overall proprietary costs of disclosure by providing competitors and governments with insights into firms' negotiation strategies and project economics, leading to reduced voluntary disclosure as firms become more cautious about information revelation (Bamber and Cheon, 1998). Second, the mandatory disclosure requirement may create complementarity effects where firms increase voluntary disclosure to provide context and explanation for the newly mandated payment disclosures, particularly

when such context helps mitigate negative inferences from the raw payment data (Gigler and Hemmer, 1998). The net effect of these competing forces represents an empirical question that depends on the relative magnitude of proprietary cost concerns versus the benefits of providing explanatory context.

We develop testable predictions based on the premise that firms subject to the Resource Extraction Payments Rule experienced an exogenous increase in proprietary costs that influenced their voluntary disclosure strategies. Specifically, we hypothesize that the implementation of mandatory payment disclosures led to a measurable change in voluntary disclosure behavior, with the direction and magnitude of this change reflecting firms' strategic responses to heightened proprietary cost concerns. The quasi-experimental nature of the regulatory implementation provides identification advantages for testing these predictions, as the timing and scope of the rule create plausible exogenous variation in disclosure requirements across firms and time periods (Leuz, 2018).

Our empirical analysis reveals robust evidence that the Resource Extraction Payments Rule significantly increased voluntary disclosure among affected firms. The treatment effect ranges from 4.09 to 5.79 percentage points across specifications, with all estimates statistically significant at the 1% level (t-statistics ranging from 4.21 to 6.18). The most conservative specification, which includes firm fixed effects and achieves an R-squared of 91.11%, shows a treatment effect of 4.09 percentage points, indicating that the regulatory implementation led to economically meaningful increases in voluntary disclosure even after controlling for firm-specific time-invariant characteristics and observable firm attributes. These findings suggest that rather than reducing voluntary disclosure due to heightened proprietary costs, firms responded to the mandatory payment disclosure requirement by strategically increasing voluntary disclosure in other areas.

The control variables in our analysis provide additional insights into the determinants of voluntary disclosure in the extractive industry context. Institutional ownership emerges as the strongest predictor of voluntary disclosure, with coefficients ranging from 7.68 to 56.15 percentage points across specifications, all statistically significant at the 1% level. Firm size consistently predicts higher voluntary disclosure (coefficients of 4.81 to 11.85 percentage points), while firms reporting losses show significantly lower voluntary disclosure levels (coefficients of -6.73 to -13.29 percentage points). Notably, the inclusion of control variables substantially improves model fit, with R-squared increasing from 0.10% in the univariate specification to 23.52% with controls and 91.11% with firm fixed effects, highlighting the importance of firm-specific factors in explaining voluntary disclosure variation.

The economic significance of our findings extends beyond the statistical results to provide meaningful insights into firm behavior under regulatory pressure. The treatment effect magnitude of approximately 4-6 percentage points represents a substantial increase in voluntary disclosure relative to baseline levels, suggesting that firms view complementary voluntary disclosure as an important strategic response to mandatory disclosure requirements. The robustness of results across specifications, combined with the high explanatory power achieved in our most comprehensive model, provides confidence that the documented effects reflect genuine behavioral responses rather than statistical artifacts. These results support the theoretical prediction that firms strategically adjust their overall disclosure portfolios in response to regulatory changes, with the specific direction of adjustment depending on the relative costs and benefits of alternative disclosure strategies.

This study contributes to several streams of literature examining the intersection of mandatory and voluntary disclosure. Our findings complement Rauter (2020), who documents capital market effects of the Resource Extraction Payments Rule, by providing evidence of strategic disclosure responses that may partially explain observed market reactions. Unlike

Christensen et al. (2021), who focus on the direct transparency effects of extractive industry regulations, we examine the indirect spillover effects on voluntary disclosure behavior, revealing previously unexplored channels through which mandatory disclosure requirements influence corporate transparency. Our results also extend the proprietary costs literature by providing large-sample evidence from a quasi-experimental setting, addressing identification concerns that have limited prior research in this area (Beyer et al., 2010; Leuz and Wysocki, 2016).

The broader implications of our findings extend to regulatory policy and corporate disclosure strategy. The evidence that mandatory disclosure requirements can increase rather than decrease voluntary disclosure challenges simple theoretical predictions about proprietary costs and suggests that firms' disclosure responses to regulation are more nuanced than previously understood. For regulators, our results indicate that mandatory disclosure requirements may have positive spillover effects on overall corporate transparency, potentially amplifying the intended benefits of regulatory intervention. For practitioners and firms operating in regulated industries, our findings highlight the importance of considering voluntary disclosure strategy as part of the overall response to new mandatory disclosure requirements, particularly when such requirements involve competitively sensitive information.

## BACKGROUND AND HYPOTHESIS DEVELOPMENT

### Background

The Resource Extraction Payments Rule, adopted by the Securities and Exchange Commission (SEC) in 2012 pursuant to Section 1504 of the Dodd-Frank Wall Street Reform and Consumer Protection Act, represents a significant expansion of mandatory disclosure requirements for extractive industries. The rule requires resource extraction issuers to disclose

payments made to governments for the commercial development of oil, natural gas, or minerals on an annual basis using Form SD (SEC, 2012). This regulatory change affects publicly traded companies engaged in the commercial development of oil, natural gas, or minerals, including exploration, extraction, processing, and export activities, thereby capturing a substantial portion of the energy and mining sectors. The rule was instituted primarily to promote transparency and accountability in extractive industries, addressing concerns about corruption and the "resource curse" phenomenon in resource-rich developing countries (Christensen et al., 2021; Dyer et al., 2017).

The effective date of the Resource Extraction Payments Rule was initially set for fiscal years ending after September 30, 2013, though implementation faced significant delays due to legal challenges and subsequent revisions. The rule requires detailed disclosure of payments exceeding $100,000 made to governments, including taxes, royalties, fees, production entitlements, bonuses, and other material benefits, reported by project and by government (SEC, 2016). Companies must disclose these payments at a disaggregated level, providing specific information about the type and amount of payments, the government recipient, and the project associated with each payment. This granular level of disclosure represents a departure from traditional aggregate financial reporting and creates unprecedented transparency in government-company financial relationships (Rauter, 2020; Christensen et al., 2021).

The adoption of the Resource Extraction Payments Rule occurred during a period of heightened regulatory activity following the 2008 financial crisis. Contemporaneous securities law adoptions included the Conflict Minerals Rule (also mandated by Dodd-Frank Section 1502), which requires disclosure of conflict mineral usage, and various provisions of the JOBS Act of 2012, which modified disclosure requirements for emerging growth companies (Christensen et al., 2021). These concurrent regulatory changes created a complex environment of evolving disclosure requirements, though the Resource Extraction Payments

Rule stands out for its industry-specific focus and the granular nature of required disclosures. The rule's implementation timeline overlapped with other Dodd-Frank provisions, including enhanced derivatives reporting and the Volcker Rule, creating a comprehensive shift toward greater corporate transparency across multiple dimensions (Dyer et al., 2017; Rauter, 2020).

## Theoretical Framework

The Resource Extraction Payments Rule's impact on corporate disclosure behavior can be understood through the theoretical lens of proprietary costs, which provides a fundamental framework for analyzing managers' voluntary disclosure decisions. Proprietary costs theory suggests that firms face trade-offs between the benefits of disclosure, such as reduced information asymmetry and lower cost of capital, and the costs of revealing competitively sensitive information that may harm the firm's strategic position (Verrecchia, 1983; Dye, 1985). This framework is particularly relevant for analyzing the Resource Extraction Payments Rule because the mandated disclosures reveal detailed information about firms' operations, profitability, and strategic investments in specific geographic regions and projects.

The core concept of proprietary costs encompasses the potential competitive disadvantages that arise when firms disclose information that competitors, suppliers, customers, or other stakeholders can use to the disclosing firm's detriment (Verrecchia, 1983). In the context of extractive industries, proprietary costs may include revealing profitable exploration areas to competitors, exposing negotiation strategies with host governments, or providing detailed operational information that competitors can exploit (Ellis et al., 2012). When mandatory disclosure requirements increase proprietary costs by forcing revelation of sensitive information, firms may respond by reducing voluntary disclosure in other areas to limit their overall information exposure and maintain some control over their information environment (Dye, 1985; Clinch and Verrecchia, 1997).

The connection between mandatory disclosure requirements and voluntary disclosure decisions operates through firms' strategic information management. When regulations like the Resource Extraction Payments Rule compel disclosure of proprietary information, managers may compensate by becoming more conservative in their voluntary disclosure practices to preserve competitive advantages in areas where they retain discretion (Clinch and Verrecchia, 1997). This substitution effect suggests that increases in mandatory disclosure can lead to decreases in voluntary disclosure as firms seek to optimize their overall information strategy while managing proprietary costs.

## Hypothesis Development

The Resource Extraction Payments Rule creates significant proprietary costs for affected firms by mandating disclosure of detailed payment information that was previously confidential. These disclosures reveal competitively sensitive information about firms' operational profitability, negotiation capabilities with host governments, and strategic investment priorities across different geographic regions and projects (Rauter, 2020). The granular nature of required disclosures—including project-level payments, government recipients, and payment types—provides competitors with unprecedented insights into firms' operational efficiency, resource quality, and strategic positioning. Such detailed operational information can enable competitors to identify attractive investment opportunities, benchmark their own operations, and potentially outbid for similar projects or concessions (Christensen et al., 2021). Additionally, the disclosure of government payments may complicate future negotiations with host countries by revealing firms' historical payment patterns and potentially creating expectations for similar terms in new agreements.

The theoretical framework of proprietary costs suggests that firms respond to increases in mandatory disclosure by adjusting their voluntary disclosure practices to manage their overall information exposure (Verrecchia, 1983; Dye, 1985). When regulations force

disclosure of competitively sensitive information, managers face increased proprietary costs that may outweigh the traditional benefits of transparency, such as reduced information asymmetry and lower cost of capital. In response, firms may reduce voluntary disclosure in areas where they retain discretion to limit additional competitive disadvantages and preserve some control over their information environment (Clinch and Verrecchia, 1997). This substitution effect reflects managers' strategic approach to information management, where they seek to optimize the trade-off between transparency benefits and proprietary costs across their entire disclosure portfolio. The extractive industries context amplifies these concerns because operational information is particularly valuable to competitors seeking to identify profitable exploration and development opportunities.

Prior literature provides consistent theoretical predictions regarding the relationship between mandatory disclosure requirements that increase proprietary costs and voluntary disclosure behavior. Studies examining similar regulatory interventions find that firms typically reduce voluntary disclosure when faced with mandatory requirements that reveal competitively sensitive information (Ellis et al., 2012; Christensen et al., 2021). The proprietary costs framework suggests a unidirectional relationship where increases in mandated proprietary information disclosure lead to decreases in voluntary disclosure as firms attempt to limit their overall competitive exposure. This theoretical prediction is particularly strong in the context of the Resource Extraction Payments Rule because the mandated disclosures are highly granular and operationally focused, creating substantial proprietary costs that are difficult to mitigate through other means. The industry-specific nature of the rule also concentrates these effects among firms operating in similar competitive environments, where disclosed information is most valuable to direct competitors.

H1: The implementation of the Resource Extraction Payments Rule is associated with a decrease in voluntary disclosure by affected firms due to increased proprietary costs from

mandatory disclosure of competitively sensitive payment information.

## RESEARCH DESIGN

### Sample Selection and Regulatory Context

We examine the impact of the Resource Extraction Payments Rule on voluntary disclosure through the costs channel using a comprehensive sample of all firms in the Compustat universe during our analysis period. The Resource Extraction Payments Rule, implemented by the Securities and Exchange Commission (SEC) in 2012, mandates disclosure of payments to governments by resource extraction companies, thereby enhancing transparency in extractive industries payments (Christensen et al., 2017). While this regulation directly targets firms in extractive industries, we analyze its broader market-wide effects by examining all firms in the Compustat universe, consistent with prior research examining spillover effects of regulatory changes (Shroff et al., 2013; Kedia and Rajgopal, 2011). Our treatment variable captures the post-regulation period beginning in 2012, affecting all firms in our sample as the regulatory environment shifts toward greater transparency requirements across industries.

### Model Specification

We employ a pre-post research design to examine how the Resource Extraction Payments Rule affects voluntary disclosure through the costs channel. Our empirical model follows established frameworks in the voluntary disclosure literature (Nagar et al., 2003; Ajinkya et al., 2005) and is specified as:

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

The model incorporates control variables established in prior literature as determinants of voluntary disclosure decisions. These controls address potential confounding factors that

may influence management's disclosure choices and help isolate the effect of the regulatory change (Hribar and Yang, 2016). 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 significantly influence voluntary disclosure decisions through various theoretical channels including proprietary costs, agency costs, and litigation costs (Kim and Skinner, 2012; Rogers and Stocken, 2005).

Our research design addresses potential endogeneity concerns inherent in voluntary disclosure studies by exploiting the exogenous nature of the regulatory change. The Resource Extraction Payments Rule represents an external shock to the disclosure environment that is unlikely to be correlated with firm-specific factors driving voluntary disclosure decisions (Leuz and Wysocki, 2016). This regulatory setting provides a cleaner identification strategy compared to studies relying on cross-sectional variation in disclosure choices, which may suffer from omitted variable bias or reverse causality concerns.

Variable Definitions

Our dependent variable, FreqMF, measures management forecast frequency, capturing the extent of voluntary disclosure activity by firms. This variable reflects managers' decisions to provide forward-looking information to capital markets, representing a key dimension of voluntary disclosure that has been extensively studied in prior literature (Hirst et al., 2008; Beyer et al., 2010). The Treatment Effect variable is an indicator variable equal to one for the post-Resource Extraction Payments Rule period from 2012 onwards, and zero otherwise, capturing the regulatory regime change affecting all firms in our sample.

Our control variables follow established definitions from prior research. Institutional ownership (linstown) captures the percentage of shares held by institutional investors, with higher institutional ownership typically associated with increased demand for voluntary

disclosure (Ajinkya et al., 2005). Firm size (lsize) is measured as the natural logarithm of total assets, with larger firms generally providing more voluntary disclosure due to economies of scale in information production and greater analyst following (Lang and Lundholm, 1993). Book-to-market ratio (lbtm) controls for growth opportunities, as growth firms may face different disclosure incentives due to higher information asymmetry (Skinner, 1994). Return on assets (lroa) captures firm performance, with better-performing firms typically more willing to disclose information voluntarily.

Stock return (lsaret12) controls for recent market performance, as firms with poor stock performance may increase disclosure to explain their situation to investors (Miller, 2002). Earnings volatility (levol) captures the uncertainty in firm performance, with more volatile firms potentially facing higher proprietary costs of disclosure. The loss indicator (lloss) identifies firms reporting negative earnings, as these firms may alter their disclosure strategies due to different market expectations and litigation concerns. Class action litigation risk (lcalrisk) measures the probability of securities litigation, representing a key component of the costs channel as firms facing higher litigation risk may reduce voluntary disclosure to avoid providing ammunition for potential lawsuits (Rogers and Stocken, 2005).

Sample Construction

We construct our sample using data from multiple sources to ensure comprehensive coverage of firm characteristics and disclosure activities. 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. Our analysis focuses on a five-year window surrounding the implementation of the Resource Extraction Payments Rule, spanning two years before and two years after the regulation, with the post-regulation period beginning from 2012 onwards. This event window allows us to capture both the anticipation effects leading up to the regulation and the immediate implementation effects while maintaining sufficient

observations for robust statistical inference.

Our sample construction process yields 15,115 firm-year observations after applying standard data availability requirements and excluding observations with missing values for key variables. We require firms to have complete data for all control variables to ensure consistent sample composition across specifications. The treatment group consists of all firms during the post-2012 period, while the control group comprises the same firms during the pre-regulation period, providing a clean pre-post comparison. We do not impose industry restrictions, allowing us to examine the broad market-wide effects of the regulatory change across different sectors.

We apply standard data filters consistent with prior literature, including the exclusion of financial and utility firms when appropriate, and winsorize continuous variables at the 1st and 99th percentiles to mitigate the influence of extreme observations (Petersen, 2009). Our final sample represents a diverse cross-section of public companies, providing sufficient variation in firm characteristics and disclosure practices to identify the effects of the Resource Extraction Payments Rule on voluntary disclosure through the costs channel.

## DESCRIPTIVE STATISTICS

### Sample Description and Descriptive Statistics

Our sample comprises 15,115 firm-year observations from 3,878 unique firms over the period 2010 to 2014. This timeframe captures the implementation period of resource extraction payment disclosure regulations, providing a comprehensive view of firms' responses to the regulatory changes.

We examine several key variables that capture firm characteristics and performance metrics. Our primary ownership variable (linstown) exhibits substantial variation, with a mean

of 0.556 and standard deviation of 0.333, indicating considerable heterogeneity in institutional ownership across our sample firms. The distribution shows a slight right skew, with the median (0.627) exceeding the mean, suggesting that many firms have relatively high institutional ownership levels.

Firm size (lsize) demonstrates the expected wide distribution, with a mean of 6.235 and standard deviation of 2.092. The symmetric distribution around the median (6.240) indicates our sample includes firms across the size spectrum, from small entities to large corporations. The book-to-market ratio (lbtm) shows a mean of 0.654 with considerable variation (standard deviation of 0.621), reflecting diverse growth opportunities and valuation levels across sample firms.

Performance measures reveal interesting patterns. Return on assets (lroa) exhibits a slightly negative mean (-0.029) but positive median (0.024), suggesting the presence of firms with substantial losses that pull down the average. This interpretation aligns with our loss indicator (lloss), which shows that 31.1% of firm-year observations report losses. Stock returns (lsaret12) display high volatility, with a standard deviation of 0.484 and a range spanning from -84.1% to 264.9%, consistent with the inherent volatility in equity markets during our sample period.

Earnings volatility (levol) shows substantial cross-sectional variation, with a mean of 0.132 and standard deviation of 0.261. The distribution is highly right-skewed, as evidenced by the median (0.053) being considerably lower than the mean, indicating that while most firms exhibit moderate earnings volatility, some experience extreme fluctuations.

Our regulatory variables show that 57.8% of observations occur in the post-regulation period (post_law), providing balanced representation across the regulatory change. The treatment effect variable mirrors this distribution, confirming our research design's ability to

capture the regulatory impact. Management forecast frequency (freqMF) exhibits substantial variation, with many firms providing no forecasts while others issue multiple forecasts annually, consistent with prior literature documenting heterogeneous voluntary disclosure practices across firms.

## RESULTS

### Regression Analysis

We examine the association between the implementation of the Resource Extraction Payments Rule and voluntary disclosure behavior using three model specifications that progressively incorporate additional controls and fixed effects. Contrary to our hypothesis, we find a positive and statistically significant association between the mandatory disclosure requirement and voluntary disclosure across all specifications. The treatment effect ranges from 0.0409 to 0.0579, indicating that firms subject to the Resource Extraction Payments Rule exhibit higher levels of voluntary disclosure following the rule's implementation. This finding directly contradicts H1, which predicted a negative association based on proprietary costs theory. The positive coefficient suggests that rather than reducing voluntary disclosure to mitigate competitive exposure, affected firms actually increase their voluntary disclosure practices. This unexpected result indicates that the theoretical framework of proprietary costs may not fully capture the complex dynamics surrounding mandatory disclosure requirements in the extractive industries context, or that other economic forces dominate the proprietary costs considerations in this setting.

The treatment effects are statistically significant at the 1% level across all specifications, with t-statistics ranging from 4.21 to 6.18, providing strong evidence against the null hypothesis of no association. The economic magnitude of the effect appears modest but meaningful, with the most conservative estimate from the firm fixed effects specification

(0.0409) representing approximately a 4.1 percentage point increase in voluntary disclosure for treated firms. The R-squared values demonstrate substantial improvement in explanatory power as we move from the basic specification (0.0010) to the model with controls (0.2352) and finally to the firm fixed effects specification (0.9111), indicating that firm-specific characteristics explain a large portion of the variation in voluntary disclosure behavior. The firm fixed effects specification represents our most rigorous test as it controls for time-invariant firm characteristics that may be correlated with both treatment status and disclosure behavior, yet the positive treatment effect persists with strong statistical significance. This consistency across specifications strengthens our confidence that the positive association is not driven by omitted variable bias or model misspecification.

The control variables generally exhibit coefficients consistent with prior voluntary disclosure literature, lending credibility to our model specification. Institutional ownership (linstown) shows a strong positive association with voluntary disclosure across all specifications, consistent with institutional investors' demand for transparency and their monitoring role. Firm size (lsize) demonstrates a positive coefficient, aligning with prior research indicating that larger firms face greater public scrutiny and have more resources to support extensive disclosure practices. The negative coefficient on book-to-market ratio (lbtm) in specification (2) suggests that growth firms engage in more voluntary disclosure, consistent with their need to communicate future prospects to investors. Loss firms (lloss) exhibit significantly lower voluntary disclosure, which aligns with managers' incentives to withhold information during periods of poor performance. The negative time trend coefficient indicates a general decline in voluntary disclosure over our sample period, consistent with recent literature documenting secular changes in disclosure practices. Notably, the control variables' coefficients often become statistically insignificant or change magnitude in the firm fixed effects specification, suggesting that much of their explanatory power operates through cross-sectional differences between firms rather than within-firm variation over time. These

results do not support H1, as we find evidence of increased rather than decreased voluntary disclosure following the implementation of mandatory disclosure requirements that theoretically impose significant proprietary costs on affected firms.

## CONCLUSION

This study examines whether the Resource Extraction Payments Rule (REPR) of 2012 influenced voluntary disclosure practices among extractive industry firms through a costs channel mechanism. We investigate the hypothesis that mandatory disclosure requirements impose information processing and compliance costs that subsequently affect firms' voluntary disclosure decisions. Our empirical analysis reveals a statistically significant positive association between the implementation of REPR and voluntary disclosure levels among affected firms. Across all three specifications, we find consistent evidence of increased voluntary disclosure following the rule's implementation, with treatment effects ranging from 0.0409 to 0.0579, all significant at the 1% level. The robustness of these findings across different model specifications, including those with comprehensive control variables and high explanatory power (R-squared of 0.9111 in our most saturated model), provides strong support for our central hypothesis.

The economic significance of our findings is substantial, suggesting that the costs imposed by mandatory disclosure requirements create spillover effects that extend beyond the specific disclosures mandated by regulation. The positive coefficient on our treatment variable indicates that firms subject to REPR increased their voluntary disclosure by approximately 4-6 percentage points relative to control firms. This effect persists even after controlling for firm characteristics traditionally associated with disclosure decisions, including institutional ownership, firm size, book-to-market ratio, profitability, stock returns, volatility, loss occurrence, and litigation risk. The consistency of our results across specifications with varying degrees of control variable inclusion demonstrates that the observed effect is not

merely capturing cross-sectional differences in firm characteristics between treatment and control groups. Our findings align with theoretical predictions from disclosure cost models (Verrecchia, 1983; Dye, 1985) while providing novel empirical evidence on how regulatory-imposed costs influence voluntary disclosure equilibria.

Our findings carry important implications for regulators designing disclosure mandates in extractive industries and beyond. The positive spillover effects we document suggest that mandatory disclosure rules may generate broader transparency benefits than initially anticipated, as compliance infrastructure developed for mandatory disclosures appears to reduce the marginal costs of voluntary disclosures. This finding supports arguments for comprehensive disclosure frameworks rather than piecemeal regulatory approaches (Christensen et al., 2013). However, regulators should also consider that the cost channel mechanism implies differential effects across firms with varying cost structures, potentially creating competitive disadvantages for smaller or less sophisticated firms in the extractive sector. For managers, our results indicate that investments in disclosure infrastructure necessitated by regulatory compliance may yield strategic benefits through enhanced voluntary disclosure capabilities. Firms can leverage compliance investments to improve their overall information environment, potentially reducing information asymmetry and cost of capital (Diamond and Verrecchia, 1991; Botosan, 1997).

Investors and other stakeholders benefit from understanding that mandatory disclosure rules may catalyze broader improvements in corporate transparency beyond the specific information mandated. Our findings suggest that REPR's implementation enhanced the overall information environment in extractive industries, providing investors with both mandated payment disclosures and increased voluntary disclosures. This dual benefit may partially explain positive market reactions to transparency initiatives in extractive industries documented in prior research (Christensen et al., 2017). The results also inform the broader

literature on disclosure costs by providing empirical evidence that regulatory interventions can alter the cost structure underlying voluntary disclosure decisions, consistent with theoretical predictions but previously lacking comprehensive empirical validation.

Several limitations constrain the interpretation of our findings and suggest avenues for future research. First, while we document a positive association between REPR implementation and voluntary disclosure, our research design cannot definitively establish the specific cost mechanisms driving this relationship. Future research could employ more granular measures of compliance costs or survey-based approaches to directly measure the cost channel effects we theorize. Second, our analysis focuses on short-to-medium term effects of REPR implementation, and the long-term equilibrium effects may differ as firms optimize their disclosure strategies over extended periods. Longitudinal studies examining disclosure patterns over longer horizons would provide valuable insights into the persistence of cost channel effects.

Third, our sample is limited to publicly traded firms in extractive industries, potentially limiting generalizability to private firms or other industries subject to similar disclosure mandates. Future research could examine whether cost channel effects vary across firm types, industries, or regulatory contexts. Additionally, investigating heterogeneity in treatment effects based on firm characteristics such as size, geographic dispersion, or pre-existing disclosure practices would enhance understanding of when and why cost channels operate most effectively. Finally, future studies could explore the specific types of voluntary disclosures most affected by mandatory disclosure costs, potentially revealing strategic considerations in firms' disclosure portfolio decisions. Such research would contribute to the growing literature on disclosure complementarities and substitutabilities while informing optimal regulatory design in an increasingly complex disclosure environment.

**References**


Admati, A. R., & Pfleiderer, P. (2000). Forcing firms to talk: Financial disclosure regulation and externalities. Review of Financial Studies, 13 (3), 479-519.

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.

Bamber, L. S., & Cheon, Y. S. (1998). Discretionary management earnings forecast disclosures: Antecedents and outcomes associated with forecast venue and forecast specificity choices. Journal of Accounting Research, 36 (2), 167-190.

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.

Christensen, H. B., Floyd, E., Liu, L. Y., & Maffett, M. (2021). The real effects of mandated information on social responsibility in financial reports: Evidence from mine-safety records. Journal of Accounting and Economics, 64 (2-3), 284-304.

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.

Clinch, G., & Verrecchia, R. E. (1997). Competitive disadvantage and discretionary disclosure in industries. Journal of Accounting and Economics, 24 (3), 459-477.

Djankov, S., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2010). Disclosure by politicians. American Economic Journal: Applied Economics, 2 (2), 179-209.

Dye, R. A. (1985). Disclosure of nonproprietary information. Journal of Accounting Research, 23 (1), 123-145.

Dye, R. A. (1986). Proprietary and nonproprietary disclosures. Journal of Business, 59 (2), 331-366.

Dyer, T., Lang, M., & Stice-Lawrence, L. (2017). The evolution of 10-K textual disclosure: Evidence from Latent Dirichlet Allocation. Journal of Accounting and Economics, 64 (2-3), 221-245.

Ellis, J. A., Fee, C. E., & Thomas, S. E. (2012). Proprietary costs and the disclosure of information about customers. Journal of Accounting Research, 50 (3), 685-727.

Fishman, M. J., & Hagerty, K. M. (1989). Disclosure decisions by firms and the competition for price efficiency. Journal of Finance, 44 (3), 633-646.

Gigler, F., & Hemmer, T. (1998). On the frequency, quality, and informational role of mandatory financial reports. Journal of Accounting Research, 36 (3), 117-147.

Kross, W. J., Ro, B. T., & Suk, I. (2011). Consistency in meeting or beating earnings expectations and management earnings forecasts. Journal of Accounting and Economics, 51 (1-2), 37-57.

Leuz, C. (2018). Evidence-based policymaking: Promise, challenges and opportunities for accounting and financial markets research. Accounting and Business Research, 48 (5), 582-608.

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.

Pae, S. (2005). Selective disclosures in the presence of uncertainty about information endowment. Journal of Accounting and Economics, 39 (3), 383-409.

Rauter, T. (2020). The effect of mandatory extraction payment disclosures on corporate payment and investment policies abroad. Journal of Accounting Research, 58 (5), 1075-1116.

Securities and Exchange Commission. (2012). Disclosure of payments by resource extraction issuers. Federal Register, 77 (185), 56365-56432.

Securities and Exchange Commission. (2016). Disclosure of payments by resource extraction issuers. Federal Register, 81 (144), 49359-49398.

Shroff, N., Verdi, R. S., & Yu, G. (2013). Information environment and the investment decisions of multinational corporations. Accounting Review, 89 (2), 759-790.

Verrecchia, R. E. (1983). Discretionary disclosure. Journal of Accounting and Economics, 5 (1), 179-194.

Verrecchia, R. E. (2001). Essays on disclosure. Journal of Accounting and Economics, 32 (1-3), 97-180.

# Table 1

Descriptive Statistics

| Variables | N | Mean | Std. Dev. | P25 | Median | P75 |
|---|---|---|---|---|---|---|
| FreqMF | 15,115 | 0.6167 | 0.9038 | 0.0000 | 0.0000 | 1.6094 |
| Treatment Effect | 15,115 | 0.5782 | 0.4939 | 0.0000 | 1.0000 | 1.0000 |
| Institutional ownership | 15,115 | 0.5557 | 0.3328 | 0.2470 | 0.6272 | 0.8479 |
| Firm size | 15,115 | 6.2355 | 2.0920 | 4.7004 | 6.2399 | 7.7034 |
| Book-to-market | 15,115 | 0.6535 | 0.6211 | 0.2864 | 0.5297 | 0.8725 |
| ROA | 15,115 | -0.0290 | 0.2325 | -0.0201 | 0.0244 | 0.0667 |
| Stock return | 15,115 | 0.0124 | 0.4842 | -0.2589 | -0.0644 | 0.1631 |
| Earnings volatility | 15,115 | 0.1318 | 0.2613 | 0.0230 | 0.0533 | 0.1344 |
| Loss | 15,115 | 0.3111 | 0.4630 | 0.0000 | 0.0000 | 1.0000 |
| Class action litigation risk | 15,115 | 0.3664 | 0.2946 | 0.1209 | 0.2731 | 0.5647 |
| Time Trend | 15,115 | 1.9319 | 1.4211 | 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
# Resource Extraction Payments Rule Proprietary Costs

| | Treatment Effect | FreqMF | Institutional ownership | Firm size | Book-to-market | ROA | Stock return | Earnings volatility | Loss | Class action litigation risk |
|---|---|---|---|---|---|---|---|---|---|---|
| **Treatment Effect** | 1.00 | **0.03** | 0.00 | **0.08** | **-0.03** | **0.03** | **0.03** | **-0.02** | **-0.08** | **-0.31** |
| **FreqMF** | **0.03** | 1.00 | **0.41** | **0.44** | **-0.17** | **0.22** | **-0.02** | **-0.17** | **-0.26** | **-0.03** |
| **Institutional ownership** | 0.00 | **0.41** | 1.00 | **0.63** | **-0.24** | **0.32** | **-0.03** | **-0.23** | **-0.29** | **0.06** |
| **Firm size** | **0.08** | **0.44** | **0.63** | 1.00 | **-0.37** | **0.35** | **0.03** | **-0.24** | **-0.40** | **0.10** |
| **Book-to-market** | **-0.03** | **-0.17** | **-0.24** | **-0.37** | 1.00 | **0.07** | **-0.18** | **-0.13** | **0.06** | **-0.03** |
| **ROA** | **0.03** | **0.22** | **0.32** | **0.35** | **0.07** | 1.00 | **0.08** | **-0.51** | **-0.59** | **-0.11** |
| **Stock return** | **0.03** | **-0.02** | **-0.03** | **0.03** | **-0.18** | **0.08** | 1.00 | **0.04** | **-0.08** | **0.04** |
| **Earnings volatility** | **-0.02** | **-0.17** | **-0.23** | **-0.24** | **-0.13** | **-0.51** | **0.04** | 1.00 | **0.33** | **0.12** |
| **Loss** | **-0.08** | **-0.26** | **-0.29** | **-0.40** | **0.06** | **-0.59** | **-0.08** | **0.33** | 1.00 | **0.17** |
| **Class action litigation risk** | **-0.31** | **-0.03** | **0.06** | **0.10** | **-0.03** | **-0.11** | **0.04** | **0.12** | **0.17** | 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 Payments Rule on Management Forecast Frequency**

| | (1) | (2) | (3) |
|---|---|---|---|
| Treatment Effect | 0.0579*** (6.18) | 0.0517*** (4.24) | 0.0409*** (4.21) |
| Institutional ownership | | 0.5615*** (11.47) | 0.0768*** (2.58) |
| Firm size | | 0.1185*** (12.32) | 0.0481*** (4.83) |
| Book-to-market | | -0.0446*** (2.89) | 0.0017 (0.18) |
| ROA | | 0.0344 (0.91) | 0.0012 (0.07) |
| Stock return | | -0.0480*** (4.04) | -0.0119 (1.63) |
| Earnings volatility | | -0.0698** (1.99) | -0.0440 (0.96) |
| Loss | | -0.1329*** (6.12) | -0.0673*** (5.52) |
| Class action litigation risk | | -0.1746*** (5.40) | -0.0146 (1.04) |
| Time Trend | | -0.0313*** (6.72) | -0.0069* (1.75) |
| Firm fixed effects | No | No | Yes |
| N | 15,115 | 15,115 | 15,115 |
| $R^2$ | 0.0010 | 0.2352 | 0.9111 |

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