Mandatory Disclosure and Peer Firm Managers' Learning from Stock Prices

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Abstract: Research suggests that mandatory disclosure hinders managers' ability to learn from their own stock prices in making investment decisions. We build on this research by examining how mandatory disclosure impacts the learning of managers of peer firms. Using the introduction of mandatory segment disclosure under SFAS 131, we document a significant decrease in investment-*q* sensitivity for peer firms, suggesting decreased investment efficiency. We also find that the decrease in sensitivity is concentrated among peers with lower financial constraints and higher informed trading, as well as those with greater economic links to disclosing firms. Collectively, our findings suggest that mandatory disclosure interferes with peer firm managers' learning from their own stock prices. We provide novel evidence that mandatory disclosure has negative externalities to peer firms' investment.

JEL Classification: G12, G14, G24, G31, M41

1. Introduction

In this study, we explore how mandatory disclosure impacts the ability of peer firm managers to learn from their stock prices when making investment decisions. Research documents that mandatory disclose results in inefficient investment by impeding disclosing firm managers' ability to learn from their own stock prices (e.g., Jayaraman and Wu 2019; Goldstein et al. 2021). However, a critical, but as of yet unexplored question, is whether the effects of mandatory disclosure on managerial learning from price go beyond the disclosing firm, spilling over to their peers.

The impact of mandatory disclosure on peer firms' ability to learn information from price is likely shaped by multiple economic forces. First, mandatory disclosure reduces the relative information advantage of informed traders of peer firms by mitigating information asymmetry between informed and uninformed traders due to the peer firm's economic links to the focal firm (i.e., the disclosing firm).[1] Thus, as focal firms' disclosure decreases the information advantage held by informed traders about peer firms, these traders are less likely to acquire private information and trade on it. To the extent that some of this private information is unknown to peer firm managers, mandatory disclosure can impede peer firm managers' ability to learn from their own stock prices to guide their investment decisions.[2]

On the other hand, there is a second force through which mandatory disclosure may affect peer firm managers' ability to learn from their stock price, absent information spillover effects from disclosing firms. Specifically, when mandatory disclosure reduces the expected returns to

[1] See Foster (1981), Olsen and Dietrich (1985), Baginski (1987), Clinch and Sinclair (1987), Han et al. (1989), Han and Wild (1990), and Shroff et al. (2017) for empirical evidence.

[2] For managerial learning from prices to exist, it suffices to assume that managers are not perfectly informed about all factors that are relevant to their investment decisions. While firm managers are presumably likely better informed about firm-specific factors than investors, it is possible that some informed investors collectively are better informed about various relevant industry, geopolitical, and macroeconomic factors, for example.

acquiring and trading on private information about the disclosing firm (Diamond 1985), informed traders have incentives to reallocate information acquisition effort to economically linked firms. This substitutability between investor information acquisition about the disclosing firm and its peers may actually increase peer firm managers' ability to learn from prices. As it is ex ante unclear which economic forces dominate, we take our question to data.

We use the introduction of mandatory segment reporting under SFAS 131 as our setting. SFAS 131 required firms to provide disaggregated segment information based on a management approach, namely how financial results of business units are reviewed by management. Jayaraman and Wu (2019) provide evidence that SFAS 131 resulted in decreases in stock illiquidity and managerial learning from stock prices for firms that increased the number of segments disclosed followed the enactment of SFAS 131. Following Jayaraman and Wu (2019) we classify firms that increased segment disclosure under the new regime as disclosure firms (i.e., *focal firms*). We then use Hoberg and Phillips' (2010) product similarity measure to identify non-focal firms that are peers of focal firms (*peer firms*), and we categorize all remaining firms as *control firms*. Our final sample consists of 3,218 firms: 840 focal firms, 1,369 peer firms, and 1,009 control firms.

We begin by examining the effect of mandatory segment reporting on informed trading, as proxied by the probability of informed trading (*PIN*). After confirming Jayaraman and Wu's (2019) result of a decrease in *PIN* among focal firms, we find that peer firms also experience a decrease in *PIN* compared to control firms. This finding suggests that mandatory segment reporting discourages private information production by informed traders of peer firms. To the extent that peer firm managers rely on information in their stock prices to guide their investment, as suggested by prior studies (e.g., Chen et al. 2007; Bai et al. 2016), a decline in informed trading

is expected to have an adverse effect on their ability to learn decision-relevant information from their own stock prices.

We test this prediction using an investment-*q* sensitivity framework (Bai et al. 2016; Goldstein et al. 2021). First, we confirm Jayaraman and Wu's (2019) finding of a marked decrease in investment-*q* sensitivity for focal firms. Controlling for the effect of focal firms, we document that peer firms experience a significant decrease in investment-*q* sensitivity, compared to control firms. In terms of relative economic magnitude, the spillover effect of mandatory segment reporting on peer firms' investment-*q* sensitivity is 74% of the focal firm effect. Further, we find little change in the sensitivity of investment to cash flows, suggesting that time-varying investment opportunities do not drive our results. Also, we find no apparent trend in investment-*q* sensitivity between the peer and control groups prior to the enactment of SFAS 131. Combined with our PIN results, this evidence suggests that mandatory disclosure by focal firms discourages informed traders of peer firms from acquiring information and trade on it, decreasing the informativeness of stock prices, and that peer firm managers are less able to rely on price signals in making investment decisions following the passage of SFAS 131.

Next, we investigate whether this decrease in investment-*q* sensitivity among peer firms varies by financial constraints. This test is motivated by the idea that managers are better able to adjust investments in response to signals in price when they are financially unconstrained (Bakke and Whited 2010). Consistent with this argument, we observe a significant decrease in investment-*q* sensitivity among financially unconstrained peer firms. In contrast, financially constrained peers do not experience any change. In addition, since price-based learning is higher for firms with more active informed trading (Chen et al. 2007), we predict and find a more prominent decrease in investment-*q* sensitivity when financially unconstrained firms are actively traded by informed

traders. These results strengthen our inference of priced-based learning as an explanation for the decrease in investment-*q* sensitivity among peer firms we document.

We maintain that the mechanism underlying the adverse effect of focal firms' disclosure on peer firms' learning from prices is information spillover—*focal* firms' segment disclosure reduces information asymmetry between uninformed and informed investors about *peer* firms. As a result, informed traders acquire less information about peer firms as the expected profits from information acquisition decrease. Thus, we expect the decrease in investment-*q* sensitivity among peer firms to be more pronounced for peers with the closest economic links to focal firms.

We test this prediction by measuring the economic links between focal and peer firms using Hoberg and Phillips' (2010) product similarity score. If focal and peer firms have similar products, focal firms' disclosure is more informative to investors of peer firms. We find that the decrease in investment-*q* sensitivity is concentrated among peer firms that are most closely economically linked to focal firms. Since financially unconstrained firms are more affected by price-based learning, we also expect a more marked decrease in investment-*q* sensitivity when close peers are financially unconstrained. This is what we document: financially unconstrained peer firms that are economically close to focal firms experience the greatest decrease in investment-*q* sensitivity. These results further support the idea that mandatory disclosure has important spillover effects on peer firms' ability to learn from their own stock prices in making investment decisions.

We further substantiate our inferences by examining the effect of mandatory segment reporting on peer firms' profitability. If reduced managerial learning from stock prices results in inefficient investment, peer firms' profitability will decrease. Consistent with this prediction, we find that peer firms experience a decrease in profitability, and this decrease is concentrated among financially unconstrained peers. These findings suggest that mandatory segment disclosure by

focal firms leads to inefficient investment by unconstrained peer firms by impeding their ability to learn from stock prices.

We conclude our analyses with a series of robustness tests. First, we find consistent results using an alternative definition of investment based on R&D expense plus capital expenditures, as R&D comprises a type of investment about which managers can learn from the market. Second, if firms complement mandatory segment disclosure with voluntary earnings guidance (Fox et al. 2022), peer firm managers may increase voluntary disclosure. To the extent that such disclosures reduce informed traders' information advantage and thus discourage private information production by informed traders (Chen et al. 2021), the decrease in investment-*q* sensitivity by peer firms could also be due to changes in their disclosure behavior. However, our findings are robust to controlling for voluntary disclosure.

Our findings contribute to two streams of literature. First, we contribute to the literature on the economic consequences of mandatory disclosure. Recent evidence suggests that mandatory disclosure can impose real costs on disclosing firms by reducing managers' ability to learn from their stock prices when making investment decisions (Jayaraman and Wu 2019; Pinto 2019; Bird et al. 2021; McClure et al. 2020; Goldstein et al. 2021). In particular, Jayaraman and Wu (2019) show that mandatory segment disclosure reduces managerial learning from stock prices among firms directly affected by SFAS 131. We extend this strand of research by demonstrating that mandatory disclosure also impedes peer firm managers' ability to glean information from their stock prices to guide their investment decisions.

Second, our findings contribute to the literature on the spillover effects of mandatory disclosure on peer firms. Both theoretical and empirical research presents informational spillover benefits to investors of peers of disclosing firms as a justification for mandating disclosure (Admati

and Pfleiderer 2000; Bushee and Leuz 2005; Kim and Ljungqvist 2021). However, our findings indicate that mandatory disclosure can also result in real costs to peers of disclosing firms. Overall, our evidence helps paint a fuller picture of the costs and benefits of mandatory disclosure, and should thus better inform the evaluation of future potential mandatory disclosure regulation (Leuz and Wysocki 2016).

2. Related Literature, Setting, and Hypothesis Development

2.1. Related literature

Our study builds on three areas of literature. First, the literature that examines whether mandatory disclosure improves the information environment of disclosing firms. Second, the literature that studies the consequences of mandatory disclosure for the information environment of peers of disclosing firms. Finally, the literature that examines whether mandatory disclosure also imposes real costs on disclosing firms via a managerial learning from price channel. We briefly discuss important findings from the first two streams of research, but primarily focus on research examining the effects of mandatory disclosure on managerial learning from price, as this is most closely related to our study.

A long-standing literature documents that mandatory disclosure improves the information environment of disclosing firms. One line of studies in this literature examines the economic consequences of securities regulations and changes to broad sets of accounting standards (e.g., Sarbanes-Oxley, Reg FD, mandatory IFRS adoption), while another line of studies focuses on specific accounting standards.[3] Of most relevance to our study is research examining the informational benefits of SFAS 131. For example, Berger and Hann (2003) show that SFAS 131

[3] See Fields et al. (2001), Beyer et al. (2010), and Leuz and Wysocki (2016) for reviews of this area of research.

resulted in an increase in segment reporting, improved analyst forecasts, and better monitoring of diversified firms. Ettredge et al. (2005) document that SFAS 131 increased the market's ability to predict future earnings (FERC) of firms that went from disclosing only a single segment to multiple segments. Finally, Jayaraman and Wu (2019) find decreases in stock illiquidity and informed trading among firms affected by the enactment of SFAS 131. Collectively, this line of research documents that mandatory segment disclosure improves the information environment of disclosing firms.

The second related stream of literature documents spillover effects of disclosed information on the information environment of peer firms. Several studies establish that earnings announcements and management earnings forecasts provide information to investors about other firms that are economically connected to announcing firms (e.g., Foster 1981; Olsen and Dietrich 1985; Baginski 1987; Clinch and Sinclair 1987; Han et al. 1989; Han and Wild 1990). Other research examines the spillover effects of mandatory disclosure. For example, Bushee and Leuz (2005) use the adoption of disclosure regulation to the OTCBB in 1999, namely the "Eligibility Rule," and show that already compliant firms exhibit increases in stock liquidity, consistent with externalities of mandatory disclosure. Chen et al. (2021) use the mandatory derivative disclosures enacted by SFAS 161 and show that suppliers whose customers are required to increase derivatives-related disclosure experience a decrease in information asymmetry between informed and uninformed investors, suggesting that the information spillover effects of mandatory disclosure extend to supplier/customer relationships. In light of the unraveling results (Grossman and Hart 1980; Grossman 1981; Milgrom 1981), such evidence on information spillover benefits is viewed as a justification for advocating mandatory disclosure (Beyer et al. 2010). However,

there is a lack of evidence on whether mandatory disclosure has real spillover effects on peer firms, and, if so, whether the effect is beneficial or detrimental to peer firms' investment decisions.

In contrast to research providing evidence of informational benefits of mandatory disclosure, there is a nascent line of research exploring potential real costs of mandatory disclosure, specifically through a managerial learning from stock price channel. This stream of literature builds on the notion that stock prices aggregate private information, which is otherwise dispersed across investors (Hayek 1945). Disclosure theory posits that mandatory disclosure can reduce informed investors' incentives to gather private information about disclosing firms by narrowing the information gap between informed and uninformed traders. To the extent that private information in stock prices is new to managers, mandatory disclosure can impair managers' ability to learn from their stock price to guide their investment decisions (Gao and Liang 2013; Goldstein and Yang 2019).

Recent empirical studies provide evidence consistent with this prediction. In particular, Jayaraman and Wu (2019) find that firms that provide more segment disclosure after the enactment of SFAS 131 experience decreases in both private information production by informed traders and investment-*q* sensitivity, consistent with reduced managerial learning from prices. In other related studies, Goldstein et al. (2021) and Bird et al. (2021) use the staggered implementation of the SEC's EDGAR system and document decreases in investment-*q* sensitivity for affected firms. These studies go beyond prior literature documenting informational benefits of mandatory disclosure by uncovering important real costs of mandatory disclosure. However, research has not yet considered the potential effects of mandatory disclosure on peer firm managers' ability to learn from their stock prices.

2.2. Mandatory segment reporting enacted under SFAS 131

Released by the FASB in 1997, SFAS 131 requires U.S. firms to publicly disclose disaggregated financial information for the same segments the firm considers when making internal decisions. For example, if a firm internally splits its financial performance amongst four different segments to inform its decisions, SFAS 131 requires the firm to include disaggregated financial information about those four segments in its financial reports.

SFAS 131 provides an excellent setting to examine the effect of mandatory disclosure on peer firm managers' ability to learn information from prices for two primary reasons. First, prior studies have established both informational benefits and real costs associated with the new segment disclosures enacted under SFAS 131 for disclosing firms. Second, Jayaraman and Wu (2019) suggest that disaggregated sales information newly available under SFAS 131 informs investors about disclosing firms' competitive environment, which leads to informed traders reducing their information acquisition activities. Thus, SFAS 131 has a natural link to the detection of potential spillover effects of disclosure to other firms competing in similar product markets.

SFAS 131 also offers econometric advantages to the identification of the effect of mandatory disclosure on peer firms' ability to learn from stock prices. Although SFAS 131 applies to all U.S. firms, some firms were already in compliance with the new disclosure requirement prior to its enactment. This feature allows us to identify a set of control firms, against which we benchmark the treatment effect. However, it is possible that some firms decided to not comply with SFAS 131. To the extent that this non-compliance problem is substantial, it weakens the power of our tests. Also, the non-staggered nature of SFAS 131 increases the possibility of time-varying correlated omitted bias. Accordingly, we mitigate this concern by examining within-treatment sample variation in the treatment effect.

2.3. Hypothesis development

The potential effects of mandatory disclosure on peer firm managers' ability to learn from their own stock prices is determined by multiple economic forces. As discussed above, prior studies provide evidence that a firm's disclosure provides informative signals about its peer firms' performance when the firms' fundamentals are economically connected (e.g., Foster 1981; Olsen and Dietrich 1985; Baginski 1987; Clinch and Sinclair 1987; Han et al. 1989; Han and Wild 1990; Bushee and Leuz 2005; Chen et al. 2021). This information spillover channel suggests that mandatory disclosure by the focal firm could reduce the information advantage of peer firms' informed traders against uninformed traders. As a result, informed traders may scale back information acquisition about peer firms, leading to a decrease in the amount of private information in peers' stock prices. To the extent that some of this information was unknown to peer firm managers, their ability to glean new information from prices to guide their investment decisions may decrease following an increase in mandated disclosure.

However, mandatory disclosure can also impact peer firm managers' learning from stock prices absent information spillover effects. Here, the effect depends on whether private information about focal firms and that of peer firms function as complements or substitutes (Tookes 2008; Goldstein and Yang 2015).[4] Complementarity between two pieces of information arises when acquiring one piece of information increases the expected returns to acquiring the other piece of information.[5] If this is this case, as mandatory disclosure by focal firms discourages informed traders from collecting and trading on private information about focal firms, expected

[4] Tookes (2008) develops a model in which informed traders have incentives to trade competitors' stocks. Goldstein and Yang (2015) develop a model in which informed traders acquire and trade on information about multiple sources of uncertainty regarding firm value. They show that acquiring information about one dimension of uncertainty can increase (i.e., complement) or decrease (i.e., substitute for) informed traders' information acquisition of the other type of uncertainty. The intuition of these predictions is also applicable to our setting, in which informed traders decide to collect private information about focal and peer firms when both are subject to correlated sources of uncertainty.

[5] To illustrate, consider unannounced iPhone and Samsung Galaxy updates. Demand for the iPhone is determined both by its absolute quality and its quality relative to the Samsung Galaxy. In this case, private information about upcoming iPhone updates is more valuable when traders also have information about Samsung Galaxy updates.

returns to acquiring private information about peer firms may also decrease, resulting in decreased informativeness in peer firm stock prices. This would cause peer firms to suffer a decrease in their ability to learn information from their stock prices.

On the other hand, if private information about focal firms and peer firms function as substitutes, informed investors will gather more private information about peer firms when mandatory disclosure by focal firms erodes their information advantage with respect to focal firms.[6] In other words, when trading multiple stocks, informed traders may reallocate information acquisition effort from focal firms to peer firms. This reallocation decision would increase the informativeness of peer firms' stock prices, resulting in improved managerial learning from price. Due to the presence of these competing predictions, we state our hypothesis in alternative form:

H1*: Peer firm managers' ability to learn from their own stock prices increases or decreases after mandatory disclosure by focal firms.*

3. Sample and Research Design

3.1. Sample Selection

To facilitate comparison, we begin our sample selection by obtaining a sample of the 3,814 unique firms included in Jayaraman and Wu (2019).[7] Our sample period begins five years before, and ends five years after, the implementation of SFAS 131, resulting in 33,548 firm-year observations (we exclude the year of implementation). We then restrict this sample to firm-year observations that are in the product similarity database of Hoberg and Phillips (2010) and also have at least one peer in the database. Additionally, we require focal firms to have at least one non-

[6] For example, consider a case of future demand for lumber from Lowe's and future demand for nails from Home Depot. Because demand for each of the products is informative about overall demand for building supplies, information about future demand for nails from Home Depot is more incrementally useful when information about future demand for lumber from Lowe's is not known.

[7] See Table 1 of Jayaraman and Wu (2019) for a decomposition of these 3,814 firms by changes in the number of segments around the enactment of SFAS 131. We are grateful to Sudarshan Jayaraman and Joanna Wu for providing us with the sample used in their study.

focal peer that meets the above requirements. These requirements result in 25,921 firm-year observations. We also eliminate 1,092 observations for firms that do not have financial information in the year prior to SFAS 131 implementation. We further eliminate firm-year observations belonging to the utilities and financial services industries, resulting in 24,829 firm-year observations. Finally, we eliminate firm-year observations that do not have sufficient data to calculate variables used in investment-*q* sensitivity tests or singletons (i.e., only one observation for a firm in our sample). Our final sample consists of 23,657 firm-year observations, although sample size varies in some of our analyses due to additional data requirements. Panel A of Table 1 summarizes our sample selection process.

3.2. Research design and summary statistics

We follow prior research and classify firms that disclosed more segments following the enactment of SFAS 131 as "affected" (i.e., focal) (Jayaraman and Wu 2019). Unique to our study, we identify peers of focal firms by splitting unaffected firms into two groups: peer firms and control firms. We do this using the Hoberg and Phillips' (2010) measure of firms' product similarity. Specifically, we define a firm as a peer if it meets both of the following conditions in the fiscal year immediately before SFAS 131 implementation: (1) the firm is one of the five most closely related non-focal peers of at least one focal firm and (2) the Hoberg and Phillips (2010) product similarity score between the firm and its focal firm is above the threshold that Hoberg and Phillips (2010) identify as being equivalent in coarseness to three-digit SIC codes. Firms that are not classified as focal firms or peer firms are classified as control firms. Our sample of 3,218 firms consists of 840 (26.1%) focal firms, 1,369 (42.5%) peer firms, and 1,009 (31.4%) control firms. Panel B of Table 1 summarizes this classification process.

Our first analysis examines informed trading around the passage of SFAS 131. Mandatory segment reporting may affect peer firm managers' ability to learn from their own stock prices because focal firms' segment disclosure can affect peer firms' informed traders' incentives to acquire information and trade on it. To provide evidence on this mechanism, we estimate the following generalized difference-in-differences regressions (with firm subscripts omitted):

$$PIN_t = \alpha + \gamma + \beta_1 FOCAL*POST + \beta_2 PEER*POST + \beta_3 SIZE_t + \beta_4 PRC\_INV_t + \varepsilon_t \quad (1)$$

where *PIN* is the probability of informed trading, calculated by Brown et al. (2004) following the approach of Easley et al. (1997). *FOCAL* is equal to one if the firm is classified as a focal firm, and zero otherwise. *PEER* is equal to one if the firm is classified as a peer firm, and zero otherwise, as detailed above. *POST* is equal to one (zero) in the five fiscal years following (preceding) SFAS 131 implementation. *SIZE* is firm size, measured as the log of the market value of equity, and *PRC_INV* is the inverse of the firm's stock price at the end of the fiscal year. To alleviate the impact of outliers, all continuous variables are winsorized at the 1st and 99th percentiles. Firm and year fixed effects are represented by α and γ, respectively, which absorb the main effects of both *FOCAL* and *PEER*, as well as *POST*, respectively. We follow Jayaraman and Wu (2019) and cluster standard errors by industry at the two-digit SIC industry level. The β_1 and β_2 coefficients capture the incremental effect of the enactment of SFAS 131 on informed trading of focal firms and peer firms, respectively, compared to control firms.

Our primary hypothesis pertains to managerial learning from stock prices. Because managerial learning is not directly observable, we follow prior studies (e.g., Chen et al. 2007; Bai et al. 2016; Jayaraman and Wu 2019) and use investment-*q* sensitivity as a proxy for managerial learning from prices. To identify the effect of SFAS 131 on investment-*q* sensitivity, we estimate the following OLS regression (with firm subscripts omitted):

$$INV_{t+1} = \alpha + \gamma + \beta_1 q_t + \beta_2 CFO_t + \beta_3 FOCAL*POST + \beta_4 PEER*POST + \beta_5 q*FOCAL + \beta_6 q*PEER + \beta_7 q*POST + \beta_8 q*FOCAL*POST + \beta_9 q*PEER*POST + \beta_{10} CFO_t*FOCAL + \beta_{11} CFO_t*PEER + \beta_{12} CFO_t*POST + \beta_{13} CFO_t*FOCAL*POST + \beta_{14} CFO_t*PEER*POST + \beta_{15} SIZE_t + \varepsilon_t \quad (2)$$

where INV_{t+1} represents capital expenditures in year t+1 scaled by property, plant, and equipment as of year t; q is Tobin's q, a price-based measure of investment opportunities, defined as the market-value of total assets scaled by the book-value of total assets; *CFO*, defined as cash flow from operations scaled by beginning-of-year total assets, proxies for non-price-based investment opportunities; and all other variables are as defined above. Following Jayaraman and Wu (2019), we standardize q and *CFO* to increase the interpretability of the results. As in equation (1), we include firm and year fixed effects and cluster standard errors at the industry level. The β_8 and β_9 coefficients capture the differential change in investment-q sensitivity of focal and peer firms respectively, compared to control firms around the enactment of SFAS 131.

We present full sample summary statistics in Table 2. The mean value of investment, *INV*, is 37.9% of lagged net property, plant, and equipment. The mean Tobin's q is 2.224. Panel B of Table 2 provides pre-SFAS 131 differences across focal, peer, and control observations. The mean values of *INV* are 0.426 for focal firms, 0.474 for peer firms, and 0.444 for control firms. Differences in *INV* are significant between focal and peer groups and between peer and control groups but insignificant between focal and control firms. The mean values of Tobin's q show the same increasing patterns, being highest for peer firms (2.383) and lowest for focal firms (2.115). Including firm fixed effects in our generalized difference-in-differences design mitigates the concern that uncontrolled firm-heterogeneity confounds the identification of the treatment effect. We assess the parallel trends assumption to further mitigate this concern.

4. Results

4.1. Informed trading

We present the results of estimating equation (1) in Table 3. We display two specifications. Model (1) replicates the result of Jayaraman and Wu (2019) by treating all non-focal firms as "unaffected" firms. In Model (2), we separate unaffected firms into peers of focal firms and control firms. As shown in Column (1), we successfully confirm the results of Jayaraman and Wu (2019). The coefficient on *FOCAL*POST* is negative and significant at *p*-value<.01, suggesting a decrease in informed trading among disclosing firms following the implementation of SFAS 131 compared to non-disclosing firms.

Importantly, the results in Model (2) provide evidence of a spillover effect of mandatory segment reporting on informed trading about peer firms. Specifically, the coefficient on *PEER*POST* is negative and significant at *p*-value<.01, indicating that peers of disclosing firms experience a significant decrease in informed trading compared to control firms. The coefficient on *FOCAL*POST* remains negative and significant at *p*-value<.01. In terms of relative economic significance, the effect of SFAS 131 on peer firms' informed trading is about 60% of that on focal firms (-0.009/-0.015). This novel finding suggests that mandatory segment reporting decreases informed trading in peer firms' stocks by reducing the information advantage held by informed traders about peer firms.

4.2. Investment-q sensitivity

Table 4 presents results of estimating equation (2), which tests our primary hypothesis concerning the effect of mandatory segment reporting on peer firms' ability to learn information from their stock prices. Similar to Table 3, we present two specifications. Model (1) shows a baseline specification without peer firms, while Model (2) includes focal, peer, and control groups. The results in Model (1) confirm the findings of Jayaraman and Wu (2019), as the coefficient on

*q*FOCAL*POST* is negative and significant at *p*-value<.05, consistent with an incremental decrease in investment-*q* sensitivity among focal firms, compared to all non-disclosing firms.

With respect to our hypothesis, the results in Model (2) show that peers of disclosing firms also experience a significant decrease in investment-*q* sensitivity. Specifically, the coefficient of -0.035 on *q*PEER*POST* (*p*-value<.01) indicates that peer firms experienced a 18.9% decrease in investment-*q* sensitivity following the enactment of SFAS 131, relative to their pre-period sensitivity.[8] The coefficient on *q*FOCAL*POST* remains negative and significant. The magnitude of the spillover effect of mandatory segment reporting on peer firms' investment-*q* sensitivity is about 73.5% of the disclosing firm effect. Further, the coefficient estimate on *CFO*PEER*POST* is insignificant, suggesting that managers' reliance on cash flows does not change following the adoption of SFAS 131. Prior research has argued that cash flows capture non-price-based investment opportunities (Jayaraman and Wu 2019). Thus, this result mitigates time-varying investment opportunities as a confounding factor. The findings in Table 4 provide evidence consistent with peer firms suffering a loss in their ability to learn from their own stock prices as a result of focal firms' mandatory disclosure, an important and previously undiscovered real spillover cost of mandatory disclosure.

4.3. Parallel trends

Underlying the identification of the spillover effects of mandatory disclosure in a difference-in-differences design is the parallel trends assumption. In our setting, this assumption implies that, absent the enactment of SFAS 131, *PIN* and investment-*q* sensitivity would have behaved in a similar manner between peer firms and control firms. Following the advice of Roberts

[8] A one standard deviation increase in Tobin's *q* is associated with an increase in investment by 0.185 in the *pre*-SFAS 131 period for peer firms (coefficient on *q* [0.163] + coefficient on *q*PEER* [0.022]). The coefficient of -0.035 on *q*PEER*POST* suggests a 18.9% decrease in *pre*-SFAS 131 period investment-*q* sensitivity (-0.035/0.185).

and Whited (2013) we explore trends in *PIN* and investment-*q* sensitivity in the years prior to the enactment of SFAS 131. To do this, we create multiple indicator variables denoting each year during our sample period and then interact these yearly indicators with *PEER*. We omit observations in the first three years to serve as the baseline. Thus, the coefficient estimate on each year indicator interacted with *PEER* captures the yearly differences in *PIN* and investment-*q* sensitivity between peer and control groups compared to differences in the baseline years.

Figures 1 and 2 plot the yearly coefficient estimates for *PIN* and investment-*q* sensitivity, along with 95% confidence intervals. In Figure 1, differences in *PIN* between peer firms and control firms appear trivial in the years prior to the enactment of SFAS 131, and gradually increase in the four years following its enactment, becoming statistically significant in year t+3. In Figure 2, similar to Figure 1, differences in investment-*q* sensitivity decrease in the first three years of the post-SFAS 131 period before converting to the baseline differences, and no clear pre-trend is observed. However, we recognize that the difference in investment-*q* sensitivity in the year just prior to SFAS 131 implementation is somewhat high, although statistically insignificant. A battery of within-peer firm heterogeneity tests discussed in the following sections helps alleviate endogeneity concerns arising from this.

4.4. Cross-sectional tests: Financial constraints

Although the decrease in peer firms' investment-*q* sensitivity documented in Table 4 provides evidence consistent with adverse spillover effects of mandatory segment reporting on peer firms' ability to learn from stock prices, it is possible that this decrease could be due to uncontrolled, time-varying factors concurrent with the enactment of SFAS 131. To mitigate this concern, we examine whether peer firms exhibit predictable cross-sectional heterogeneity in the treatment effect documented in Table 4.

First, we differentiate between financially constrained and unconstrained peer firms. If a decrease in learning from stock prices is indeed responsible for the decrease in investment-*q* sensitivity, the decrease should be concentrated among financially unconstrained firms (Jayaraman and Wu (2019). The intuition underlying this prediction is that firms are better able to adjust their investment levels in response to changes in price signals when they are more financially flexible (Bakke and Whited 2010). We test this prediction using measures developed by Whited and Wu (2006) (WW index) and Hadlock and Pierce (2010) (HP index) as proxies for financial constraints.[9] We classify peer firms as constrained (unconstrained) if their financial constraint values are above (equal to or below) the median peer firm's financial constraint value in the last full year before SFAS 131. For these tests, we modify equation (2) by replacing *PEER* with *PEER_CONS* and *PEER_UNCONS,* denoting financially constrained and unconstrained peer firms, respectively.

The results of these cross-sectional tests are presented in Panel A of Table 5. We present only the relevant coefficients for brevity. Model 1 (2) presents the results using the HP index (WW index). The results support our prediction that the decrease in investment-*q* sensitivity is concentrated among financially unconstrained peer firms. Specifically, both coefficients on *q*PEER_UNCONS*POST* are negative and significant at the 5% level or better. In contrast, the coefficients on *q*PEER_CONS*POST* are insignificant in both models, and the difference in the coefficients is statistically significant in both models. These results are consistent with financially unconstrained firms being most impacted by reduced learning from stock prices.

Next, we explore whether the more marked decrease in investment-*q* sensitivity by financially unconstrained peer firms is concentrated in those with higher levels of informed

[9] The WW index = 0.65 – 0.091*Cash flow – 0.062*Dividend dummy + 0.021*Long-term debt – 0.044*Size + 0.102*Industry sales growth – 0.035*Sales growth, while the HP index = −0.737*Size + 0.043* Size^2 − 0.040*Age.

trading. The intuition behind this test is that peer firms that previously relied more on signals in prices in the pre-SFAS 131 period (i.e., firms with higher levels of informed trading) will suffer more severely from the negative effects of mandatory segment reporting on informed trading. We test this prediction by dividing the sample based on the level of informed trading in the pre-SFAS 131 period. Firms are sorted into the *HIGH PIN* (*LOW PIN*) subsample if *PIN* in the last full year before SFAS 131 implementation is above (equal to or below) the median *PIN* value. We then repeat our cross-sectional tests based on financial constraints within each *PIN* subsample.

Results are presented in Panel B of Table 5. Models (1) and (2) present results for the *HIGH PIN* subsample, while Models (3) and (4) present results for the *LOW PIN* subsample. In Models (1) and (2), the *HIGH PIN* subsample, the coefficients on *q*PEER_UNCONS*POST* are negative and significant, whereas in Models (3) and (4), the *LOW PIN* subsample, they are insignificant. In contrast, the coefficients on *q*PEER_CONS*POST* are insignificant across all models. These results show that financially unconstrained peer firms suffer a significant decrease in investment-*q* sensitivity only if they had high levels of informed trading prior to SFAS 131. These results are consistent with price-based learning, but difficult to reconcile with alternative explanations. More specifically, any non-learning alternative explanation for these findings would need to explain why the decrease in peer firms' investment-*q* sensitivity is only significant for financially unconstrained peer firms with high levels of informed trading prior to SFAS 131.

4.5. Cross-sectional tests: Economic links between focal and peer firms

A central premise underlying the spillover from focal firms' disclosure to peer firms' investment decisions is that focal and peer firms are economically linked. As such, focal firms' segment disclosure assists peer firms' uninformed investors in reducing their information gap relative to informed traders. In addition, the complementary relation between private information

about focal firms and that of peer firms should be stronger when their fundamentals are more closely connected. We thus expect the decrease in investment-*q* sensitivity to be more pronounced for peer firms that are most closely economically linked to focal firms.

To test this prediction, we measure the extent to which peer firms are economically connected to focal firms using the average of the Hoberg and Phillips (2010) product similarity score(s) between the peer firm and its focal firm(s) (*Product Similarity*). As two firms' product spaces overlaps more, the focal firms' segment disclosure should be more useful to peer firms' investors. We complement the similarity measure by counting the number of focal firms that each peer firm is connected to (*#Linked Focal Firms*). The intuition for this proxy is that each focal firm's segment disclosure is a relatively noisy signal of peer firm performance. However, when a peer firm is linked to more focal firms, peer firm investors observe more of these (noisy) signals. To the extent that noise in focal firms' disclosures is canceled out, investors obtain more precise information about peer firms when those firms are linked to more focal firms. For these tests, we partition peer firms into close peers and relatively distant peers by creating two indicators denoting peer firms with above-median (*PEER_CLOSE*) and below-median (*PEER_DIST*) pre-period values of *Product Similarity* and *#Linked Focal Firms*. Similar to our prior cross-sectional tests, we modify equation (2) by replacing *PEER* with *PEER_CLOSE* and *PEER_DIST*, denoting close and distant peers, respectively.

We present the results in Panel A of Table 6. Model 1 (2) presents the results using *Product Similarity* (*#Linked Focal Firms*) as a proxy for the strength of the economic links between focal and peer firms. The results are consistent with our expectations. Specifically, the coefficients on *q*PEER_CLOSE*POST* are negative and significant at the 5% level or better in both models, suggesting a decline in investment-*q* sensitivity among peers most closely linked to focal firms. In

contrast, the coefficients on *q*PEER_DIST*POST* are insignificant in both models, indicating no discernable change in investment-*q* sensitivity among relatively more distant peers. These results suggest that peer firms with close economic relations to focal firms are most affected by the reduction in learning from stock prices.

Next, we examine whether the decrease in investment-*q* sensitivity by close peers is concentrated in those that are also financially unconstrained. We test this prediction by further splitting close peers based on financial constraints. For the purpose of comparison, we also split distant peers based on financial constraints. Thus, we create four indicator variables denoting close peers with high financial constraints (*PEER_CLOSE_CONS*), close peers with low constraints (*PEER_CLOSE_UNCONS*), distant peers with high constraints (*PEER_DIST_CONS*), and distant peers with low constraints (*PEER_DIST_UNCONS*).

We present the results in Panel B of Table 6. Across the four models, the coefficients on *q*PEER_CLOSE_UNCONS* are all negative and significant at *p*-value<.01, whereas the coefficients on *q*PEER_CLOSE_CONS* are all insignificant. These results indicate that close peers experience a decline in investment-*q* sensitivity only when they are also financially unconstrained. In contrast, economically distant peers do not experience a significant decrease in investment-*q* sensitivity regardless of their level of financial constraints. Taken together, these results provide consistent support for the notion that the decrease in investment-*q* sensitivity experienced by peer firms is attributable to the spillover effects of mandatory segment reporting.

4.6. Profitability

To provide further insights into the spillover effects of mandatory disclosure, we examine the impact of mandatory segment reporting on peer firms' profitability. Mandatory segment reporting can affect peer firms' profitability through two countervailing mechanisms. On one hand,

when peer firms experience a decrease in their ability to learn information from their stock prices in making investment decisions, their investments should be suboptimal; this should lead to decreases in profitability. However, mandatory segment disclosure could provide offsetting benefits. Specifically, segment disclosure by focal firms could mitigate information asymmetry with capital providers (e.g., Foster 1981; Olsen and Dietrich 1985; Baginski 1987; Clinch and Sinclair 1987; Han et al. 1989; Han and Wild 1990). A decrease in information asymmetry with capital providers leads to greater access to external capital and thus peer firms' profitability may increase. Overall, the net effects of mandatory segment disclosure on peer firms' profitability are unclear.

We test these opposing predictions by estimating the following OLS regression (with firm subscripts omitted);

$$ROA_t = \alpha + \gamma + \beta_1 FOCAL*POST_t + \beta_2 PEER*POST_t + \beta_3 SIZE_t + \beta_4 PRC\_INV_t + \varepsilon_t \quad (3)$$

where *ROA* is measured as income before extraordinary items in year *t* scaled by total assets in year *t* – 1. All other variables are defined as previously. We again include firm (α) and year (γ) fixed effects and cluster standard errors by industry. The β_1 and β_2 coefficients capture the incremental effect of the enactment of SFAS 131 on the profitability of focal firms and peer firms, respectively, compared to control firms.

We present the results of estimating equation (3) in Model (1) of Table 7. We find a significantly negative coefficient on *PEER*POST* (coefficient = -0.016; *p*-value<0.10), indicating a decline in profitability for peer firms. Disclosing firms appear to experience a decline in ROA (coefficient on *FOCAL*POST* = -0.017), but the decrease is not statistically significant at conventional levels (*t*-statistics=1.563). This lack of significance for focal firms is consistent with the results documented in Jayaraman and Wu (2019). Because our previous cross-sectional tests

found that financially unconstrained peer firms suffer the most severe decline in learning from stock prices, we again split peer firms into financially constrained and unconstrained using our two measures of financial constraints and report the results in Models (2) and (3). In both models, we find that only financially unconstrained peer firms experience significant decreases in ROA. These results imply that mandatory disclosure by focal firms reduces peer firms' profitability, consistent with peer firms experiencing a decrease in their ability to learn information from their stock prices.

4.7. Robustness tests

We conclude our analysis with two untabulated robustness tests. First, we use an alternative definition of investment. We replace our main dependent variable, *INV*, with *INV_RD*, which is comprised of both capital expenditures and R&D expenses. Using the specification of Table 5, Panel A, we find that financially unconstrained peer firms continue to experience a significant decrease in investment-*q* sensitivity following SFAS 131 when investment is measured as capital expenditures plus R&D expenses. Conversely, financially constrained peer firms still do not experience a significant change in investment-*q* sensitivity. The coefficients for financially constrained peer firms and financially unconstrained peer firms are again statistically different from each other.

Second, we control for changes in peer firms' voluntary disclosure. Prior studies show that firms can adjust voluntary disclosure by reassessing its net benefits in response to mandatory disclosure regulation (Noh et al. 2019; Fox et al. 2022). Thus, one may be concerned that the decrease in investment-*q* sensitivity we documented around the implementation of SFAS 131 could be confounded by changes in voluntary disclosure. To mitigate this concern, we include an indicator variable for whether a firm issued earnings guidance in a particular year as an additional

control variable in the specification used in Panel A of Table 5. We continue to find that financially unconstrained peer firms experience a significant decrease in investment-*q* sensitivity, while constrained peer firms do not. These results alleviate the concern that changes in voluntary guidance may be an alternative explanation for the decrease in peer firm investment-*q* sensitivity associated with SFAS 131 implementation.

5. Conclusion

Using mandatory segment reporting under SFAS 131, we document both statistically and economically significant decreases in informed trading and investment-*q* sensitivity for the peers of firms that are mandated to disclose more segments. Further, we show that the decrease in investment-*q* sensitivity is concentrated in financially unconstrained peer firms and those with stronger economic links to disclosing firms. Lastly, we find a decline in profitability among financially unconstrained peer firms. Overall, our findings suggest that mandatory disclosure by focal firms reduces peer firm managers' ability to learn from stock prices, resulting in investment inefficiency.

A nascent line of research finds that mandatory disclose results in inefficient investment by impeding the ability of managers of disclosing firms to learn from their own stock prices (Jayaraman and Wu 2019; McClure et al. 2020; Goldstein et al. 2021). We extend this line of research by providing evidence that these real costs of mandatory disclosure via reduced managerial learning from stock prices spill over to the peers of disclosing firms. Our evidence on the real spillover costs of mandatory disclosure also contributes to research suggesting informational spillover benefits to investors of peers of disclosing firms (Admati and Pfleiderer 2000; Bushee and Leuz 2005; Kim and Ljungqvist 2021). Overall, our findings paint a more

nuanced picture of the overall costs and benefits of mandatory disclosure, thus broadening the scope of our understanding of the economic consequences of mandatory disclosure.

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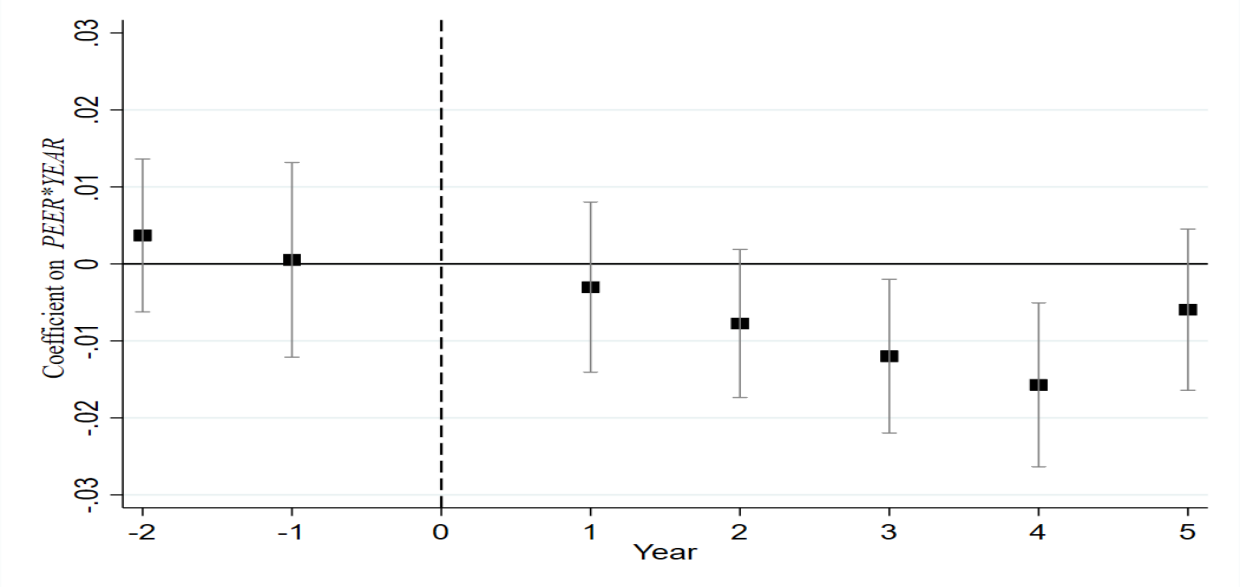
Appendix A: Variable Definitions

Variable Name	Definition
INV	Capital expenditures (CAPX) at $t + 1$ scaled by lagged net Property, Plant, and Equipment (PPENT)
INV_RD	Capital expenditures (CAPX) plus R&D expenses (XRD) at $t + 1$ scaled by lagged total assets (AT)
PIN	Probability of informed trading calculated by Brown et al. (2004) and based on the model in Easley et al. (1997)
ROA	Return on Assets, defined as income before extraordinary items (IB) scaled by lagged total assets (AT)
q	Tobin's *q*, calculated as [the book value of assets (AT) plus the market value of equity (PRCC_F*CSHO) minus the book value of equity (CEQ)] scaled by the book value of assets (AT).
CONTROL	An indicator variable set to one if the firm is not classified as a focal firm or as a peer firm, and zero otherwise.
FOCAL	An indicator variable set to one if the firm increased the number of segments disclosed after SFAS 131 implementation, and zero otherwise
PEER	An indicator variable set to one if the firm meets both of the following criteria, and zero otherwise: (1) the firm is one of the five most closely related non-focal peers of at least one focal firm and (2) the Hoberg and Phillips (2010) product similarity score between the firm and the focal firm is above the threshold that Hoberg and Phillips (2010) identify as being equivalent in coarseness to three-digit SIC codes.
POST	An indicator variable set to one in the five fiscal years subsequent to the year of SFAS 131 implementation, and zero in the five fiscal years prior to the year of SFAS 131 implementation.
PEER_CLOSE	An indicator variable equal to one for a peer firm that is economically close to focal firms, and zero otherwise. See Section 4.5. for details.
PEER_DIST	An indicator variable equal to one for a peer firm that is relatively more distant to focal firms, and zero otherwise. See Section 4.5. for details.
PEER_CONS	An indicator variable equal to one for a peer firm that is financially constrained, and zero otherwise. See Section 4.4. for details.
PEER_UNCONS	An indicator variable equal to one for a peer firm that is financially unconstrained, and zero otherwise. See Section 4.4. for details.
PEER_CLOSE_CONS	An indicator variable equal to one for a peer firm that is economically close to focal firms and financially constrained, and zero otherwise. See Section 4.5. for details.

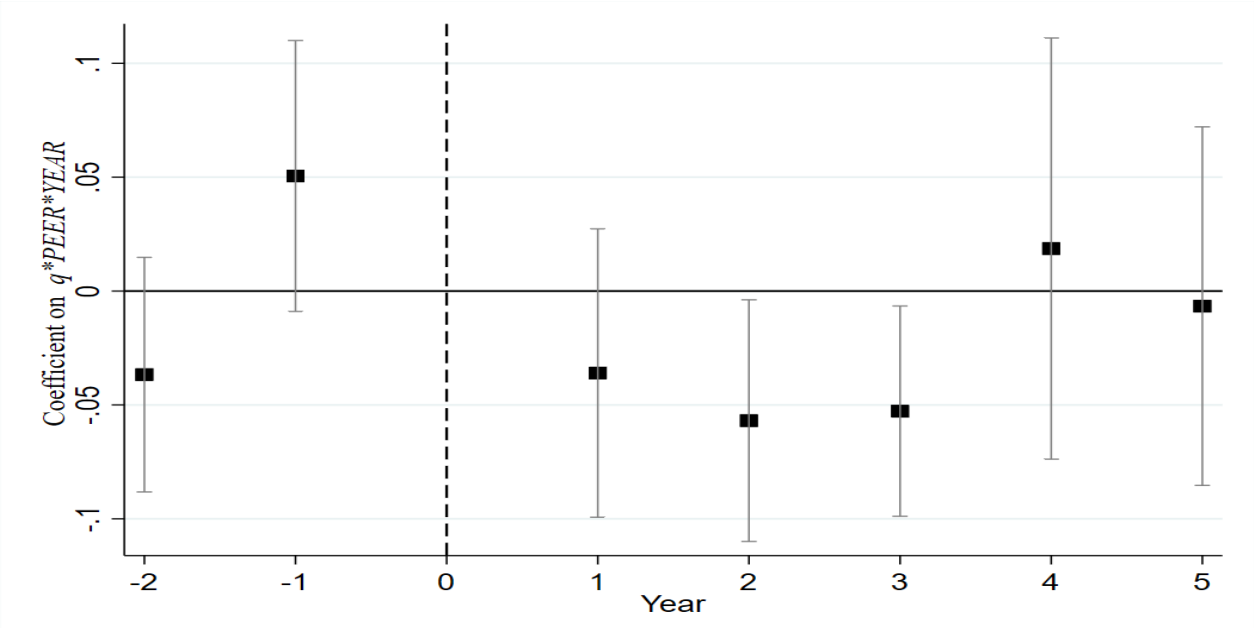
PEER_CLOSE_UNCONS	An indicator variable equal to one for a peer firm that is economically close to focal firms and financially unconstrained, and zero otherwise. See Section 4.5. for details.
PEER_DIST_CONS	An indicator variable equal to one for a peer firm that is relatively more distant to focal firms and financially constrained, and zero otherwise. See Section 4.5. for details.
PEER_DIST_UNCONS	An indicator variable equal to one for a peer firm that is relatively more distant to focal firms and financially unconstrained, and zero otherwise. See Section 4.5. for details.
CFO	The sum of income before extraordinary items (IB) and depreciation and amortization (DP), scaled by lagged total assets (AT)
PRC_INV	The inverse of the stock price (1 divided by PRCC_F)
SIZE	The log of the market value of equity (PRCC_F*CSHO)

Figure 1

Panel A: PIN yearly effects



Panel B: Investment-q sensitivity yearly effects



Panel A shows the yearly difference in *PIN* between peer firms and control firms, relative to the average difference in *PIN* between peer firms and control firms over the first three years of our sample. Panel B shows the yearly difference in investment-*q* sensitivity between peer firms and control firms, relative to the average difference in investment-*q* sensitivity between peer firms and control firms over the first three years of our sample.

Table 1
Sample Selection and Firm Classification

Panel A: Sample Selection

Requirement	Number of Firms	Number of Firm-Year Observations
Five years before and after SFAS 131 implementation for a sample of 3,814 firms used in Jayaraman and Wu (2019)	3,814	33,548
Observations must have at least one peer in the Hoberg and Phillips' (2010) product similarity and focal firm must have at least one non-focal peer.	(292)	(7,627)
Require data in the year just prior to SFAS 131 implementation	(241)	(1,092)
Remove if missing variable information needed to run main tests or if firm only has one observation	(63)	(1,172)
Final Sample	**3,218**	**23,657**

Panel B: Firm Classification

	Increase Segment Disclosure	One of 5 closest non-focal peers of at least one focal firm AND exceeds minimum product similarity threshold to be included in Hoberg and Phillips (2010) TNIC-3.	Number of Firms
Focal Firms	Yes	NA	840
Peer Firms	No	Yes	1,369
Control Firms	No	No	1,009

This table describes our sample selection and classification processes. Panel A documents our sample selection process. Panel B documents our criteria for a firm to be classified as a focal firm, a control firm, or a peer firm.

Table 2
Summary Statistics

Panel A: Full Sample

Variable	Obs.	Mean	Median	SD	P25	P75
FOCAL	23,657	0.266	0.000	0.442	0.000	1.000
PEER	23,657	0.433	0.000	0.495	0.000	1.000
CONTROL	23,657	0.302	0.000	0.459	0.000	1.000
POST	23,657	0.481	0.000	0.500	0.000	1.000
INV	23,657	0.379	0.235	0.453	0.126	0.442
q	23,657	2.224	1.563	1.909	1.121	2.494
CFO	23,657	0.004	0.075	0.256	0.000	0.126
SIZE	23,657	5.098	4.961	2.064	3.605	6.503
PIN	22,239	0.205	0.211	0.102	0.139	0.269
PRC_INV	23,657	0.254	0.090	0.503	0.042	0.229

Panel B: Pre-period means and medians

	Mean			Median		
Variable	Focal	Peer	Control	Focal	Peer	Control
INV	0.426	0.474	0.444			
q	2.115	2.383	2.360			
CFO	0.051	0.018	-0.012			
SIZE	5.397	5.016	4.470			
PIN	0.209	0.217	0.228			
PRC_INV	0.158	0.177	0.250			

Panel A presents descriptive statistics for variables used in our paper. Panel B presents pre-period variable means separately for focal firms, peer firms, and control firms. The Focal vs. Peer column shows the absolute value of the difference between the variable mean for focal firms and peer firms in the pre-period. The Focal vs. Control column shows the absolute value of the difference between the variable mean for focal firms and control firms in the pre-period. The Peer vs. Control column shows the absolute value of the difference between the variable mean for peer firms and control firms in the pre-period. Bold text indicates significant differences in pre-period variable means at the 1% level.

Table 3
Effect of Mandatory Segment Disclosure on Peer Firms' Informed Trading

Dependent Variable	(1) *PIN*	(2) *PIN*
*FOCAL*POST*	-0.009***	-0.015***
	(-3.022)	(-3.803)
PEER*POST		**-0.009*** **
		(-2.847)
SIZE	-0.025***	-0.025***
	(-23.444)	(-23.333)
PRC_INV	-0.012***	-0.012***
	(-5.419)	(-5.329)
Observations	22,239	22,239
R-squared	0.459	0.460
Firm FE	Yes	Yes
Year FE	Yes	Yes
Cluster	Industry	Industry

This table shows the impact of SFAS 131 on informed trading of peer firms. *PIN*, a measure of informed trading, is calculated by Brown et al. (2004) and based on the model by Easley et al. (1997). *FOCAL* is a dummy variable equal to one if the firm is classified as a focal firm and zero otherwise. *PEER* is a dummy variable equal to one if the firm is classified as a peer firm, and zero otherwise. *POST* is a dummy variable equal to one for fiscal years following the implementation of SFAS 131, and zero otherwise. *SIZE* is the log of the market value of equity. *PRC_INV* is the inverse of the stock price at the end of the fiscal year. Robust standard errors are clustered by industry (two-digit SIC industry codes). t-statistics are displayed in parentheses below the corresponding coefficients. Statistical significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively. Refer to Appendix A for additional variable definitions.

Table 4
Effect of Mandatory Segment Disclosure on Peer Firms' Investment-*q* Sensitivity

Dependent Variable	(1) *INV*	(2) *INV*
q	0.177***	0.163***
	(12.321)	(11.894)
CFO	0.109***	0.099***
	(9.261)	(7.040)
*FOCAL*POST*	0.006	-0.014
	(0.560)	(-0.993)
*PEER*POST*		-0.033*
		(-1.946)
*q*FOCAL*	-0.005	0.008
	(-0.342)	(0.486)
*q*PEER*		0.022
		(1.643)
*q*POST*	-0.048***	-0.027
	(-5.067)	(-1.514)
*q*FOCALXPOST*	-0.023**	-0.044***
	(-2.061)	(-2.805)
q*PEER*POST		**-0.035***
		(-1.840)
*CFO*FOCAL*	-0.011	-0.001
	(-0.434)	(-0.021)
*CFO*PEER*		0.016
		(0.846)
*CFO*POST*	-0.034**	-0.032**
	(-2.656)	(-2.410)
*CFO*FOCALXPOST*	0.009	0.008
	(0.353)	(0.258)
*CFO*PEERXPOST*		0.001
		(0.047)
SIZE	0.013	0.013
	(1.556)	(1.603)
Observations	23,657	23,657
R-squared	0.398	0.399
Firm FE	Yes	Yes
Year FE	Yes	Yes
Cluster	Industry	Industry

This table shows the impact of SFAS 131 on peer firms' investment-*q* sensitivity. *INV*, a measure of investment, is calculated as next year's capital expenditures scaled by current year's property, plant, and equipment. *FOCAL* is a dummy variable equal to one if the firm is classified as a focal firm, and zero otherwise. *PEER* is a dummy variable equal to one if the firm is classified as peer firm, and zero otherwise. *POST* is a dummy variable equal to one for fiscal years following the implementation of SFAS 131, and zero otherwise. *q* is Tobin's *q*, calculated as the book value of

assets, plus the market value of equity, minus the book value of equity, all scaled by the book value of assets. *CFO* is cash flows from operations, calculated as the sum of income before extraordinary items and depreciation and amortization, scaled by total assets. Following Jayaraman and Wu (2019), both *q* and *CFO* are standardized to have a mean of zero and a standard deviation of one. Robust standard errors are clustered by industry (two-digit SIC industry codes). t-statistics are displayed in parentheses below the corresponding coefficients. Statistical significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively. Refer to Appendix A for additional variable definitions.

Table 5
Cross-Sectional Tests: Financial Constraints

Panel A: Full Sample

	(1)	(2)
Financial Constraint Measure	HP Index	WW Index
Dependent Variable	*INV*	*INV*
*q*PEER_CONS*POST* [a]	-0.010	0.005
	(-0.432)	(0.218)
*q*PEER_UNCONS*POST* [b]	-0.065**	-0.087***
	(-2.637)	(-3.671)
| [a] – [b] |	0.055	0.092
p-value of [a] = [b]	0.0586	0.0001
Controls (Model 2 of Table 3)	Yes	Yes
Observations	23,657	23,509
R-squared	0.400	0.400
Firm FE	Yes	Yes
Year FE	Yes	Yes
Cluster	Industry	Industry

Panel B: High and Low PIN Subsamples

	(1)	(2)	(3)	(4)
PIN Subsample	HIGH PIN	HIGH PIN	LOW PIN	LOW PIN
Financial Constraint Measure	HP Index	WW Index	HP Index	WW Index
Dependent Variable	*INV*	*INV*	*INV*	*INV*
*q*PEER_CONS*POST* [a]	0.017	0.011	0.001	-0.009
	(0.522)	(0.381)	(0.034)	(-0.335)
*q*PEER_UNCONS*POST* [b]	-0.136***	-0.124***	-0.001	0.002
	(-5.512)	(-4.877)	(-0.055)	(0.062)
| [a] – [b] |	0.153	0.135	0.002	0.011
p-value of [a] = [b]	0.00	0.0001	0.9265	0.6738
Controls (Model 2 of Table 3)	Yes	Yes	Yes	Yes
Observations	10,026	9,953	11,716	11,649
R-squared	0.367	0.367	0.468	0.468
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cluster	Industry	Industry	Industry	Industry

This table shows results for investment-*q* sensitivity cross-sectional tests that classify peer firms as either financially constrained or financially unconstrained. Panel A displays results for the whole sample, while Panel B presents results separately for High PIN and Low PIN subsamples. The tests reported in Panel A and Panel B contain the full set of control variables displayed in Model 3 of Table 3, but only results for the variables of interest are shown for the sake of space. *PEER_CONS* is a dummy variable equal to one if the firm is classified as financially constrained peer firm, and zero otherwise. *PEER_UNCONS* is a dummy variable equal to one if the firm is classified as a financially

unconstrained peer firm, and zero otherwise. *INV*, a measure of investment, is calculated as next year's capital expenditures scaled by current year's property, plant, and equipment. *POST* is a dummy variable equal to one for fiscal years following the implementation of SFAS 131, and zero otherwise. *q* is Tobin's *q*, calculated as the book value of assets, plus the market value of equity, minus the book value of equity, all scaled by the book value of assets. Following Jayaraman and Wu (2019), *q* is standardized to have a mean of zero and a standard deviation of one. HP Index and WW Index refer to the Hadlock and Pierce (2010) and Whited and Wu (2006) measures of financial constraints, respectively. Robust standard errors are clustered by industry (two-digit SIC industry codes). t-statistics are displayed in parentheses below the corresponding coefficients. Statistical significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively. Refer to Appendix A for additional variable definitions.

Table 6
Cross-Sectional Tests: Economic Links to Focal Firms

Panel A: Economically close peer firms versus relatively distant peer firms

	(1)	(2)
Economic link measure	*Product Similarity*	*#Linked Focal Firms*
Dependent Variable	*INV*	*INV*
*q*PEER_CLOSE*POST* [a]	-0.050**	-0.092***
	(-2.184)	(-4.663)
*q*PEER_DIST*POST* [b]	-0.011	-0.011
	(-0.589)	(-0.391)
| [a] – [b] |	0.039	0.081
p-value of [a] = [b]	0.1249	0.0344
Controls (Model 2 of Table 3)	Yes	Yes
Observations	23,299	23,657
R-squared	0.400	0.400
Firm FE	Yes	Yes
Year FE	Yes	Yes
Cluster	Industry	Industry

Panel B: Double sorts on economic links to focal firms and financial constraints

	(1)	(2)	(3)	(4)
Economic link measure	*Product Similarity*		*#Linked Focal Firms*	
Financial Constraint Measure	HP Index	WW Index	HP Index	WW Index
Dependent Variable	*INV*	*INV*	*INV*	*INV*
*q*PEER_ CLOSE_CONS*POST* [a]	-0.012	-0.000	-0.028	-0.016
	(-0.390)	(-0.011)	(-0.855)	(-0.468)
*q*PEER_ CLOSE_UNCONS*POST* [b]	-0.106***	-0.102***	-0.160***	-0.161***
	(-3.727)	(-3.058)	(-5.231)	(-5.844)
*q*PEER_ DIST_CONS*POST*	0.004	0.022	-0.001	0.014
	(0.199)	(0.935)	(-0.024)	(0.457)
*q*PEER_ DIST_UNCONS*POST*	-0.015	-0.058	-0.009	-0.044
	(-0.447)	(-1.585)	(-0.284)	(-1.359)
| [a] – [b] |	0.094	0.102	0.132	0.145
p-value of [a] = [b]	0.0283	0.0315	0.0158	0.0024
Controls (Model 2 of Table 3)	Yes	Yes	Yes	Yes
Observations	23,299	23,157	23,657	23,509
R-squared	0.401	0.402	0.402	0.402
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cluster	Industry	Industry	Industry	Industry

This table shows results for investment-*q* sensitivity cross-sectional tests that classify peer firms as either economically close to focal firms or relatively distant to focal firms. In Panel A, *PEER_CLOSE* is a dummy variable equal to one for a peer firm that is economically close to focal firms, and zero otherwise. *PEER_DIST* is a dummy variable equal to one for a peer firm that is economically relatively distant to focal firms, and zero otherwise. In Panel B, we partition samples of close peers and relatively distant peers into financially constrained and unconstrained subsample, respectively. *PEER_CLOSE_CONS* is a dummy variable equal for a peer firm that is economically close to focal firms and financially constrained, and zero otherwise. *PEER_CLOSE_UNCONS* is a dummy variable equal for a peer firm that is economically close to focal firms and financially unconstrained, and zero otherwise. *PEER_DIST_CONS* is a dummy variable equal for a peer firm that is economically relatively distant to focal firms and financially constrained, and zero otherwise. *PEER_DIST_UNCONS* is a dummy variable equal for a peer firm that is economically relative distant to focal firms and financially unconstrained, and zero otherwise. *INV*, a measure of investment, is calculated as next year's capital expenditures scaled by current year's property, plant, and equipment. *POST* is a dummy variable equal to one for fiscal years following the implementation of SFAS 131, and zero otherwise. *q* is Tobin's *q*, calculated as the book value of assets, plus the market value of equity, minus the book value of equity, all scaled by the book value of assets. Following Jayaraman and Wu (2019), *q* is standardized to have a mean of zero and a standard deviation of one. Robust standard errors are clustered by industry (two-digit SIC industry codes). t-statistics are displayed in parentheses below the corresponding coefficients. Statistical significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively. Refer to Appendix A for additional variable definitions.

Table 7
Profitability

	(1)	(2)	(3)
Financial Constraint Measure		HP Index	WW Index
Dependent Variable	*ROA*	*ROA*	*ROA*
*FOCAL*POST*	-0.017	-0.017	-0.017
	(-1.563)	(-1.526)	(-1.529)
PEER*POST	**-0.016***		
	(-1.853)		
PEER_CONS*POST		**0.000**	**-0.008**
		(0.011**)**	**(**-0.698**)**
PEER_UNCONS*POST		**-0.027****	**-0.025****
		(-2.552**)**	**(**-2.527**)**
SIZE	0.039***	0.038***	0.039***
	(9.690)	(9.559)	(10.028)
PRC_INV	-0.013**	-0.013**	-0.013**
	(-2.127)	(-2.221)	(-2.269)
Observations	23,579	23,579	23,437
R-squared	0.628	0.628	0.626
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Cluster	Industry	Industry	Industry

This table shows changes in profitability following SFAS 131 implementation. *ROA*, a measure of profitability, is calculated as income before extraordinary items scaled by lagged total assets. *FOCAL* is a dummy variable equal to one if the firm is classified as a focal firm and zero otherwise. *PEER* is a dummy variable equal to one if the firm is classified as a peer firm, and zero otherwise. *PEER_CONS* is a dummy variable equal to one if the firm is classified as financially constrained peer firm, and zero otherwise. *PEER_UNCONS* is a dummy variable equal to one if the firm is classified as a financially unconstrained peer firm, and zero otherwise. *POST* is a dummy variable equal to one for fiscal years following the implementation of SFAS 131, and zero otherwise. *SIZE* is the log of the market value of equity. *PRC_INV* is the inverse of the stock price at the end of the fiscal year. HP Index and WW Index refer to the Hadlock and Pierce (2010) and Whited and Wu (2006) measures of financial constraints, respectively. Robust standard errors are clustered by industry (two-digit SIC industry codes). t-statistics are displayed in parentheses below the corresponding coefficients. Statistical significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively. Refer to Appendix A for additional variable definitions.