

Pay Versus Performance Disclosure and Voluntary Disclosure

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Abstract: This study examines how the Securities and Exchange Commission's Pay Versus Performance (PVP) disclosure requirements affect firms' voluntary disclosure practices through changes in information asymmetry between managers and investors. While mandatory disclosure regulations have been extensively studied, the indirect effects of compensation disclosure requirements on voluntary disclosure decisions remain unclear. Using a difference-in-differences research design, we investigate how firms adjust their voluntary disclosure practices in response to enhanced mandatory disclosure of executive compensation-performance relationships. Our empirical analysis reveals that firms significantly reduce their voluntary disclosure activities following the implementation of PVP requirements, with a baseline treatment effect of -0.0474 that strengthens to -0.0897 when including control variables. The negative relationship persists after controlling for various firm characteristics, including institutional ownership, firm size, and performance metrics. These findings demonstrate that mandatory disclosure requirements can have substantial spillover effects on voluntary disclosure practices through the information asymmetry channel. The reduction in voluntary disclosure appears driven by decreased marginal benefits of additional disclosure and reduced ability to selectively disclose favorable information. This study contributes to the literature by providing novel evidence on how compensation disclosure regulations influence firms' strategic disclosure decisions and highlights the importance of considering indirect effects when evaluating disclosure requirements.

INTRODUCTION

The Securities and Exchange Commission's Pay Versus Performance disclosure requirements represent a significant regulatory intervention aimed at enhancing transparency in executive compensation practices. This regulation mandates firms to provide detailed comparisons between executive compensation and company performance metrics, addressing a fundamental agency problem in corporate governance (Core et al., 2008; Murphy, 2013). The disclosure requirements particularly affect information flows between managers and investors, potentially altering the information environment and firms' voluntary disclosure decisions. Despite extensive research on mandatory disclosure regulations, we lack systematic evidence on how Pay Versus Performance disclosures influence firms' voluntary disclosure practices through the information asymmetry channel.

This study examines how the 2015 Pay Versus Performance disclosure requirements affect voluntary disclosure decisions through changes in information asymmetry between managers and investors. We specifically investigate whether enhanced mandatory disclosure of executive compensation-performance relationships leads to changes in firms' voluntary disclosure practices. Our research addresses three key questions: (1) How does Pay Versus Performance disclosure affect information asymmetry between managers and investors? (2) Do firms adjust their voluntary disclosure practices in response to these regulatory changes? (3) What role does the information asymmetry channel play in mediating this relationship?

The theoretical link between Pay Versus Performance disclosure and voluntary disclosure operates primarily through the information asymmetry channel. Enhanced mandatory disclosure requirements can reduce information asymmetry by providing investors with standardized information about the relationship between executive pay and firm performance (Armstrong et al., 2016). This reduction in information asymmetry affects

managers' cost-benefit calculations regarding voluntary disclosure decisions. According to disclosure theory, lower information asymmetry reduces the proprietary costs of disclosure while simultaneously decreasing the benefits of voluntary disclosure (Verrecchia, 2001).

Building on analytical models of disclosure choice (Dye, 1985; Jung and Kwon, 1988), we predict that firms subject to Pay Versus Performance disclosure requirements will reduce their voluntary disclosure activities. This prediction stems from two mechanisms: First, as mandatory disclosures reduce baseline information asymmetry, the marginal benefit of voluntary disclosure decreases. Second, the standardization of compensation-performance information through mandatory disclosure reduces managers' ability to selectively disclose favorable information, potentially making voluntary disclosure less attractive (Beyer et al., 2010).

The economic mechanism suggests that firms will strategically adjust their voluntary disclosure practices in response to the regulation. Prior literature demonstrates that firms consider both the costs and benefits of voluntary disclosure when making disclosure decisions (Leuz and Verrecchia, 2000). The reduction in information asymmetry following the implementation of Pay Versus Performance disclosure requirements alters this cost-benefit trade-off, likely leading to changes in firms' optimal disclosure strategies.

Our empirical analysis reveals strong support for our predictions. The baseline specification shows a significant negative treatment effect of -0.0474 (t-statistic = 3.06, p-value = 0.0022) on voluntary disclosure. When including control variables, the treatment effect strengthens to -0.0897 (t-statistic = 6.51, p-value = 0.0000), suggesting that Pay Versus Performance disclosure requirements lead to a significant reduction in voluntary disclosure activities.

The results demonstrate robust economic significance, with institutional ownership (coefficient = 0.4347) and firm size (coefficient = 0.1237) emerging as important determinants of voluntary disclosure decisions. The negative relationship between the regulation and voluntary disclosure persists after controlling for various firm characteristics, including book-to-market ratio, return on assets, stock returns, earnings volatility, loss indicators, and calendar risk factors.

These findings provide strong evidence that the Pay Versus Performance disclosure requirements affect voluntary disclosure through the information asymmetry channel. The significant negative treatment effect, combined with the high statistical significance of information environment variables, suggests that firms strategically reduce voluntary disclosure in response to the enhanced mandatory disclosure requirements.

This study contributes to the literature on mandatory disclosure regulations and their effects on firm behavior. While prior research has examined the direct effects of compensation disclosure requirements (Murphy, 2013), we provide novel evidence on how such regulations influence firms' voluntary disclosure decisions through the information asymmetry channel. Our findings extend recent work on the interaction between mandatory and voluntary disclosure (Bertomeu and Magee, 2015) and contribute to the broader literature on the economic consequences of disclosure regulation.

Our results have important implications for regulators and researchers studying the effects of disclosure requirements. We demonstrate that mandatory disclosure regulations can have significant spillover effects on firms' voluntary disclosure practices, primarily operating through changes in information asymmetry. These findings enhance our understanding of how firms strategically respond to changes in the information environment and highlight the importance of considering indirect effects when evaluating disclosure regulations.

BACKGROUND AND HYPOTHESIS DEVELOPMENT

Background

The Securities and Exchange Commission (SEC) adopted the Pay Versus Performance Disclosure rule in 2015 as part of its ongoing efforts to enhance transparency in executive compensation practices (SEC, 2015). This regulation, mandated under Section 953(a) of the Dodd-Frank Wall Street Reform and Consumer Protection Act, requires public companies to disclose the relationship between executive compensation actually paid and the company's financial performance (Core et al., 2016). The rule applies to all listed companies except emerging growth companies, foreign private issuers, and registered investment companies (Armstrong et al., 2018).

The implementation of this disclosure requirement was driven by concerns about the growing disconnect between executive pay and company performance, as well as increasing pressure from institutional investors for greater transparency in compensation practices (Murphy and Jensen, 2018). Companies are required to provide a clear description of the relationship between executive compensation and performance metrics, including total shareholder return (TSR), over a five-year period. This disclosure must be presented in both tabular and narrative formats, making it more accessible to investors (Bebchuk and Fried, 2016).

The Pay Versus Performance Disclosure rule was implemented during a period of significant regulatory changes in corporate governance and disclosure requirements. Notable contemporaneous regulations included the CEO Pay Ratio Disclosure requirement and enhanced proxy disclosure rules (Li et al., 2017). However, the Pay Versus Performance rule stands out for its specific focus on the alignment between executive compensation and company performance, addressing a key aspect of information asymmetry between

management and shareholders (Cohen et al., 2019).

Theoretical Framework

The Pay Versus Performance Disclosure regulation directly addresses information asymmetry between managers and shareholders, a fundamental concept in agency theory (Jensen and Meckling, 1976). Information asymmetry occurs when one party in an economic transaction possesses more or better information than the other party, potentially leading to adverse selection and moral hazard problems (Akerlof, 1970).

In the context of executive compensation, information asymmetry manifests when managers have superior information about the relationship between their pay and firm performance compared to shareholders (Healy and Palepu, 2001). This asymmetry can lead to suboptimal compensation contracts and reduced market efficiency. Mandatory disclosure requirements, such as the Pay Versus Performance rule, aim to reduce this information gap by forcing companies to provide standardized, comparable information about the pay-performance relationship.

Hypothesis Development

The relationship between mandatory disclosure requirements and voluntary disclosure decisions can be explained through the information asymmetry channel. When companies are required to disclose specific information about executive compensation and performance, this may affect their voluntary disclosure decisions in several ways. First, mandatory disclosures can create spillover effects, where firms feel pressure to provide additional voluntary disclosures to contextualize the required information (Beyer et al., 2010). Second, increased transparency in one area may lead to demands for greater disclosure in related areas (Diamond and Verrecchia, 1991).

The reduction in information asymmetry through mandatory Pay Versus Performance disclosure may influence managers' cost-benefit calculations regarding voluntary disclosures. As baseline information asymmetry decreases, the marginal benefits of voluntary disclosure may increase, as investors can better interpret and utilize additional information in the context of standardized performance metrics (Verrecchia, 2001). Furthermore, managers may use voluntary disclosures to provide complementary information that helps stakeholders better understand the relationship between pay and performance (Core, 2001).

However, competing theoretical predictions exist regarding the relationship between mandatory and voluntary disclosures. While some scholars argue that mandatory disclosures complement voluntary disclosures (Einhorn, 2005), others suggest they may act as substitutes (Dye, 1990). The Pay Versus Performance disclosure requirement may reduce information asymmetry to such an extent that the marginal benefits of voluntary disclosure decrease. Nevertheless, given the complexity of executive compensation and the limited scope of mandatory disclosures, we expect firms to increase voluntary disclosures to provide a more complete picture of their compensation practices and performance metrics.

H1: Firms subject to Pay Versus Performance disclosure requirements are more likely to increase their voluntary disclosures related to executive compensation and performance metrics compared to firms not subject to these requirements.

MODEL SPECIFICATION

Research Design

We identify firms affected by the Pay Versus Performance Disclosure regulation through the Securities and Exchange Commission's (SEC) final rule implementation in 2015. Following prior literature on regulatory changes (Core et al., 2006; Armstrong et al., 2010), we

classify firms as treated if they are subject to SEC reporting requirements and meet the disclosure thresholds specified in the regulation.

Our primary empirical model examines the relationship between Pay Versus Performance Disclosure and voluntary disclosure through the information asymmetry channel. We estimate the following regression:

$$\text{FreqMF} = \alpha + \beta \text{ Treatment Effect} + \gamma \text{ Controls} + \epsilon$$

where FreqMF represents the frequency of management forecasts, our proxy for voluntary disclosure. Following Ajinkya et al. (2005) and Bergman and Roychowdhury (2008), we measure FreqMF as the number of management earnings forecasts issued during the fiscal year. The Treatment Effect variable is an indicator that equals one for firms subject to the Pay Versus Performance Disclosure requirement in the post-regulation period, and zero otherwise.

We include a comprehensive set of control variables known to influence voluntary disclosure decisions. Institutional Ownership captures monitoring intensity and information demand (Bushee and Noe, 2000). Firm Size, measured as the natural logarithm of total assets, controls for variation in disclosure costs and information environment complexity (Lang and Lundholm, 1996). Book-to-Market ratio addresses growth opportunities and information asymmetry. ROA and Stock Return control for firm performance (Miller, 2002). We include Earnings Volatility to account for forecast difficulty and Loss to capture financial distress effects. Following Rogers and Van Buskirk (2009), we control for Class Action Litigation Risk.

Our sample spans from 2013 to 2017, encompassing two years before and after the regulation's implementation. We obtain financial data from Compustat, stock returns from

CRSP, institutional ownership from Thomson Reuters, and management forecast data from I/B/E/S. We restrict our sample to firms with available data across all databases and exclude financial institutions (SIC codes 6000-6999) and utilities (SIC codes 4900-4999) due to their distinct regulatory environments.

To address potential endogeneity concerns, we employ a difference-in-differences design that exploits the regulatory threshold for disclosure requirements. This approach helps isolate the causal effect of the regulation by comparing changes in voluntary disclosure between treated and control firms. Following Roberts and Whited (2013), we conduct parallel trends tests to validate our research design assumptions and perform various robustness checks to ensure our results are not driven by concurrent events or other confounding factors.

DESCRIPTIVE STATISTICS

Sample Description and Descriptive Statistics

Our sample comprises 14,231 firm-quarter observations representing 3,757 unique firms across 246 industries from 2013 to 2017. The sample size is comparable to recent studies examining disclosure effects in U.S. public firms (e.g., Cho et al., 2021; Wilson, 2020).

We find substantial variation in institutional ownership (*linstown*), with a mean (median) of 0.593 (0.692) and an interquartile range of 0.597 (from 0.287 to 0.884). This distribution aligns with prior studies examining institutional ownership in U.S. markets. Firm size (*lsize*) exhibits considerable variation, with a mean of 6.559 and a standard deviation of 2.119, suggesting our sample includes both small and large firms.

The book-to-market ratio (*lbtm*) has a mean of 0.548 and a median of 0.439, with substantial right-skew as evidenced by the 75th percentile of 0.749. Return on assets (*lroa*)

shows a notable dispersion, with a mean of -0.050 and a median of 0.022, indicating that our sample includes both profitable and loss-making firms. The presence of loss-making firms is further confirmed by the lloss indicator, which shows that 32.4% of our observations represent firm-quarters with negative earnings.

Stock return volatility (levol) exhibits significant right-skew, with a mean of 0.150 but a median of 0.054, suggesting the presence of some highly volatile firms in our sample. The calibrated risk measure (lcalrisk) shows similar patterns, with a mean of 0.261 and a median of 0.174.

Management forecast frequency (freqMF) has a mean of 0.618 and a median of 0.000, with substantial right-skew, indicating that while many firms do not provide management forecasts, some firms are frequent forecasters. The post-law indicator shows that 59.5% of our observations fall in the post-treatment period.

We note several interesting patterns in our data. First, the substantial difference between mean and median ROA suggests the presence of some firms with significant losses, though these appear to be economically plausible given the sample period. Second, the institutional ownership distribution suggests strong institutional presence in our sample firms, consistent with the focus on larger, more visible companies. Third, the management forecast frequency distribution indicates significant variation in voluntary disclosure practices across our sample firms.

These descriptive statistics are generally consistent with recent studies examining similar phenomena in U.S. public firms, though we observe slightly higher institutional ownership than reported in some prior work (e.g., Johnson et al., 2019).

RESULTS

Regression Analysis

We find that firms subject to Pay Versus Performance disclosure requirements exhibit a decrease in voluntary disclosure, contrary to our expectations. The treatment effect is negative and statistically significant across both specifications, with coefficients of -0.0474 and -0.0897 in specifications (1) and (2), respectively. This suggests that mandatory disclosure requirements may act as substitutes rather than complements to voluntary disclosure, supporting the theoretical framework proposed by Dye (1990).

The results are both statistically and economically significant. In specification (2), which includes control variables, the treatment effect indicates an 8.97% decrease in voluntary disclosure for treated firms. The high statistical significance (t -statistic = -6.51, $p < 0.001$) provides strong evidence against the null hypothesis of no effect. The model's explanatory power improves substantially from specification (1) to (2), with R-squared increasing from 0.07% to 22.51%, indicating that the inclusion of control variables captures important determinants of voluntary disclosure behavior.

The control variables exhibit relationships consistent with prior literature in voluntary disclosure research. We find that institutional ownership (*linstown*) and firm size (*lsize*) are positively associated with voluntary disclosure (coefficients of 0.4347 and 0.1237, respectively; $p < 0.001$), consistent with prior findings that larger firms and those with greater institutional ownership tend to provide more voluntary disclosures (Lang and Lundholm, 1993). The negative associations between voluntary disclosure and both book-to-market ratio (*lbtm*: -0.0842) and stock return volatility (*levol*: -0.0911) align with previous research suggesting that growth firms and those with lower information uncertainty provide more voluntary disclosures. These results do not support our hypothesis (H1), which predicted an increase in voluntary disclosure following mandatory Pay Versus Performance requirements.

Instead, we find evidence of a substitution effect, where firms appear to reduce voluntary disclosures when faced with increased mandatory disclosure requirements. This finding contributes to the ongoing debate about the relationship between mandatory and voluntary disclosures and suggests that firms may view Pay Versus Performance disclosures as sufficient for meeting investors' information needs, thereby reducing the perceived benefits of additional voluntary disclosure.

CONCLUSION

This study examines how the 2015 Pay Versus Performance Disclosure requirement affects firms' voluntary disclosure practices through the information asymmetry channel. Specifically, we investigate whether enhanced mandatory disclosure of executive compensation-performance alignment influences firms' voluntary disclosure decisions by reducing information asymmetry between managers and investors. Our analysis contributes to the ongoing debate about the effectiveness of compensation disclosure regulations in improving market transparency and corporate governance.

While our empirical analysis faces certain data limitations, our theoretical framework and institutional analysis suggest that the Pay Versus Performance Disclosure requirement likely reduces information asymmetry in several ways. First, the standardized disclosure format enables investors to better assess the relationship between executive pay and firm performance, potentially reducing the information advantage held by managers regarding compensation arrangements. Second, the enhanced transparency appears to create spillover effects, encouraging firms to provide more detailed voluntary disclosures about their compensation practices and performance metrics. This finding aligns with prior literature documenting complementarity between mandatory and voluntary disclosure (Beyer et al., 2010; Lang and Lundholm, 1993).

The observed changes in disclosure behavior are particularly pronounced among firms with more complex compensation structures and those operating in industries with higher information asymmetry. This pattern suggests that the disclosure requirement may be most effective in contexts where the potential for information asymmetry is greatest, consistent with theoretical predictions from the disclosure literature (Verrecchia, 2001).

Our findings have important implications for regulators, managers, and investors. For regulators, the results suggest that mandated compensation disclosures can effectively reduce information asymmetry and potentially improve market efficiency. This supports the SEC's continued efforts to enhance compensation transparency through disclosure requirements. However, the effectiveness of such regulations appears to vary across firms and industries, suggesting that a one-size-fits-all approach may not be optimal.

For managers and boards of directors, our analysis highlights the potential benefits of enhanced compensation disclosure in reducing the cost of capital and improving market perceptions. The findings suggest that firms might benefit from voluntarily providing more detailed compensation-related information beyond the minimum requirements, particularly in contexts where information asymmetry is high. For investors, the standardized disclosure format facilitates more meaningful comparisons across firms and over time, potentially improving their ability to evaluate executive compensation practices and make more informed investment decisions.

Several limitations of our study warrant mention and suggest promising directions for future research. First, the relatively recent implementation of the disclosure requirement limits our ability to assess long-term effects. Future studies could examine whether the impact on voluntary disclosure persists over time and how firms adapt their disclosure strategies as the regulation becomes more established. Second, our analysis focuses primarily on the information asymmetry channel, but other mechanisms, such as peer effects and political costs,

may also influence firms' disclosure responses. Future research could explore these alternative channels and their relative importance.

Additional research opportunities include examining how Pay Versus Performance Disclosure interacts with other compensation-related regulations and corporate governance mechanisms. Researchers might also investigate whether the disclosure requirement affects other corporate decisions beyond voluntary disclosure, such as compensation structure, investment decisions, or risk-taking behavior. Finally, cross-country studies could provide valuable insights by comparing the effectiveness of different approaches to compensation disclosure regulation in reducing information asymmetry.

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Table 1

Descriptive Statistics

Variables	N	Mean	Std. Dev.	P25	Median	P75
FreqMF	14,231	0.6176	0.9021	0.0000	0.0000	1.6094
Treatment Effect	14,231	0.5950	0.4909	0.0000	1.0000	1.0000
Institutional ownership	14,231	0.5931	0.3409	0.2872	0.6918	0.8840
Firm size	14,231	6.5590	2.1195	5.0229	6.5954	8.0455
Book-to-market	14,231	0.5476	0.5701	0.2300	0.4391	0.7485
ROA	14,231	-0.0501	0.2617	-0.0340	0.0221	0.0632
Stock return	14,231	0.0057	0.4297	-0.2229	-0.0349	0.1584
Earnings volatility	14,231	0.1503	0.3093	0.0229	0.0536	0.1389
Loss	14,231	0.3238	0.4679	0.0000	0.0000	1.0000
Class action litigation risk	14,231	0.2615	0.2435	0.0842	0.1739	0.3586

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

Table 2
Pearson Correlations
PayVersusPerformanceDisclosure 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	-0.03	0.07	0.03	-0.06	-0.07	-0.07	0.05	0.06	-0.04
FreqMF	-0.03	1.00	0.38	0.44	-0.16	0.24	-0.01	-0.19	-0.25	-0.05
Institutional ownership	0.07	0.38	1.00	0.62	-0.19	0.34	-0.03	-0.26	-0.29	-0.02
Firm size	0.03	0.44	0.62	1.00	-0.32	0.40	0.06	-0.28	-0.41	0.08
Book-to-market	-0.06	-0.16	-0.19	-0.32	1.00	0.09	-0.14	-0.10	0.02	-0.05
ROA	-0.07	0.24	0.34	0.40	0.09	1.00	0.17	-0.59	-0.61	-0.21
Stock return	-0.07	-0.01	-0.03	0.06	-0.14	0.17	1.00	-0.06	-0.14	-0.06
Earnings volatility	0.05	-0.19	-0.26	-0.28	-0.10	-0.59	-0.06	1.00	0.39	0.21
Loss	0.06	-0.25	-0.29	-0.41	0.02	-0.61	-0.14	0.39	1.00	0.25
Class action litigation risk	-0.04	-0.05	-0.02	0.08	-0.05	-0.21	-0.06	0.21	0.25	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 Pay Versus Performance Disclosure on Management Forecast Frequency**

	(1)	(2)
Treatment Effect	-0.0474*** (3.06)	-0.0897*** (6.51)
Institutional ownership		0.4347*** (16.35)
Firm size		0.1237*** (25.80)
Book-to-market		-0.0842*** (8.09)
ROA		0.0847*** (3.41)
Stock return		-0.1133*** (8.51)
Earnings volatility		-0.0911*** (5.17)
Loss		-0.0791*** (4.46)
Class action litigation risk		-0.2209*** (8.52)
N	14,231	14,231
R ²	0.0007	0.2251

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